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Original Article

The Investigation of Facial Affect Recognition in Individual with Post-Traumatic Stress Disorder Symptoms in compare with Normal Control People

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Abstract

Introduction: The purpose of this study, according to the importance of facial affect recognition in social interactions and conflicting results of the studies that have previously evaluated the emotion recognition in individuals with PTSD disorder, is to investigate the emotion recognition in individuals with PTSD Disorder symptoms.

Method: The sample size in this study is over 41, including 20 individual with Post-Traumatic Stress Disorder Symptoms and 21 healthy subjects as control group.

Finding: The findings of this Study suggest that individuals with PTSD disorder have showed no poorer performance in total scale of facial affect recognition than normal control group. Moreover, the results indicate that these patients specifically have poorer performance in disgust and neutral emotion recognition. On the one hand, these results suggest that people, who have difficulty in facial affect recognition, are more likely prone to PTSD disorder. And on the other hand, inability in recognizing different emotions can result in experiencing the traumatic again, that is due to lack of correct diagnosis of threatening situations. Generally, considering the facial affect recognition as an underlying social performance factor in this group of people is important.

Key words: Facial affect recognition, Post-traumatic stress disorder, Social functioning

INTRODUCTION

One of the symptoms of post-traumatic stress disorder is the discontinuation of routine social interactions. In fact, one of the issues that are considered in treating the survivors of mental harm is to re-establish the sense of interaction with others [1] therefore, it is important to understand the underlying mechanisms of interpersonal relationships in this group of individuals. Correct interpretation of others facial emotions states are as important as expressing our excitement for establishing social interactions. Facial emotions provide important clues about our emotional states and their correct interpretation and as a vital ability to establish normal interpersonal relationships are recognized. An inseparable part of the research suggests that this function in many psychiatric disorders such as social anxiety disorder and many neurological disorders such as Korsakov's disorder [2-6]. Certain aspects of the pathology of these disorders can be the result of a changed process of understanding emotional clues. There is also a lack of experience and expression of emotional states in people with post-traumatic stress disorder. Post-traumatic stress disorder apart from the creation of feelings of shame, guilty, humiliation, anger and anxiety over stimuli associated with trauma causes inappropriate emotional responses; creativity and emotional numbness can also be created [7-9]. A common form of emotional maladaptation in Alexithymia's posttraumatic stress disorder which causes problems in recognizing and naming emotions, there are some hypotheses regarding the cause of emotional maladaptation in post-traumatic stress disorder. Neurobiological models attempt to explain the incomplete emotional function of this disorder in terms of

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neurophysiological patterns [10-11]. These models often involve amygdala in pathogenesis and maintenance of post-traumatic stress disorder. The amygdala and foreskin cortex are highly interconnected. Amygdala is involved in conditioned fear, while the medial prefrontal cortex is activated during the phase-out phase conditional fear [12]. Mice with lesions in the middle cerebral proximal cortex showed defects in conditional phobia silencing [13]. In reviewing neurological information, it has been shown that foreskin cortex plays an important role in modulating the amygdala reaction [14-17]. These models suggest that increased amygdala reactions to scary and trauma-related stimuli are due to decreased activity of the mid forehead lobe. This is due to inadequate amygdala inhibition by the intermediate prefrontal cortex [18]. Nervous imaging studies have also supported these models, which have reported different patterns of neuronal activity which is specifically characterized by increased amygdala reactions and decreased activity of the lobe of the forehead. [19-21] Therefore, studies first of all indicate a defect in amygdala performance in people suffering from posttraumatic stress disorder [24-24] Secondly, involving the amygdala in the emotional process, especially fear, and the process of recognizing facial emotions [26-27].

On the other hand, another group of studies suggests Hyppocampus is the most remarkable anatomy in this group of patients [28-29]. Although the Hyppocampus structure has the most relationship with memory, it is also involved in emotional processes. Other structural abnormalities have also been addressed in post-traumatic stress disorder, for example, reducing the size of the MPFC [30] is a structure that is likely to emerge in the experience and setting of excitement [18].

Electroscopy-based studies also support the underlying neurophysiology or neuro-anatomy involved in impaired emotional processes in PTSD disorders. [31-32]. Flemingen et al [32] observed that the response potential raised to angry and neutral states in post-traumatic stress disorder subjects was different in comparison to the control group and their findings suggest a consistent response to the potential threat in the control and low-level individuals in order to distinguish between total threatening stimuli and without a threat in the patient group; just as in patients with depression and social anxiety, in this way, the defect in understanding the emotional clues leads to a low sensitivity to the negative emotional state of anger and hatred in this group of patients [6]. In addition to the physiology proposed for defect in facial affect recognition in this group of patients, another group of studies suggests that children who are abused by parents are in trouble decoding emotions compared to children who are not exposed to these abuses. [33]

Studies have also shown that parents who abuse tend to show less positive emotions and more negative emotions than other parents [34-35]. As a result, children who are mistreated, in the correct recognition of emotions, they face bumps. In summary, there are emerging evidences of biases and differences in the emotional recognition of many psychiatric disorders. For example, depressed people generally seem to have difficulty facial affect recognition. The anxiety tract is associated with a better recognition of fear excitement and people with schizophrenia and Huntington's disease showed a defect in the facial affect recognition. However, given these evidences, it is strange that limited research has focused on the performance of people with posttraumatic stress disorder for facial affect recognition [3]. The results of a group of studies suggest that there is a deficiency in the recognition of fear and sadness in patients with post-traumatic stress disorder compared to the control group [36], while another group of studies suggests that this group of patients had better performance in recognizing negative emotions, which reported it due to the bias of the patients' attention to the threatening triggers themselves caused by anxiety in this group of individuals [37].

Therefore, with regard to the contradictory results of past research, the purpose of the study is to investigate the recognition of the emotions of fear, anger, hatred, happiness, sadness, surprise and neutral state of affairs are in people with symptoms of post-traumatic stress disorder, with the goal of recognizing as much as possible facial affect recognition as one of the components of social interactions, effective steps can be taken to improve the symptoms of this group of patients. Since many post-traumatic stress disorder patients also suffer from major depression [38], it is known that that patients who suffer from depression show a negative bias in the recognition of facial emotions, in that they neutralize the positive faces and understand the neutral faces negatively, major depression has also been studied in this study. So that it's possible effects on the results are evaluated [39].

METHODOLOGY

The research method in this research is a causal-comparative causative study. In this causal comparative study, the recognition of emotional states (fear, anger, hatred, happiness, sadness, surprise and neutral state) as the dependent variables in two groups of people with symptoms of post-traumatic stress disorder and normal symptoms have been compared.

Subjects

The statistical population of people with symptoms of posttraumatic stress disorder was all students aged between

18 and 34 years old, male and female, who studied at Shiraz University during the second half of 2015 and according to the cutoff point of the Post-Traumatic Stress Disorder (PTSD) questionnaire, were evaluated as people with post-traumatic stress disorder symptoms.

Normal society includes all male and female students of Shiraz University aged 18 to 34 years old and did not have any symptoms of this disorder based on the Post-Traumatic Stress Disorder Questionnaire (PCL) and scored at least in this questionnaire. In this study, the sample size is 41, which are 20 individuals with symptoms of post-traumatic stress disorder and 21 healthy controls as control group. Subjects were selected through a sampling method from the relevant statistical population. Of the 100 students who completed the post-traumatic stress disorder Questionnaire (PSI), only 20 were assessed based on the scores of the scale (50 points) as people with PTSD disorder and were examined as the experimental group, and 21 subjects who obtained the minimum score on the basis of the scale were evaluated as the control group. Inclusion criteria for people with signs and symptoms of post-traumatic stress disorder include the diagnosis of the symptoms of the disorder according to the cutoff score of the post-traumatic stress disorder (PCL) questionnaire, the ability to communicate verbally, the willingness and informed consent to participate in the research and exclusion criteria include alcohol and drug abuse history, cerebral or psychological harm other than the primary diagnosis was assessed by the investigator. The inclusion criteria for entering the study for normal people included obtaining a minimum score according to the score of the post-traumatic stress disorder (PCL) questionnaire, lack of history of mental illness, lack of referral to psychiatry clinics, willingness and informed consent to participate in research and exclusion criteria also included drug and alcohol consumption and physical illness and brain damage.

Instruments

Beck depression inventory

This questionnaire contains 21 questions that measure the degree of depression in a 4-point Likert scale.

Beckastar and Garbin (1996) obtained the retest coefficient of the test within a week's time 0.93 obtained. In Iran, Goodarzi [40] provides a reliable and valid test for this test. He measured the reliability of Beck's questionnaire by calculating the coefficient of internal consistency in Cronbach's alpha, and the coefficient of correlation obtained from the ballot method is based on paired and individual questions $r = 0.70$.

Post-Traumatic Stress Disorder Questionnaire (PCL): it is a self-reporting scale which is used to evaluate the degree of disorder and screen the disease from ordinary people and other patients as a diagnostic tool. The list was designed by Weathers, Litz, Herman, Huska and Keane. This questionnaire has 17 questions and five of its materials relate to traumatic signs and symptoms, 7 articles of which relate to signs and symptoms of emotional numbness and avoidance and 5 items of this list are subject to severe signs and symptoms.

The validity and reliability of this test have been investigated in various studies. Blanchard et al [42] the internal consistency coefficient (Cronbach's alpha coefficient) is the total scale of 0.93, symbolic questions and signs of a traumatic recurrence experience are 0.93, signs and symptoms of neonatal numbness and avoidance 0.82 and the criteria for signs and symptoms of severe arousal have been reported 0.83. Weiderz et al [41] examined the convergence validity of this test. The convergence validity of this scale with the MMPI-2 PK scale (0.77), the impact scale of the accident (0.90) and the scale of confrontation with war (0.46) were reported. The formal validity of this scale was confirmed by Goodarzi's research, also, in this study, the Cronbach's alpha coefficient for this questionnaire was reported as 0.83.

Facial affect recognition task: In this research, facial affect recognition was examined by 41 images that with 6 different affect states (fear, anger, hatred, happiness, sadness, surprise) and neutral state measured. In order to construct this test, at first 110 images of emotional images of the faces of Ekman and Friesen [44] containing images of the faces of people of different ages and both sexes with emotional states of happiness, sadness, anger, fear, hatred and surprise and neutral Was prepared. Then, these images were performed in a group of 41 students from clinical psychology students of Shiraz University who were in the age range of 19 to 22 years old.

Then 41 photos (each excitement was 6 photos, except for fear of emotion that took 5 photos) In the initial screening, the participants had more than 85% agreement in the correct diagnosis of emotion associated with the image, as recognition stimuli and 7 photographs (6 emotional and neutral conditions), which subjects had 100% agreement, were selected as main choices. Therefore, a multi-choice test with 41 materials was designed. In the form of 7 images that contain 100% of the agreement, each of which expressly represents one of the six main emotions (sadness, happiness, fear, hatred, surprise and anger, and neutral state) as test options, 41 other images were considered as test subjects, and the images considered as test options were placed in 7 cards at 20 × 30 cm in front of the subject's eyesight and the other images were computerized in front of the subject's eyes. However, it should be noted that these photos were randomly numbered and then displayed in the same order numbered for all subjects.

Procedure

After connecting and satisfying the subject, he sat at a spacing of 40±5 cm from the computer screen on an appropriate chair and the method was known to him. The test was performed on a computer basis. The test procedure also included 7 photos that contained test options in front of the subject's eyesight, then one of another 41 photos was displayed on a 16-inch screen of a handheld computer with 1280x800 pixels for 500 milliseconds, after submitting each image, the subjects had 5 seconds, to indicate the emotion of the desired photo, or among the 7 photos in front of the subject, representing 6 emotions and neutral states, an photos that is emotionally similar to the target photos. The performance of the subjects in this test was measured based on the total number of correct answers.

Statistical method

The collected data were analyzed using descriptive statistics, standard deviation and inferential statistics methods of ANCOVA and MANCOVA were analyzed using SPSS 22 software. The reason for the use of multivariate covariance analysis, investigating several dependent variables recognizing the emotions of fear, anger, hatred, happiness, sadness and neutral state with regard to an independent variable (symptoms of post-traumatic stress disorder), taking into account the effect of covariance variables (gender and depression) and considering that the overall score of facial affect recognition reflected the performance of individuals in different excitements, total affect recognition individually with one way covariance analysis method, considering the effect of gender and depression as a covariance variable, also, before analyzing the data in order to evaluate the assumption of one way covariance analysis, to examine the homogeneity of the variance of variables the Levine test and in the analysis of multivariate covariance to examine homogeneity of the variance box's test of equality of covariance matrixes was used.

RESULTS

The sample size in this study is 41 people. They were 20 patients with posttraumatic stress disorder (14 women and 6 men) and 21 healthy subjects (5 men and 16 women) as control group. The age range was between 18 and 35 years old. The mean age of subjects in the experimental group was 24 and SD 4 and in the normal group, the mean age was 22 and standard deviation 2. In terms of educational qualifications, most of the participants had a bachelor's degree (64%) and a master's degree (36%). In general, the two groups did not have a significant difference in age ($p > 0.05$). Patients who suffer from depression show a negative bias in facial affect recognition. In this way, they will negatively sense the positive faces and neutral faces. For this reason, in this study, depression in this group of patients was also evaluated in order to investigate the possible impact of this variable on the research. The results indicated that there was a significant difference between the subjects in the experimental group and those in the control group ($p = 0.001$, $t=8$) the subjects with post-traumatic stress disorder symptoms ($M=25$, $SD = 10$) were more depressed than control subjects ($M=255$, $SD=4$). For this reason, depression was introduced as a variance of covariance in the analysis of variance and its effect was evaluated. On the other hand, Chi-square test showed that there was a significant difference between the two groups in terms of gender ($X^2=8$, $p=0.3$). For this reason, the gender variable is also included as a covariance variable and its effect was evaluated. The mean and standard deviation of the performance of the two groups in the total score of the recognition of excitement and various excitements are shown separately in Table 1.

First, one-variable analysis of variance (ANCOVA) was used to assess the total score of facial recognition in both groups. Levine's test was used to analyze the variables homogeneity. The results of the homogeneity analysis of variances on the dependent variables are not significant at the level of 0.00 and the researcher who assumes that the variances are equal; the results of this test are reported in Table 2. The results indicated that there was no significant difference between the two groups in terms of overall affect recognition ($p > 0.05$, $F = 1$).

Then, multivariate analysis of variance (MANCOVA) was used to determine the effect of the group on one of the dependent variables. Also, the effect of this variable was also evaluated by entering gender variable and depression as a covariance variable. Before analyzing the data, to test the variance homogeneity, a box test was used. The results of the homogeneity test of the covariance matrix on the dependent variables are not significant at the level of 0.05 and allow the researcher to assume that the variances are equal. At first, the results of the Lambda-Wikis test were significant, which indicates a significant difference between the two groups in the dependent variables.

The results of the Lambda-Wikis test are reported in Table 3, therefore, the effect of the group on the linear combination of facial affect recognition is significant ($P = 0.001$).

Considering the results of the Lambda-Wikis test, the results of the two groups in all of the dependent variables were analyzed in all the emotions in order to determine the significant difference between the two groups in which of the dependent variables, these results are reported in Table 4.

Table 1: The mean and standard deviation of the performance of the two groups in the total score of the affect recognition and different affect in separation

Variable	Average examination group	Standard deviation of the experiment group	Average control group	Standard deviation of control group
Total recognition score	31	4/02	32	4/40
Fear	2	1	2	1
Hatred	4	1	5/09	0
Sadness	4	1	4	0
Neutral state	3	1	5	1
Happiness	5	0	6	0
Anger	3	1	3	1
Surprise	5	0	5	0

Table 2: Univariate variance analysis results to compare the mean scores of the two groups in the total score of facial recognition

Variable	Total squares	Degrees of freedom	Average squares	F statistics	Significance level
Affect recognition	37	3	12	1	NS

Table 3: Results of the Lambda Wikipedia test

	Value	F	Degrees of freedom	Significance level
Lambda-Wikis	0.090	42	31	0.001

Table 4: The results of multivariate variance analysis for comparison of mean scores of two groups in facial affect recognition

Variable	Total squares	Degrees of freedom	Average squares	F statistics	Significance level
Fear	2	3	0	0	NS
Hatred	5	3	1	1/04	0/001
Sadness	2	3	0	0	NS
Neutral state	4/07	3	1	1/07	0/001
Happiness	0	3	0	0	NS
Anger	2	3	0	10/4	NS
Surprise	2	3	2	1	NS

As shown in Table 4, there is a significant difference between the two groups in terms of hatred and neutral excitement. In this way, individuals with symptoms of post-traumatic stress disorder had weaker performance in these two excitements of the control group.

DISCUSSION

The results of this study indicated that individuals with post-traumatic stress disorder symptoms did not show any significant difference in the overall facial affect recognition in comparison with the control group, these results are consistent with the findings of another group of studies that are the only flaw in certain excitements and not all emotions have been reported in this group of people [36]. The current study showed that this group of people was only weaker in their recognition of hate speech and facial affect than the control group. In line with the findings of this study, some past studies have suggested that emotional perception is not a one-dimensional function and in the clinical population, perception of certain excitements is usually defective, while the recognition of other affects is unconstrained [45].

The ability to establish successful and effective social interaction depends on three basic components: 1. Send effective information 2. Receive effective information 3. Experience the excitement. Previous research suggests that the symptoms of post-traumatic stress disorder are related to the defect in the emotional experience of emotional numbness and Alexithymia, on the other hand, another group of studies suggests that problems encountered in interpersonal interactions in people with symptoms of this disorder are not limited to the lack of experiential excitement, it also involves the proper understanding of emotional information from others, establishing social relationships to successfully integrate between the three areas involved. [46] In general, one of the symptoms of post-traumatic stress disorder is distraction and refraining from activities, places and people which are associated with a traumatic experience. People with posttraumatic stress disorder tend to isolate themselves and feel the lack of communication and out of sync with those around them. Facial affect recognition problems may be a facilitating and effective factor in interpersonal problems or at least exacerbate symptoms [47-48]. On the one hand, evidence suggests that there is a correlation between cognitive performance and facial affect recognition [49] on the other hand, previous studies have shown that post-traumatic stress disorder is associated with defects in cognitive maladaptation such as attention, memory, and learning

[52-55] Therefore, a group of studies attribute the defect in recognizing some of the emotions in this group of people to cognitive maladaptation, however, in the present study, the sample group consists of undergraduate and postgraduate students with symptoms of post-traumatic stress disorder, therefore, it does not seem that cognitive function in this group of people has a problem or is different from the sample group and cognitive misconduct cannot explain the defect in emotional processing well in these people. Another group of research points to the mood of the subjects that may affect the recognition of emotion and in fact, the flaw in recognizing the special excitement in this group of people justifies. [36] post-traumatic stress disorder are often associated with depression [38] and the results of research in both groups of people with symptoms of this disorder and healthy showed that the facial affect recognition can vary according to the current mood status [5], and it has been found that patients who suffer from depression have a negative bias in facial affect recognition by doing so, they negatively understand the positive faces and neutral faces [39], but as discussed earlier, major depression has also been investigated in this study. The results showed that there was a significant difference between the two groups in terms of depression and its possible effects on the results. Therefore, the impairment in affect recognition cannot be attributed to depression and mood in this group of people.

Therefore, these results can only be explained on the basis of neurobiological evidence; as damage to insula is associated with a defect in the recognition of hatred affects [53] and the results of the research indicate that injuries in insula in people with anxiety disorder such as post-traumatic stress disorder [18. Therefore, the defect in recognition of hatred affect can be attributed to injury in Insula. On the other hand, there is evolving evidence which shows that other structures such as the hippocampus and MPFC, and in particular the amygdala are fully involved in the neurology of post-traumatic stress disorder and since these structures and in particular, the amygdala is involved in the processing of negative emotions (including the excitement of hatred) and the results indicate that in people with amygdala traumatic stress disorder differently in response to the stimulus associated with trauma and e facial affect recognition compared with the control group. Therefore, in general, the results of the present study are in agreement and confirm the results of previous studies of the presence of neurological damage leading to defect in emotional processing in people with post-traumatic stress disorder symptoms.

The defect in the recognition of neutral states can also be explained by the presence of negative biases towards the threatening triggers in people with anxiety symptoms, with individuals with post-traumatic stress disorder having a negative bias towards threatening triggers in their environment. They may attribute the excitements incorrectly to faces that do not convey facial information, in which they attribute negative emotions to neutral facial states, and when faced with neutral or vague facial affect recognition, they better recognize the negative affect and thus show defects in the recognition of neutral emotional states. In general, it is important to check the defect in recognizing the specific excitement in people with post-traumatic stress disorder symptoms. Because, on the one hand, the symptoms of this disorder can interfere with the person's ability to recognize emotional states and it's difficult to perform. On the other hand, this finding may indicate that people who are experiencing facial recognition are more likely to be at risk for PTSD symptoms. Regardless of causal relationships, the inability to correctly recognize the various excitements can lead to re-experiencing trauma due to the inadequate identification of threatening situations. From this point of view, individuals with symptoms of this disorder and those with a defect in facial affect recognition may be particularly vulnerable populations [54], and in general, these findings have important therapeutic implications for treating this group of patients.

REFERENCES

1. Herman J. Trauma and Recovery: The aftermath of violence—from domestic abuse to political terror. New York, NY: Basic Books. 1997.
2. Lembke A, Ketter TA. Impaired recognition of facial emotion in mania. American Journal of Psychiatry. 2002; 159 (1): 302-304.
3. McClure EB, Pope K, Hobermann AJ, Pine DS, Leibenluft, E. Facial expression recognition in adolescents with mood and anxiety disorders. American Journal of Psychiatry. 2002; 160 (2): 1172-1174.
4. Green R, Turner GR, Thompson WF. Deficits in facial emotion perception in adults with recent traumatic brain injury. Neuropsychologia. 2004; 42 (3): 133-141.
5. Venn HR, Watson S, Gallagher P,Young AH. Facial expression perception: An objective outcome measure for treatment studies in mood disorders? International Journal of Neuropsychopharmacology. 2006; 9 (1): 229-245.
6. Montagne B, Schutters S, Westenberg HG, Kessels RP, de Haan EH. Reduced sensitivity in the recognition of anger and disgust in social anxiety disorder. Cognitive Neuropsychiatry. 2006; 11 (2): 389-401.
7. Reynolds M, Brewin CR. Intrusive memories in depression and\ posttraumatic stress disorder. Behaviour Research and Therapy. 1999; 37 (1): 201-215.
8. Brewin CR, Holmes EA. Psychological theories of posttraumatic stress disorder. Clinical Psychological Review. 2003; 23 (2): 339-376.
9. Dalgleish T. Cognitive approaches to posttraumatic stress disorder: The evolution of multirepresentational theorizing. Psychological Bulletin. 2004; 130(2): 228-260.
10. Frewen PA, Lanius RA. Toward a psychobiology of posttraumatic self-dysregulation: Re-experie ncing, hyperarousal, dissociation and emotional numbing. Annals of the New York Academy of Sciences. 2006; 1071 (1), 110-124.
11. Rauch SL, Shin LM, Phelps EA. Neurocircuitry models of posttraumatic stress disorder and extinction: Human neuroimaging research—past, present and future. Biological Psychiatry. 2006; 60 (2), 376-382.
12. Davis M. The role of the amygdala in fear and anxiety. Annual Review of Neuroscience. 1992; 15 (4): 353-375.
13. Morgan MA, Romanski LM, LeDoux JE. Extinction of emotional learning:

Contribution of medial prefrontal cortex. Neuroscience Letters. 1993; 163 (2):109-113.
14. Davidson RJ. Anxiety and affective styles: Role of prefrontal cortex and amygdala. Biological Psychiatry. 2002; 51 (2): 68-80.
15. McNally RJ. Cognitive abnormalities in post-traumatic stress disorder. TRENDS in Cognitive Science. 2006; 10(6): 271-277.
16. Quirk GJ, Gehlert DR. Inhibition of the amygdala: Key to pathological states? Annals of the New York Academy of Sciences. 2003; 985 (2): 263-272.
17. Shin LM, Rauch SL, Pitman RK. Amygdala, medial prefrontal cortex, and hippocampal function in PTSD. Annals of the New York Academy of Sciences. 2006; 1071(3): 67-79.
18. Etkin A, Wager TD. Functional neuroimaging of anxiety: A meta-analysis of emotional processing in PTSD, social anxiety disorder, and specific phobia. American Journal of Psychiatry. 2007; 164 (2): 1476-1488.
19. Bremner JD, Randall P, Vermetten E, Staib L, Bronen RA, Mazure C. Magnetic resonance imaging-based measurement of hippocampal volume in posttraumatic stress disorder related to childhood physical and sexual abuse e A preliminary report. Biological Psychiatry. 1997; 41(3): 23-32.
20. Bremner JD, Staib LH, Kaloupek D, Southwick SM, Soufer R, Charney DS. Neural correlates of exposure to traumatic pictures and sound in Vietnam combat veterans with and without posttraumatic stress disorder: A positron emission tomography study. Biological Psychiatry. 1999; 45(2): 806-816.
21. Williams LM, Kemp AH, Felmingham K, Barton M, Olivieri G, Peduto A. Trauma modulates amygdala and medial prefrontal responses to consciously attended fear. NeuroImage. 2006; 29 (2): 347-357.
22. Liberzon I, Martis B. Neuroimaging studies of emotional responses in PTSD. Annals of the New York Academy of Sciences. 2006; 1071(3): 87-109.
23. Pissiota A, Frans Ö, Fernandez M, von Knorring L, Fischer H, Fredrickson M. Neurofunctional correlates of posttraumatic stress disorder: A PET symptom provocation study. European Archives of Psychiatry and Clinical Neuroscience. 2002; 252 (2): 68-75.
24. Rauch SL, van der Kolk BA, Fisler RE, Alpert NM, Orr SP, Savage CR. A symptom provocation study of posttraumatic stress disorderusing positron emission tomography and script-driven imagery. Archives of General Psychiatry. 1996; 53(5): 380-387.
25. Whalen PJ. Fear, vigilance, and ambiguity: Initial neuroimaging studies of the human amygdala. Current Directions in Psychological Science. 1998; 7(6): 177-188.
26. Amaral DG. (2003). The amygdala, social behavior, and danger detection. Annals of the New York Academy of Sciences. 2003; 1000 (2): 337-347.
27. Haxby JV, Hoffman EA, Gobbini MI. Human neural systems for face recognition and social communication. Biological Psychiatry. 2002; 51(2): 59-67.
28. Gilbertson MW, Shenton ME, Ciszewski A, Kasai K, Lasko NB, Orr SP. Smaller hippocampal volume predicts pathologic vulnerability to psychological trauma. Nature Neuroscience. 2002; 5 (4): 1242-1247.
29. Villarreal G, Hamilton DA, Petropoulos H, Driscoll I, Rowland LM, Griego JA. Reduced hippocampal volume and total white matter volume in posttraumatic stress disorder. Biological Psychiatry. 2002; 52 (3): 119-125.
30. Woodward SH, Kaloupek DG, Streeter CC. Decreased anterior cingulate volume in combat-related PTSD. Biological Psychiatry. 2006; 59(2): 582-587.
31. Stanford MS, Vasterling JJ, Mathias CW, Constans JI, Houston RJ. Impact of threat relevance on P3 event-related potentials in combat-related post-traumatic stress disorder. Psychiatry Research. 2001; 102 (1): 125-137.
32. Felmingham KL, Bryant RA, Gordon E. Processing angry and neutral faces in post-traumatic stress disorder: An event-related potentials study. NeuroReport. 2003; 14(5): 777-780.
33. Hodgins HS, Belch C. Interpersonal violence and nonverbal abilities. Journal of Nonverbal Behavior. 2000; 24(1): 3-24.
34. Camras LA, Ribordy S, Hill J, Martino S, Sachs V, Spaccarelli S. Maternal facial behavior and production of emotional expression by maltreated and nonmaltreated children. Developmental Psychology. 1990 ;26(1): 304-312.
35. Pollack SD, Cichetti D, Hornung K, Reed A. Recognizing emotion in faces: Developmental effects of child abuse and neglect. Developmental Psychology. 2000; 36 (3), 679-688.
36. Pljac E, Montagne B, Hann E. Reduced recognition of fear and sadness in post-traumatic stress disorder. Cortex. 2010; 47 (4): 974-980.
37. Kurtic A, Pranjic N. (2011). Facial expression recognition accuracy of valence emotion among high and low indicated PTSD. Primenjena Psihologija.2011; 1:5-18.
38. Kemp AH, Gordon E, Rush AJ, Williams LM. Improving the prediction of treatment response in depression: Integration of clinical, cognitive, psychophysiological, neuroimaging, and genetic measures. CNS Spectrums. 2008;13: 1066-1086.
39. Feinberg TE, Rifkin A, Schaffer C, Walker E. (1986). Facial discrimination and emotional recognition in schizophrenia and affective disorders. Archives of General Psychiatry. 1986; 43 (2): 276-279.
40. Goodarzi MA.Reliability and validity of Beck Depression Inventory in students of Shiraz University. Journal of social science of Shiraz University. 2000; 36, 26-32. [Persian].
41. Weathers FW, Litz BT, Herman DS, Huska JA, Keane T. The PTSD Checklist (PCL).Reliability. Validity & diagnostic utility. Presented at the 9 Th Annual Meeting of the Inernational Society for Traumatic Seress Hissre Studies.1993.
42. Blanchard EB, Alexander JJ, Buckley TC, Forneris A. Psychometricproperties of the PTSD checklist (PCL). Behavior, Research and Therapy. 1996; 34 (2): 8, 669-673.
43. Goodarzi MA. reliability and validity of Post-traumatic Stress Disorder. Journal of Psychology. 2003; 7 (2).25-32. [Persian].
44. Ekman P, Friesen WV. Pictures of Facial Affect. Palo Alto, CA: Consulting Psychologists Press. 1976.
45. Calder AJ, Keane J, Manes F, Antoun N, Young AW. Impaired recognition and experience of disgust following brain injury. Nature Neuroscience. 2000; 3: 1077-1078.
46. Halberstadt AG., Denham SA, Dunsmore JC. Affective social competence. Social Development. 2001; 10(1): 79-119.
47. Andrews B, Brewin CR, Rose S. Gender, social support, and PTSD in victims of violent crime. Journal of Traumatic Stress. 2004; 16(4): 421-427.
48. Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for posttraumatic stress disorder in trauma exposed adults. Journal of Consulting and Clinical Psychology.2000; 68(5): 748-766.
49. Mathersul D, Palmer DM, Gur RC, Gur RE, Cooper N, Gordon E. Explicit identification and implicit recognition of facial emotions: II. Core domains and relationships with general cognition. Journal of Clinical and Experimental Neuropsychology. 2009; 31(2): 278-291.
50. Yehuda R, Golier JA, Halligan SL, Harvey PD. Learning and memory in Holocaust survivors with posttraumatic stress disorder. Biological Psychiatry. 2004; 55: 291-295.
51. Vasterling JJ, Duke LM, Brailey K, Constans JI, Allain JrAN, Sutker PB. Attention, learning, and memory performances and intellectual resources in Vietnam veterans: PTSD and no disorder comparisons. Neuropsychology. 2002; 16 (1):5-14.
52. Bowler RM, Hartney C, Ngo LH.Amnestic disturbance and posttraumatic stress disorder in the aftermath of a chemical release. Archives of Clinical Neuropsychology. 1998; 13 (4): 455-471.
53. Adolphs R, Tranel D, Damasio H, Damasio A. Impaired recognition of emotion in facial expressions following bilateral damage to the human amygdala. Nature. 1994; 372: 669-672.
54. Gapen M, Ortigo K, Ortigo D, Graham A, Johnson E, Evces M. Relationship between perceived community and neighborhood disorder and PTSD symptoms. (in press).

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