

The Comparison of Emotional Recognition between Outpatients with Borderline Personality Disorder and Normal People

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Objectives: Evidences obtained from different studies shows that emotional dysregulation is the basic cause of searching mental services in people with Borderline Personality Disorder (BPD). Thus, this study was conducted to identify and compare the ability of emotional recognition (positive and negative) in people with BPD and the normal ones. **Methods:** The research design was retrospective- descriptive and ex post facto type and was administered on 94 participants (47 in BPD groups, 47 in control groups) that were selected by voluntary sampling and on the basis of inclusion- exclusion criteria. The research tools included SCID-II and MCMI-III tests for screening and Ekman's 60 facial expressions computer-based test for evaluating six main emotions. Data were analyzed by MANOVA test. **Results:** Findings showed there is a significant difference between BPD group and the normal one in the amount of emotion recognition ($P < 0/0001$), and the BPD group has a better performance in emotional recognition in comparison to the control group, especially in negative emotions (fear, sadness, disgust), but there was no significant difference between the two groups in positive emotions (surprise and happiness) ($P > 0/05$). **Discussion:** These findings show that emotional sensitivity, especially in negative emotions, has a serious influence on interpersonal relationships in people with BPD.

Keywords: Borderline Personality Disorder, Positive Emotion, Negative Emotion, Ekman's computer-based test

Facial recognition of emotion is an ability to infer other people's emotional states from their facial expression which seems necessary for social relationship, so that the damage to that leads to disruption in social relationships (Unkoa, Fogd, Fuzy, & Csukly 2011). Borderline Personality Disorder (BPD) is a severe mental disorder which is characterized by signs such as impairment in social performance, instable identity, inappropriate and severe anger, instable interpersonal relationship (vacillate between idealization and devaluation), and the incident of paranoid thoughts and chronic feelings of emptiness (American Psychiatry Association, 1994). Several clinical theories claim that people with Borderline Personality Disorder (BPD) have

dysfunctions in mind reading (Linehan, 1995), that can lead to bias in social relationships, emotion identification problems and misinterpretation in facial signs of emotion (Linehan, 1995). It is believed that problems of people with Borderline Personality Disorder (BPD) in starting and maintaining the interpersonal relationship arises from their disability in diagnosing mental states and encoding facial signs of emotion (Young, 2003). This problem is one of the fundamental issues in people with Borderline Personality Disorder (BPD), so that some clinicians consider poor emotional functioning as the main and fundamental symptoms of other problems in these people (Linehan, 1993). Despite the high importance of this issue, a few researches have been conducted about facial recognition of emotion and its effects on interpersonal relationships among BPD patients. Although results of some researchers suggest that these people have lower ability in emotional recognition in comparison to normal ones (Unkoa et al., 2011); other

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researches show contradictory evidences (Arnetz, Klokman, and Seiswerd, 2005). Furthermore Lynch, Rosenthal, Kosson, Cheavens, Lejuez, & Blair (2006) showed in a study that, BPD patients had better performance in recognition of main emotions (fear, anger, sadness, disgust, surprise and happiness) in comparison to normal people. Linehan (1999) also concluded that Borderline Personality Disorder (BPD) patients have high sensitivity in recognition of fear. This result was inconsistent with Unkoa et al. (2011) findings that showed BPD patients attributed fear less to Ekman's emotional images whereas they had more sensitivity to disgust and surprise emotions ,i.e. they attributed these two emotions, in comparison to other main emotions , more to Ekman's images. Furthermore, some of these researches suggested that BPD patients perform worse than normal ones especially in recognition of emotions like anger, disgust, sadness, and fear (Levine, Marziali, & Hood, 1997; Bland, Williams, Scharer, &Maning, 2004). Wanger and Linehan (1999) also believe when BPD patients encounter a neutral facial stimulus they will experience negative biases, so that perceive more aversive emotion. In the other hand, some findings have shown that BPD patients were able to distinguish between facial expressions with positive and negative emotions (Domes, Schulze, & Herbert, 2009; Von Ceumern-Lindenstjerna, Brunner, Parzer, Mundt, Fiedler, & Resch, 2010).

Despite several researches that were conducted in this area, it is not definitely clear that in which main emotions the patients show the most damages and in which ones they show the least damages. There are contradictory evidences about recognition ability of emotion in patients with BPD, so this study was conducted with the aim to identify and compare recognition ability of emotion (positive and negative emotions) in patients with BPD and normal group.

Method

The design of this research was retrospective-descriptive and the ex post facto type. The research samples were consisted of 100 participants with the power test of 0.94 and the effect size of 0.25 and $\alpha=0.5$ (Stevens, 2007, p 414) and they were selected voluntarily by inclusion criteria (participants should age between 22 to 34 years old, they should not have severe comorbid disorders, they should get the scores of BPD in Millon-III Inventory and Structured Clinical Interview-II) and exclusion criteria (participants get scores higher than 78 in Millon-III except borderline scale (C), they get score below 85 in borderline scale. However, 6 of them have been dropped from study and totally 94 participants (47

BPD group, 47 control group) were examined (standard deviation=6, average age=28).

Instruments

Structured clinical interview (SCID-II): This structured interview designed by Spitzer, Williams, Gibbon, & First (1990) which is compatible with Forth Edition of Diagnostic and Statistical Manual of Mental Disorder (DSM-IV) to measure personality disorders. This test has been designed based on branching plan and includes some open-ended questions and one rule-out question which provide opportunity for interviewer to be guided in the new fields, based on previous answers of respondents (Marnat, 2003). This test has been carried out only for screening. The agreement coefficient between evaluators for this interview has been reported within 0.40 to 0.86 with the mean of 0.59 (Frast et al., 1995 cited from Marnat, 2003). Meanwhile, Skodol, Rosnick, Kellman, Odhan, & Hyler (1998) also have estimated the diagnostic power of this interview between "0.45 to 0.95".

Millon-III clinical multiaxial computerized test

(Millon, 1994):

This test has 175 "yes or no" questions, it has been designed by Millon (1994) based on forth revised revision of mental disorder of diagnostic and statistical guideline (DSM-IV-R) to measure disorders of axes one and two. It has 28 scales in 5 levels (variability indices, clinical personality patterns, severe pathology of personality, clinical syndromes, and severe symptoms). The test-retesting reliability coefficient of this test has been reported 0.91 and 0.75 for its correlation to the MMPI-III test. Furthermore, retesting reliability of guideline of Millon-III has been reported 0.89 for personality scales and 0.91 for clinical scales (Marnat, 2003).

Ekman's 60 facial expressions computer-based

test: This test measures 6 main emotions (anger,fear, disgust, surprise, sadness and happiness) with 60 photographs of the faces of men and women .This test measures emotional processing in general (Ekman and Friesen, 1976). All photographs present in order, and each one disappears after 5 seconds and names related to main emotions appear on a black screen. Participants should choose the name of related emotion considering the situation that was explained to them. The maximum score that one can get is 60 (correct answers to all emotions) and at least 0 (not recognizing any of emotions). The maximum score that one can get for each sub- emotion is 10 and at least 0.

Research procedure

Participants of BPD group have been selected, based on fourth edition of diagnostic and statistical manual of mental disorder (DSM-IV), structured clinical interview (SCDI-II) and Millon-III clinical multi-axial computerized test. These two tests have been used as screening tools. But, since the comorbidity of personality disorders with disorders of axes I and II is almost uncontrollable; for this reason participants were selected who firstly, score less than 85 in scales of Millon-III except boarder scale (C); secondly, if they have comorbid disorder, their base rate (BR) scores in axis 1 and 2 are up to 78 ($BR \leq 78$). This score has been chosen as the cutoff point because $BR \geq 78$ has more recognition reliability than lower ones (Marnat, 2003). Totally, 28 participants of BPD group had outpatient treated and 18 of them have not yet done anything for treatment. Control group participants have been selected by interview and considering inclusion and exclusion criteria. Participants who entered in control group scored less than 70 ($BR \leq 70$) in all Millon- III scales. These participants did not suffer any specific disorder except one of them that scored 72 in dysthymic scale, but in the past two of them were suffering from general anxiety disorder and two of them also had major depression disorder, so that have not treated yet. In this research, 6 main emotions have been categorized in two groups, positive (happiness, surprise) and negative emotions (anger, disgust, sadness, fear). The multiple analysis of variance (MANOVA) has been chosen for data analysis.

Regarding to the multiplicity of dependent variables, multivariate analysis of variance has been used for data analysis. Hence, M Box test was run to check presumption of this test (homogeneity of covariance of dependent variables in all levels of independent variables) and results suggested failure to comply with assumptions ($P < 0.05$) but regarding to the equality of sample size in both groups, it seems that MANOVA test appears to be resistant to these violations of assumptions. In the next step, according to the (Wilks' Lambda = 0.316; $P < 0.0001$; $F_{(6, 87)} = 31.343$; Partial Eta Squared = 0.68), It was found that there is a significant difference between BPD and normal groups in emotional recognition as the dependent combinatorial variable. As shown in table (1) analysis of each individual dependent variables by using Bonferroni alpha ($\alpha = 0.008$) indicates that there is a significant difference between normal and patients individuals in recognizing the emotions such as fear, anger, disgust and sadness ($P < 0.0001$). According to table 1 it can be said that BPD patients recognize anger emotion less than normal individuals, but considering that they have higher mean scores in recognition of fear, disgust and sadness emotions in comparison to the control group, these indicate that people with Borderline Personality Disorder have high level of emotional sensitivity in recognition of these emotions. Furthermore, BPD participants had the best performance in recognizing the fear ($M = 7.87$; $S.D = 1.278$) and sadness emotions ($M = 7.78$; $S.D = 1.261$) but the worst performance in recognizing anger emotion ($M = 5.27$; $S.D = 1.015$).

Results

Table 1

The results of comparison between BPD and normal groups in sextet emotional recognition

	group	mean	S.D	F	P	Partial Eta Squared																																														
Fear	BPD	7.87	2.278	40.6	0.0001	0.306																																														
	Normal	6.06	1.465				Surprise	BPD	7.702	1.81	0.69	0.408	0.007	Normal	7.468	1.599	Anger	BPD	5.27	1.015	100.49	0.0001	0.522	Normal	7.93	1.509	Disgust	BPD	7.46	1.120	21.66	0.0001	0.191	Normal	6.14	1.587	Happiness	BPD	7.38	1.609	0.13	0.713	0.001	Normal	7.51	1.742	Sadness	BPD	7.87	1.261	16.04	0.0001
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Note: SD= standard deviation; $P = P$ values; *partial Eta squared*= as effect size; BPD= borderline personality disorder

After dividing emotions into two categories, positive (happiness and surprise) and negative emotions (fear, disgust, sadness and anger), and then comparing both groups (according to adhere to the assumption of equal covariance $p > 0.05$), it was found that there is a significant difference between BPD and normal participants in linear combination of the dependent variable –emotional recognition- (Partial Eta Squared=

0.07; Wilk's lambda = 0.924; $P < 0.05$; $F(2, 91) = 3.754$). According to table 2, analyzing of each independent variables separately indicates that there is no significant difference in the positive emotions among BPD group and the control group ($P > 0.05$), but in the negative emotions BPD group had higher sensitivity than control group ($P < 0.05$).

Table 2
The results of comparison of BPD and normal participants in recognition of positive and negative emotions

	group	mean	S.D	F	P	Partial Eta Squared
Positive	BPD	15.08	2.165	0.051	0.82	0.001
	Norma	6.80	1.312			
Negative	BPD	28.48	2.241	7.57	0.007	0.076
	Norma	26.95	2.948			

Note: SD= standard deviation; P= P values; *partial Eta squared*= as effect size; BPD= borderline personality disorder; Positive= combination of happiness and surprise; Negative= combination of fear, disgust, sadness and anger.

Discussion

The aim of this study was to compare the ability of emotional recognition (positive and negative) between the people with BPD and the normal ones. The results of present study indicated that BPD participants, in comparison to control group, have more sensitivity in emotional recognition, particularly in the sadness and fear emotions. This finding is consistent with some of the past researches based on better performance of BPD patients in emotional recognition (such as Frank & Haffman, 1986; Wanger & linehan, 1999; Artnez, Klakman and Sisord, 2005). Hence it can be said that BPD patients have hypersensitivity to negative emotions and tend to perception of negative emotion, even when they expose to neutral faces.

Other results of this study showed that BPD participants had the worst performance in there cognizing of anger emotion. This result is consistent to Levine, Marziali, & Hood (1997) and Bland, Williams, Scharer, & Maning (2004); but in the other hand there are some studies that show BPD patients have more sensitivity to anger emotion and they tend to perceived vague images as anger emotion (Veague, 2004;). Several neuropsychological studies have shown that BPD patients have dysfunction in prefrontal-Limbic region that is related to recognition of anger emotion (New, et al., 2007). Disconnection between Amygdale and prefrontal cortex (PFC), lead to emotional dysregulation and impulse control problems in these people (New, et al., 2007). Accordingly, it can be said that when BPD patients expose to a stimulus, they tends to perceive it as a fear or any other negative emotions because of the greater amygdale activity, so they become angry and aggressive.

Furthermore, it was found that the recognition of negative emotions (fear, sadness, disgust, anger) in BPD group is significantly higher than the control group. This finding is consistent with Wanger and Linehan (1999) findings which indicate that BPD patients have emotional sensitivity, and these findings are not consistent to studies which indicate BPD patients have worse performance in negative emotions, especially in fear and sadness emotions (Levine, Marziali, & Hood, 1997), fear and disgust emotions (Blandet, Williams, Scharer, & Maning, 2004; Guitart et al., 2009). Altogether, the performance of BPD patients in fear, disgust and sadness emotions can be explained with fronto-Limbic dysfunction model. According to this model when BPD patients expose to negative facial stimulus, they show more activity in fronto-Limbic and also emotional processing takes place in this regions by an automatic processing (Donegan et al., 2003; Koenigseberg, et al., 2009), but when emotional processing needs more effort, BPD patients have more difficulties (Adolphs, 2005). Among these emotions, more effort is required for processing of anger, and for this reason BPD patients have worse performance in this emotion. In general, the bias and sensitivity to negative emotions in BPD patients can due to hyperactivity of Amygdale. BPD patients tend to perceive neutral facial stimulus as a negative stimuli, so they predict fear and threat from them, and therefore the limbic system provides intensive emotional responses (Domes, Cziechnek, Weidler, Berger, Fast, & Herpertz, 2008).

Furthermore, it was found that there was no significant difference between two groups despite the higher sensitivity in BPD patients to positive emotions than the control group. This result is consistent with the study of Minzeberg, Pool and Vinogradov (2006)

that suggest BPD patients have lower sensitivity in perception of positive emotion than the negative one, and do not interpret these emotions as a sign of threat and danger.

In summary, the results of this study imply that BPD patients have more accurate perception than normal people in facial expression recognition. According to these findings and the results of previous researches, it can be said that BPD patients, due to their sensitivity to negative emotions (especially disgust, sadness, fears emotions), have more tendencies to perceive these negative emotions, that is because of hyperactivity of Amygdala. The most important limitation of this study is the generalizability of the results that can be just generalized to members of this group because of available way of sampling and lack of full control of comorbid disorders. So it is recommended to use random sampling type for selecting the samples in future researches and, compare the emotional recognition between men and women by having more control on comorbid disorders with BPD.

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Received: 12 / 09/ 2013

Accepted: 26 / 12/ 2013