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A Comparative Study of the Ability of Facial Emotional Expression Recognition and its Relationship with Communication Skills in Iranian Patients with Mood Disorders

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Abstract

Background: Facial emotion recognition impairment in psychiatric patients such as those with mood disorders and impaired communication skills in these patients is one of the most important issues. The present study aims to evaluate and compare facial emotion recognition among patients with depression, bipolar disorder who experience manic phase and the subjects of the normal group without a diagnosis of a disorder. Moreover, the present study aims to evaluate and compare the relationship between facial emotion recognition ability and communication skills among these patients. **Materials and Methods:** Participants of this study included 30 patients with depression, 30 patients with bipolar disorder and 30 subjects from a normal group; a total of 90 subjects who were selected using convenience sampling method. PC version of Ekman's facial emotion test (1976) and Queendom's interpersonal communication skills test (2004) were used to collect data. Data were analyzed using statistical tests of correlation, one-way analysis of variance and Tukey's post hoc test. **Results:** The findings showed that there was a significant difference between facial emotion recognition in patients with mood disorder and the normal group. Moreover, there was a correlation between facial emotion recognition and communication skills among these patients.**Conclusions:** Based on the results of this study on facial emotion recognition impairment and its significant relationship with communication skills in patients with mood disorder, it can be said that paying attention to them is very important in treating these disorders and reducing the relapse of the disease.**[GMJ. 2015;4(3):90-99]**

Keywords: Facial Emotional Expressions; Communication and Interpersonal Skill; Bipolar Disorder; Depression Disorder

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Introduction

Impaired facial emotion recognition judgment is observed in many mental illnesses such as depression and bipolar disorder, which is considered as the main component in social interventions and establishing social and interpersonal relationships. This defect can, to some extent, explain the decline in mental and social functioning and impaired communication skills among patients with mood disorders [1]. Human beings are very good at reaching a conclusion on people's facial expressions and physical states to understand their emotional states and intentions [2]. Facial emotion expression gives others emotional information about us and affects other's emotional states. It is also one of the most important social indicators in communication skills. Reviewing empirical research on the recognition of facial emotional states ever since Charles Darwin shows that facial emotions are divided into six basic emotions including happiness, sadness, fear, surprise, anger and disgust. According to the studies conducted in different societies with different cultures, these emotions were recognized to be the same [3]. Previous studies show that people with unipolar and bipolar depressions recognize facial emotions less accurately than the control group [4-5]. Defective facial emotion recognition is the reflection of a negative bias in the perception of people with mood disorders. These people perceive happy faces as neutral and neutral faces as sad [6]. People with unipolar depression also recognize positive facial expressions slower than healthy volunteers [7]. Moreover, facial emotion recognition is under the influence of different periods of the illness. People with unipolar depression experiencing a greater degree of negative emotions perceive faces more negatively when seeing them. These perceptions could lead to the severity of depression, continuity of symptoms and probably depression relapse [8-9]. However, a study shows that people with a history of depression relapse had a different sensitivity to happy faces rather than the control group [10]. Research findings show that people with bipolar disorder are less accurate in recognizing some emotions. These people, for example, show less accuracy in recognizing the emotions such as surprise and fear [11-12]. Research literature contains different and sometimes contradictory results on defective facial emotion recognition in mood disorders. For example, Kan and Mimura claimed that hospitalized depressed people showed a significant decrease in recognizing fear [13], while the study of Csukley and Czobor [14] showed that people with depressive disorder have deficits in recognizing neutral emotions, sadness and disgust; however, no disruption was observed in recognizing emotions such as fear, anger, surprise and happiness. Most studies on people with depressive disorder confirm depressed people's tendency to negatively interpreting neutral emotions and feelings. However, the study of Longenecker and Bieliauskas did not confirm this negative bias [15]. Unlike present studies, some studies report that facial emotion recognition has not been disrupted in people with depressive disorder [16] and it is also the same about facial emotion recognition in people with bipolar disorder [17]. Moreover, it is possible that the deficits of facial emotion recognition are dependent on other syndromes along with the illness, instead of being related to a specific illness. Longitudinal studies on facial emotion recognition among depressed patients show the stability of deficits in facial emotion recognition [16-18]. Despite treatment of depression and bipolar disorders, the existence of such certain deficits in facial emotion recognition may remain stable [19-20]. The ability to accurately recognize facial emotions is an important social skill. Disruption of this ability may lead to misunderstanding and important disorders in communication and interpersonal skills. It will not be surprising to see that decreased ability of decoding facial emotions is related to decreased social competence and peer rejection [21].

Research literature has, to a large extent, dealt with impaired communication skills in mood disorders such as depression and bipolar disorders. For example, in an article, Segrin has shown some empirical evidence of degradation in communication and social skills in people with depression and bipolar disorder [22].

It seems that troublesome interpersonal relationships and lack of communication skills are related to the characteristics of mood disorders such as depression [23]. Depressed people usually find interpersonal environments complex and they become confused about their relationships. Poor communication skills, others' negative reaction, interpersonal stresses and seeking absolute guarantee are the possible reasons for such confusions [24-26]. Overall, empirical evidence suggests that most of people with depression symptoms have deficits in appropriate and effective social behaviors, which is a part of communication skills [27-29]. Such deficits constantly affect the interpersonal functioning of the people with a history of depression [30]. Psychological and social problems in mood disorders and disrupted communication and interpersonal skills are insolubly interwoven among these people [22]. Overall, deficits in social skills have a linear relationship with clinical syndromes of disorders; that is, the more severe the clinical syndrome is, the more deficits in communication skills are observed [31]. For example, the results of the study on male and female teenagers indicated that a low communication skill in teenagers predicts the increase in their depressive symptoms [32].Given the importance of impaired performance in communication skills of people with mood disorders, ambiguity of research literature about the type of impairment in facial emotion recognition in mood disorders, and unclear contribution of impairment in facial emotion recognition in predicting the amount of degradation in communication skills among people with mood disorders. The present study is designed to provide appropriate information in order to better understand mood disorders and their social interactions.

Materials and Methods

In this study, 60 mood disorder patients were selected from 90 individuals referring to two educational hospitals (Baharan Hospital in Zahedan and Ebn-e-Sina Hospital in Mashhad) using convenience sampling deploying descriptive and correlational methods. These 60 individuals were diagnosed to be in depression (30 individuals) and manic phases of Bipolar disorder according to DSM-IV and through a clinical interview by a psychiatrist and a clinical psychologist [30]. The control group was comprised of 30 individuals with no history of mental disorder. The cases more than 18 years with educational degree higher than 8 classes in addition to possessing the ability of communicating verbally who were diagnosed with mood disorder on the basis of Diagnostic and Statistical Mental Disorders (DSM IV) were included in this study. Other inclusion criteria were conscious satisfaction to participate in the study and not participating in psychology and psychiatry clinic sessions. Alcoholic and drug abuse, brain damages (brain infectious diseases) or other mental disorders were listed as exclusion criteria.

A computerized test designed for this purpose was used to assess facial emotion recognition. This test was based on Ekman and Friesen's facial emotional test [33], which is one of the most common and reliable tests on facial emotion recognition. In this study, the images of six basic emotions including anger, happiness, sadness, surprise, disgust and fear were randomly presented to the participants with no repetition. The images (a total of 36 images) were presented in the form of 3 men and 3 women in order that the participants recognize facial emotions. The images of facial emotions were presented to the participating groups separately. They had to recognize which emotion was presented proportional to the face. It is worth noting that the 36 images used in this study enjoyed on average 90% response in the standard group [33]. 36 black & white 512*768 pixel images of Ekman's six standardized facial emotions (anger, fear, disgust, surprise, sadness and happiness) in jpg format were presented to the participants at the center of the screen. The subjects were asked to recognize the facial emotions as fast as they could. This procedure continued for each emotional stimulus until the end of the test.

Communication skills test – revised, was another tool for data collection. Using 34 items, Queendom's test measures different communication skills with high reliability and validity [34]. Scoring the test was based on 5-de-

gree Likert scale from 1 (never) to 5 (always). The communication sub-skills studied on this scale include three skills of emotion management, perception and self-expression.

One-way analysis of variance (ANOVA) was used to analyze the data and to compare emotion recognition ability among depressed, bipolar and normal subjects. Tukey test was used to determine what deference was there between variances exactly and reciprocally. Finally, correlation test was used to assess the relationship between facial emotion recognition ability and communication and interpersonal skills. P value level was ($P \leq 0.05$) and statistical software that was used in this research was IBM Statistic SPSS 22.

Results

There were 90 participants in this study, among whom 48 were female and 42 were male. Demographic characteristics of the participants in each group are shown in Table-1.

Table-2 shows the mean of each normal, depressed and bipolar disorder groups in facial emotion recognition test.

ANOVA was used in order to compare facial emotion recognition ability of the participants in three normal, depressed and bipolar groups. The results are shown in Table-3.

The results of Table-3 indicate that there is no statistically significant difference between the recognition ability of anger and happiness in normal, depressed and bipolar subjects. However, there is a significant difference between the recognition ability of disgust, surprise, sadness and fear in normal, depressed and bipolar subjects. Tukey's post hoc test was used in order to more accurately compare the recognition ability of anger in normal, depressed and bipolar subjects. The results of this test showed that there was a significant difference between the recognition ability of these emotions in normal subjects and depressed and bipolar subjects ($P \leq 0.05$) so that there is more ability in normal subjects than in depressed and bipolar subjects. Moreover, there is a significant difference between bipolar and depressed subjects in terms of the recognition ability of disgust ($P \leq 0.05$) so that there is more ability in bipolar subjects than in depressed subjects. Furthermore, there is a significant difference between bipolar and depressed subjects in terms of the recognition ability of sadness ($P \leq 0.05$) so that there is more ability in depressed subjects than in bipolar subjects.

Table-4 shows the mean and standard deviation of the participants' scores in communication skills test.

In table-5, the significance test of Pearson's Correlation Coefficient was used to investigate the relationship between subscales of communication skills questionnaire and emotion recognition ability in the normal, depressed and bipolar subjects.

The results indicate the correlation between facial emotion recognition ability and the total subscale score of communication skills test in normal and depressed people; however, only a direct and significant relationship between the total score of communication skills and emotion management subscale was observed in bipolar people.

Discussion

The results of this study support our hypothesis stating that facial emotion recognition ability is disrupted in patients with mood disorders. In other words, people with depressive and bipolar disorders are more damaged in emotion recognition ability than the control group. This finding is consistent with the study results of Christian Kohler and Douglas [35-36]. However, Schaeffer claims that there is no difference between people with bipolar and depressive disorders and normal people with any history of psychiatric illness in terms of facial emotion recognition. He also claims that the difference observed in these groups is due to the less sensitivity of the group with mood disorder in recognizing the emotions with less intensity; that is, those with mood disorder need to see emotional images with higher intensity in order to recognize facial emotions [37]. Given that the emotional images in this study were presented to the participants with an average intensity of 90%, despite Schaeffer's claim and the high intensity of the images presented, defect in facial emotion recognition is evident in these peo-

ple. This defect is not probably due to the less sensitivity of the group with mood disorder.
The results of our study also implied that there was no difference in people with mood disorder and the normal group in terms of recognizing happiness, while previous studies showed that people with depressive disorder had deficit in recognizing happiness. The data obtained are unlike the previous studies of Sirguladze and Lemont [5, 10]. In this regard, it should be said that since happiness is the only positive emotion among the four negative ones, it causes a striking contrast in happy faces compared to other faces. This will make it easier to recognize happy faces compared to other faces. Moreover, other studies have also pointed that happy faces are faster and more accurately recognizable than other faces [38-40].

Table1. Demographic Characteristics of Participants by Age and Sex

Group	Sex				Mean of age	Standard deviation of age
	Female		Male			
	Percent	No	Percent	No		
Bipolar	53.3	16	46.7	14	29.13	8.08
Depressed	60	18	40	12	40.2	12.65
Normal	46.7	14	53.3	16	33.63	11.71

Table2. Mean and Standard Deviation of Participants' scores in their ability to recognize different types of emotions

Group	Variation	Mean	Standard Deviation
Normal n= 30	**Total**	30.13	3.40
	Anger	3.73	1.41
	Disgust	5.66	.80
	Surprise	5.33	1.51
	Sadness	5.60	.49
	Fear	3.93	1.31
	happy	5.86	.345
Depressed n= 30	Total	22.80	6.34
	anger	3.00	1.57
	disgust	3.30	1.93
	surprise	4.10	2.38
	sadness	4.60	1.22
	Fear	2.30	1.57
	happy	5.50	.93
Bipolar n= 30	Total	22.26	8.36
	anger	3.26	1.76
	disgust	4.56	1.77
	surprise	3.46	2.20
	sadness	3.50	1.75
	Fear	2.26	1.74
	Happy	5.20	1.86

Table 3. Comparing emotion recognition ability among normal, depressed and bipolar people

		Sum of Squares	df	Mean Square	F	Sig.
Anger	Between Groups	8.26	2	4.133	1.63	0.20
	Within Groups	219.73	87	2.526		
	Total	228.00	89			
Disgust	Between Groups	84.15	2	42.078	16.76	0
	Within Groups	218.33	87	2.510		
	Total	302.49	89			
Surprise	Between Groups	54.06	2	27.033	6.30	0.003
	Within Groups	372.83	87	4.285		
	Total	426.90	89			
Sadness	Between Groups	66.20	2	33.1	20.58	0
	Within Groups	139.90	87	1.608		
	Total	206.10	89			
Fear	Between Groups	54.46	2	27.233	11.28	0
	Within Groups	210.03	87	2.414		
	Total	264.50	89			
Happy	Between Groups	6.68	2	3.344	2.24	0.112
	Within Groups	129.76	87	1.492		
	Total	136.45	89			

Table4. Mean and Standard Deviation of Participants' Communication Skill Scores

Group	Variation	Mean	Standard deviation
Normal	Emotion management	43.76	4.89
	Perception	45.3	5.25
	self-expression	32	4.01
	Communication Skill	121.06	12.02
Depressed	Emotion management	35.93	4.71
	Perception	36.2	7.35
	self-expression	31.16	3.48
	Communication Skill	103.3	11.24
Bipolar	Emotion management	35.03	7.35
	Perception	34.36	8.04
	self-expression	27.16	3.98
	Communication Skill	96.56	17.82

Table5. Correlation between Subscales of Communication Skills and Emotion Recognition Ability among Normal, Depressed and Bipolar Subjects

Emotion Recognition Ability		Self- Expression	Perception	Emotion Management	Total Communication Skill
Normal	r	0.686	0.432	0.553	0.643
	P	0	0.017	0.002	0
Depression	r	0.480	0.462	0.510	0.664
	P	0.007	0.010	0.004	0
Bipolar	r	0.140	0.353	0.510	0.401
	P	0.459	0.056	0.004	0.028

r = correlation

P = significance

While recognizing sadness among patients of depressed and bipolar groups, it was observed that those with depressive disorder recognized sadness significantly better than the ones with bipolar disorder. This finding is consistent with the findings of other researchers. However, comparing the subjects in the normal group and the group with depressive disorder in terms of recognizing sadness shows that subjects in the normal group recognized sadness significantly better than the depressed subjects. This difference might be due to the fact that people with bipolar disorder in manic phase experience a troubled mood, quite the opposite of sadness. Therefore, it is expected that these people are faced with problems in recognizing any type of emotion that is inconsistent with mood. However, in explaining normal people's better performance compared to depressed people, it can be argued that normal people showed a better performance than depressed people due to their facial emotion recognition ability. The results of the present study concerning the deficit in bipolar patients in recognizing the emotions of surprise and fear are consistent with previous studies [11]. Regarding the correlation between facial emotions and communication and interpersonal skills, it can be said that the people in the group with mood disorder (bipolar and depressed) who obtained lower grades in facial emotion recognition have probably more deficits in facial emotion recognition than the normal group. There is a significant relationship between this deficit and communication and interpersonal factors.

Although interpersonal skill deficit is often observed in patients with mood disorders, the mechanisms leading to such inaptitude and inadequacy in social and communication skills among people with depressive symptoms are often unclear or at least unrevealed. Deficit in facial emotion recognition can be one of the mechanisms leading to deficit in communication skills among people with mood disorders [41]. According to Levinson's behavior theory, deficit in social and interpersonal skills predisposes people to growth and development of depressive disorders. Social and communication skills mean both the ability to perform behaviors that are positively reinforced by others and the ability to get away from the behaviors that are followed by punishing responses [41].

Conclusion

Overall, given the facial emotion recognition deficit in patients with mood disorder and consequently low social, communication and interpersonal skills among these patients, it can be concluded that these people cannot have a

proper understanding of social, communicational and interpersonal relationships and they show weakness in pursuing reinforcements and avoiding punishments occurring around them. This improper understanding could also lead to the persistence or relapse of depression symptoms in these patients. Therefore, the clinical psychologists and other therapists in the field of mental health are expected to pay attention to the impairment in patients with mood disorder in these two important areas (deficit in facial emotion recognition and social and interpersonal skills) for prevention and treatment of mood disorders.

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Conflicts of Interest

Authors declared no conflicts of interest.

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