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The Relationship Between Emotional Dysregulation, Alexithymia and Somatization in Patients with Bipolar Disorder

ABSTRACT

Objective: Emotional dysregulation is a basic feature found in patients with bipolar disorder. It was also reported that higher alexithymia scores are a predictive factor for a decrease in social functionality. It is known that patients with bipolar disorder experience more somatic symptoms than the general population. No study has yet been conducted on the interrelation of these 3 clinical domains, which are known to negatively affect the functionality and quality of life in bipolar disorder patients.

Methods: This study included 72 bipolar disorder-1 patients. The Difficulties in Emotion Regulation Scale was used to determine the emotional state of the patients, the Toronto Alexithymia Scale was used to determine the alexithymia scores, and the Somatization Scale was used to determine the somatization scores.

Results: As a result of hierarchical multiple linear regression analysis, the first model was found to be significant ($P < .001$), and the emotional dysregulation total scale score significantly predicted the Toronto Alexithymia Scale total scale score ($P < .001$). The second model was also found to be significant ($P < .001$), and the emotional dysregulation total scale score significantly predicted the somatization total scale score ($P < .001$).

Conclusion: This study found that ED predicted alexithymia and somatization in euthymic bipolar patients. The therapeutic approaches targeting these 3 clinical domains that negatively affect patients' quality of life and functionality may provide positive clinical outcomes.

Keywords: Bipolar disorder, emotional dysregulation, alexithymia, somatization

Introduction

Bipolar disorder (BD) is a recurrent and chronic disease characterized by fluctuations in mood and one of the main diseases that cause loss of functionality in the young population.[1] There are many factors associated with the loss of functionality in patients with BD. Suicide attempt is one of the most important causes of mortality in patients with BD. In a recent study, it was determined that character traits are more important than the diagnosis of major affective disorder in terms of suicide risk.[2] There are studies investigating whether people at risk of suicidal behavior approach suicide by searching information and news about self-harm and suicidal behavior on the internet.[3] Emotional dysregulation (ED) is one of the factors that have been shown to negatively affect functionality and prognosis in patients with bipolar disorder.[4] Emotional dysregulation describes random, chaotic, and fast-cycling changes such as frequent changes in affect, deterioration in the intensity of affect, excessive acceleration of emotional change, delay in returning to the baseline emotional state, and overreaction to psychosocial cues.[5] Emotional dysregulation can also be defined as a failure in each or all aspects of emotional regulation such as understanding and being aware of emotions, accepting emotions, controlling impulsive behaviors, acting by desired goals when experiencing negative emotions, and using appropriate emotion regulation strategies flexibly to meet goals and demands.[6] Emotional dysregulation is a basic feature found in patients with BD, and it has

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been reported that patients with BD have more difficulty in regulating their emotions compared to healthy controls[7]; even in remission periods.[8,9] Emotional dysregulation in the euthymic period was found to be associated with an increase in the frequency of relapses[10]; moreover, it has been reported that ED in the euthymic period is correlated with the severity of symptoms in manic, depressive, and mixed periods.[9] Alexithymia has been defined as a difficulty in recognizing and expressing emotions[11] and predisposes to many psychiatric disorders.[12] In studies conducted on patients diagnosed with BD-1, alexithymia scores were generally found to be higher than the control group.[13-15] In addition, a recent study evaluated higher alexithymia scores as a predictor of decreased social functionality in patients with BD.[16] The same study stated that alexithymia is associated with emotion regulation strategies such as suppression, and further studies are required to reveal the potential relationship between alexithymia, emotion regulation, and functionality. Somatic symptoms are described as bodily and physical symptoms (such as sleep and appetite) that the person feels in an anxious or unpleasant way. Patients diagnosed with BD—similar to patients diagnosed with unipolar depression—experience approximately 2 times more somatic symptoms compared to the general population.[17] In a recent study, patients diagnosed with BD-1 were divided into 2 groups as high and low in terms of somatization scores, and it was found that rapid cycling was more common in the high-scoring group, and therefore, the disease prognosis was worse.[18] Continuous ED has been detected in patients with a diagnosis of somatoform disorder, and studies are showing its relationship with alexithymia.[19] Although there are publications in the literature suggesting that the prevalence of abnormal temperamental features is 70% in patients with a diagnosis of somatoform disorder and that these patients can be evaluated in the bipolar spectrum,[20] as far as we have searched in the literature, there is no publication investigating these variables together in patients diagnosed with BD-1.

Publications above show the negative effects of ED, alexithymia, and somatization on functionality and prognosis in the course of BD and suggest that all these clinical areas may be related to each other. To the best of our knowledge, there is no study investigating the relationship between these 3 clinical areas in BD patients. Therefore, our study hypothesized that higher emotional dysregulation scores might be related to higher alexithymia and somatization severity scores.

Methods

The study was planned as a cross-sectional cohort study. Our study was conducted in the outpatient clinic of Erenkoy Mental and Nervous Diseases Training and Research Hospital, Istanbul, Turkey. Patients who were enrolled into the study were diagnosed with BD-I by using the Structured Clinical Interview for The Diagnostic and Statistical Manual of Mental Disorders (DSM)-5 disorders—Clinician Version (SCID-5-CV) affective disorders section.[21] Patients between the ages of 18 and 60 and being in remission (<7 points for the Young Mania Rating Scale and <7 points for the Hamilton Depression Rating Scale for at least 8 weeks before the participation) were included in the study.

Patients with major neurological disease history (epilepsy, multiple sclerosis, dementia, Parkinson's, etc., motor disorders, history of intracranial operation, severe head trauma and contusion, intracranial hypertension, etc.), illiteracy, having any additional psychiatric diagnosis (anxiety disorders, psychotic disorder, substance use disorder, attention deficit hyperactivity disorder, personality disorder, organic mental disorder, etc.) were excluded from the study. Around 82 consecutively admitted patients were assessed and 10 patients were excluded from the study due to unremitted symptoms as a result of the scales. The patients who were eligible for the study were included in the study after verbal and written informed consent was obtained. This study was conducted in accordance with the Declaration of Helsinki, and approval was obtained from the Ethics Committee of Erenkoy Mental and Nervous Diseases Training and Research Hospital (2021.2.1/8).

Measures

The semi-structured sociodemographic form was used for the evaluation of sociodemographic data.

The Difficulties in Emotion Regulation Scale

The Difficulties in Emotion Regulation Scale (DERS) was used to assess the severity of difficulties in emotion regulation. It was developed by Gratz and Roemer.[6] The scale, which consists of 36 items, is evaluated using a 5-point Likert-type scale. The scale consists of 6 subscales: "awareness" (lack of awareness of emotional responses), "clarity" (lack of clarity of emotional responses), "non-acceptance" (not accepting emotional responses), "strategies" (limited access to emotion regulation strategies perceived as effective), "impulse" (difficulty in controlling impulses when experiencing negative emotions), and "goals" (difficulty in purpose-oriented behavior when experiencing negative emotions).

The internal consistency coefficient of the scale was calculated as 0.94, and the internal consistency coefficients of the sub-dimensions ranged from 0.90 to 0.75.[6] Its Turkish adaptation and validity and reliability study were carried out by Rugancı.[22] The Cronbach's alpha coefficient of the Turkish version of the scale was calculated as 0.83. The test–retest reliability coefficients of the subscales of the Turkish version of the DERS ranged between 0.60 and 0.85.[22]

Toronto Alexithymia Scale

Toronto Alexithymia Scale (TAS-20) is a 20-item self-assessment scale developed by Bagby et al (1994)[23] and was used to measure alexithymia characteristics. The scale was adapted into Turkish by Güleç et al.[24] It has subscales of difficulty in recognizing emotions, difficulty in expressing emotions with words, and extraverted thinking. However, in some previous studies, factors 2 and 3 were accepted as a combined single factor.[25] Different approaches regarding the single-factor structure are available and these approaches were consistent with our study. Thus, in our study, total scale score was used

MAIN POINTS

- *Emotional Dysregulation (ED) is a basic feature found in patients with bipolar disorder (BD), and it has been reported that patients with BD have more difficulty in regulating their emotions compared to healthy controls; even in remission periods.*
- *In studies conducted with BD patients, alexithymia and somatization scores were generally found to be higher than control group.*
- *No study has yet been conducted on the interrelation of these three clinical domains, which are known to negatively affect functionality and quality of life in BD patients.*
- *Therapeutic approaches targeting these 3 clinical domains may provide positive results.*

to measure the alexithymia construct. Items are rated using a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree. The total alexithymia score is the sum of responses to all 20 items and the high scores on the scale indicate an increase in alexithymic tendency. The Cronbach's alpha coefficient of the original form of the scale was 0.81, and the subscales were 0.78, 0.75, and 0.66, while the Cronbach's alpha value of the Turkish version was 0.78, and the subscales were 0.57-0.80.[24]

Somatization Scale

The Somatization Scale was formed from the somatization disorder items of the Minnesota Multiphasic Personality Inventory created by Hathaway and McKinley.[26] It consists of 33 items. The "correct option" indicates that the psychosomatic symptom is present in the participant, while the "no option" indicates that the psychosomatic symptom is not present in the participant. Its validity and reliability study was performed by Dülgerler et al.[27] The reliability coefficient of the Turkish version of the scale was 0.83.[27]

Statistical Analysis

The Shapiro–Wilk's test was used to evaluate the normality of the numeric data. Numerical variables which were normally distributed were presented as mean(SD) ± standard deviation; otherwise, presented with median (minimum-maximum) values. Categorical variables were presented with n (%) values. Independent samples *t*-test was used to compare normally distributed numerical variables between genders. Mann–Whitney *U* test was used to compare non-normally distributed numerical variables between genders. Correlations between the numerical variables were evaluated with Spearman's and Pearson's correlation coefficient. To evaluate whether ED predicts alexithymia and somatization, 4 hierarchical multiple linear regression models were conducted with demographic variables in block 1 (gender, age of onset of BD, and education period) and the ED variables in block 2. Normality of the residuals was tested with the Shapiro–Wilk's normality test. Homoscedasticity assumption was tested with the Goldfeld–Quandt test; independence of residuals assumption was tested with the Durbin–Watson test. The multicollinearity was checked by evaluating the variance inflation factors (VIFs) and tolerance values for each of the independent variables for all models. A 2-sided *P*-value of less than .05 was considered to be statistically significant. Goldfeld–Quandt and Durbin–Watson tests were performed using "lmtest" package in the R Statistical Software 4.1.2. Other statistical analyses were performed on International Business Machines' Statistical Package for Social Sciences 23.0 program (IBM SPSS Corp.; Armonk, NY, USA).

Results

Of the 72 patients included in our study who were in remission, 34 (47.22%) were male, 38 (52.78%) were female; 32 (44.44%) were married, 29 (40.28%) were single, and 11 (15.28%) were divorced/widow. The sociodemographic and clinical characteristics of the patients are summarized in Table 1.

The Cronbach's alpha coefficients and the descriptive statistics for the total and sub-scale scores are summarized in Table 2.

Significant correlations were found between TAS total scores and ED total and all subscales ($r = 0.495$, $P < .001$ for ED total, $r = 0.574$, $P < .001$ for ED impulsivity, $r = -0.292$, $P = .013$ for ED awareness, $r = 0.371$, $P = .001$ for ED goals, $r = 0.652$, $P < .001$ for ED non-acceptance, $r = 0.284$, $P = .016$ for ED clarity, $r = 0.548$, $P < .001$ for ED strategies). In addition, a significant relationship was found between somatization total scores and ED total scores ($r = 0.326$, $P = .005$), ED impulsivity scores ($r = 0.326$, $P = .001$), ED non-acceptance ($r = 0.365$, $P = .002$), and ED strategies ($r = 0.340$, $P = .003$). The correlation coefficients of the scale and subscale score with each other are summarized in Table 3.

The relation of clinical variables (such as age, education period, age at onset of the disease, age at diagnosis, duration of the disease,

Table 1. Sociodemographic and Clinical Characteristics of the Patients

Variables	Descriptive Statistics (Mean ± Standard Deviation/ Median (Min-Max)/n (%))
Age (years)	39.65 ± 9.65
Education (years)	11.00 (5.00-17.00)
Age at onset of BPD (years)	25.00 (13.00-60.00)
Age at diagnosis (years)	25.00 (13.00-63.00)
Duration of BPD (years)	13.00 (1.00-35.00)
Number of depressive attacks	1.00 (0.00-20.00)
Number of manic attacks	2.50 (0.00-20.00)
Number of hospitalization	2.00 (0.00-12.00)
Gender	
Female	38 (52.78)
Male	34 (47.22)
Marital status	
Married	32 (44.44)
Single	29 (40.28)
Divorced/widow	11 (15.28)
Having children	37 (51.39)
Occupation status	
Working	18 (25.00)
Unemployed	47 (65.28)
Retired	5 (6.94)
Student	2 (2.78)
Medical disease	15 (20.83)
Additional psychiatric disorder	0 (0.00)
Number of mixed episode	
0	58 (93.55)
1	3 (4.84)
4	1 (1.61)
Psychotic feature	54 (83.08)
Rapid-cycling	3(4.23)
Peripartum episode	8(11.11)
Trauma history	13(18.06)
Trauma type	
Physical	8 (57.15)
Sexual	5 (35.71)
Psychological	1 (7.14)
Trauma duration	
Repetitive	7 (58.33)
Once	5 (41.67)
Psychiatric disorder in a relative	25 (34.72)
Suicidal attempt of a relative	3 (4.17)
Completed suicide of a relative	1 (1.39)

Table 2. Descriptive Statistics and Cronbach's Alpha Coefficients for Scale and Subscale Scores

Scale/Subscale Scores	Descriptive Statistics (mean (SD)/Median (Min-Max))	Cronbach's Alpha
Somatization scale	9.00 (1.00-25.00)	0.77
TAS total	46.39 (10.51)	0.79
ED total	88.00 (51.00-156.00)	0.89
ED impulsivity	12.00 (6.00-25.00)	0.69
ED awareness	21.14 (4.85)	0.71
ED goals	13.33 (4.02)	0.61
ED non-acceptance	10.00 (6.00-30.00)	0.86
ED clarity	13.00 (8.00-24.00)	0.61
ED strategies	17.50 (8.00-36.00)	0.79

ED, emotional dysregulation; TAS, Toronto Alexithymia Scale.

number of hospitalizations, number of manic episodes, and number of depressive episodes) with scale scores was investigated. While a significant negative correlation was found between ED strategies and age at diagnosis ($r = -0.258$; $P = .030$) and age at onset of the disease ($r = -0.235$; $P = .049$); a significant positive correlation was found between ED strategies and disease duration ($r = 0.236$; $P = .047$). Also, a significant negative correlation was found between TAS total and age at diagnosis ($r = -0.240$; $P = .044$).

To evaluate whether ED predicts alexithymia and somatization, we conducted 4 hierarchical multiple linear regression models with demographic variables in block 1 (gender, age at onset of BD, and education period) and the ED variables in block 2. Since age variable had caused the violation of other assumptions, we did not include it in the regression model. When a hierarchical multiple linear regression analysis was performed by taking the TAS total scale score as the dependent variable, gender, age at onset of BD, and education period in the first block, ED total scale score in the second block as the independent variables, the model was found to be significant ($R^2 = 0.430$, $P < .001$). R^2 change from block 1 was 0.253, and $P < .001$ for the F change from block 1. When the assumptions for the model were examined, it was observed that the residuals were normally distributed ($P = .965$), homoscedasticity assumption was met ($P = .954$ for the Goldfeld–Quandt test), independence of residuals assumption was met ($P = .845$ for the Durbin–Watson test statistics), and the data did not show multicollinearity (VIFs < 2 and tolerance values > 0.5 for all independent variables). In the model, it was observed that the ED total scale score ($P < .001$) and education period ($P = .045$) significantly predicted the TAS total scale score. In the second model, when a stepwise hierarchical multiple linear regression analysis was performed by taking the TAS total scale score as the dependent variable, gender, age at onset of BD, and education period in the first block, the ED subscale scores (ED impulsivity, ED awareness, ED goals, ED non-acceptance, ED clarity, ED strategies) in the second block as the independent variables, the last model including gender, age at onset of BD, education period, ED non-acceptance, ED impulsivity, and ED awareness was found to be significant ($R^2 = 0.596$, $P < .001$). R^2 change from block 1 was 0.418, and $P < .001$ for the F change from block 1. In the model (for this model; residuals were normally distributed, $P = .148$; homoscedasticity assumption was met, $P = .956$ for the Goldfeld–Quandt test; independence of residuals assumption was met, $P = .725$ for the Durbin–Watson test statistics; the data did not show multicollinearity, (VIFs < 2 and tolerance values > 0.5 for all independent variables), it was observed that the ED non-acceptance, ED impulsivity, and ED awareness subscale scores significantly predicted the TAS total scale score. The hierarchical multiple linear regression analysis results for the dependent variable of the TAS total scale score are shown in Table 4.

Table 3. Correlation Between ED Total and Subscale Scores and Other Scale Scores

Scale/Subscale		TAS Total	Somatization Total
ED total	*r*	0.495	0.326
	P	<.001	.005
EDI	*r*	0.574	0.369
	P	<.001	.001
EDA	*r*	−0.292	−0.118
	P	.013	.323
EDG	*r*	0.371	0.219
	P	.001	.065
EDN	*r*	0.652	0.365
	P	<.001	.002
EDC	*r*	0.284	0.157
	P	.016	.188
EDS	*r*	0.548	0.340
	P	<.001	.003

ED, emotional dysregulation; EDI, ED impulsivity; EDA, ED awareness; EDG, ED goals; EDN, ED non-acceptance; EDC, ED clarity; EDS, ED strategies; TAS, Toronto Alexithymia Scale.

When a hierarchical multiple linear regression analysis was performed by taking the somatization total scale score as the dependent variable, gender, age at onset of BD, and education period in the first block, ED total scale score in the second block as the independent variables, the model was found to be significant ($R^2 = 0.292$,

Table 4. Results of Hierarchical Multiple Linear Regression Analysis for TAS Total Scale Score Dependent Variable

Model 1	Unstandardized β	Standard Error of β	*P*
Block 1 ($R^2 = 0.178$, $P = .005$)			
Age at onset of BD	−0.206	0.154	.186
Gender	5.966	2.467	.018
Education period	−0.696	0.326	.037
Block 2 (R^2 change = 0.253, F change = 28.841, $P < .001$. Cohen's $F^2 = 0.442$)			
Age at onset of BD	−0.08	0.131	.546
Gender	3.980	2.102	.063
Education period	−0.563	0.275	.045
ED total	0.281	0.052	<.001
Model 2	Unstandardized β	Standard Error of β	*P*
Block 2 (R^2 change = 0.418, *F* change = 21.729, $P < .001$. Cohen's $F^2 = 1.035$)			
Age at onset of BD	−0.169	0.111	.133
Education period	−0.122	0.247	.623
Gender	−0.597	1.978	.764
ED non-acceptance	0.820	0.203	<.001
ED impulsivity	0.745	0.274	.008
ED awareness	−0.489	0.194	.014

BD, bipolar disorder; ED, emotional dysregulation; TAS, Toronto Alexithymia Scale.

Table 5. Hierarchical Multiple Linear Regression Analysis Results for the Dependent Variable of Somatization Total Scale Score

Model 3	Unstandardized β	Standard Error of β	*P*
Block 1 (R^2=0.100, P = .072)			
Age at onset of BD	0.061	0.077	.432
Education period	−0.396	0.163	.018
Gender	1.461	1.229	.239
Block 2 (R^2 change = 0.192, F change = 17.646, P < .001. Cohen's F^2=0.271)			
Age at onset of BD	0.113	0.07	.109
Education period	−0.341	0.146	.023
Gender	0.636	1.115	.570
ED total	0.117	0.028	<.001
Model 4	Unstandardized B	Standard Error of β	*P*
Block 2 (R^2 change = 0.228, F change=22.060, P < .001. Cohen's F^2=0.339)			
Age at onset of BD	0.123	0.068	.074
Education period	−0.344	0.142	.018
Gender	0.933	1.076	.389
ED strategies	0.413	0.088	<.001

BD, bipolar disorder; ED, emotional dysregulation.

P < .001). R^2 change from block 1 was 0.192, and P < .001 for the F change from block 1. When the assumptions for the model were examined, it was observed that the residuals were normally distributed (P = .062), homoscedasticity assumption was met (P = .901 for the Goldfeld–Quandt test), independence of residuals assumption was met (P = .418 for the Durbin–Watson test statistics), and the data did not show multicollinearity (VIFs < 2 and tolerance values > 0.5 for all independent variables). In the model, it was observed that the ED total scale score (P < .001) and education period (P = .023) significantly predicted the somatization total scale score. In the second model, when a stepwise hierarchical multiple linear regression analysis was performed by taking the somatization scale score as the dependent variable, gender, age at onset of BD, and education period in the first block, the ED subscale scores (ED impulsivity, ED awareness, ED goals, ED non-acceptance, ED clarity, ED strategies) in the second block as the independent variables, the last model including gender, age at onset of BD, education period, ED-strategies was found to be significant (R^2 = 0.328, P < .001). R^2 change from block 1 was 0.228, and P < .001 for the F change from block 1. For this model, residuals were normally distributed (P = .366), homoscedasticity assumption was met (P = .905 for the Goldfeld–Quandt test), independence of residuals assumption was met (P = .411 for the Durbin–Watson test statistics) and the data did not show multicollinearity (VIFs < 2 and tolerance values > 0.5 for all independent variables). In this model, ED strategies subscale score (P < .001) and education period (P = .018) significantly predicted the somatization total scale score. The hierarchical multiple linear regression analysis results for the dependent variable of the somatization total scale score are shown in Table 5.

Discussion

In our study, we found that ED was significantly associated with alexithymia and somatization, as we hypothesized, and predicted both symptom clusters as a result of regression analysis. Although it is known that ED is associated with negative clinical outcomes and reduced functionality in bipolar patients,[28-30] and its role in the pathophysiology of BD, there was very limited research in the literature. In addition, studies reported that bipolar individuals had more alexithymia and somatization symptoms compared to healthy individuals; [15,17] however, there was no study investigating the effects of ED on alexithymia and somatization in bipolar patients.

It has been reported that patients with BD have difficulties in suppressing emotion-related neural hyperactivity, increased impulsivity toward emotional stimuli, decreased re-evaluation capacity, and a tendency to negative strategies such as rumination and catastrophizing.[31] In another study, it was reported that emotion regulation difficulties did not differ between euthymic and symptomatic patients, and BD-1 or BD-2 diagnoses were not associated with emotion regulation difficulties.[9] In the same study, ED total and subscale scores (except for ED awareness) were found to be significantly higher than healthy controls, and no relationship was found between ED and disease duration and history of rapid cycling. Similarly, in our study, no correlation was found between ED scale scores (except for ED strategies) and parameters such as disease duration, age at diagnosis, number of hospitalizations, number of episodes, etc. These results suggested that ED may affect the prognosis in the course of BD, independent of basic mood symptoms.

In a study that included BD, unipolar depression, and anxiety disorder patients, ED total scores were found to be significantly higher than healthy controls, and it was stated that BD patients were between healthy controls and the other 2 clinical groups.[7] The ED total scores of the BD patients included in this study were found to be quite close to the result we obtained in our study.

Several studies have shown that patients with BD and schizophrenia have higher alexithymia scores compared to healthy individuals.[14] In addition, some studies have found that psychotic and non-psychotic disorders do not differ in terms of alexithymia.[32] This point of view suggests that alexithymia may be a non-specific feature of psychiatric diseases with disorders, especially in cognitive processing and emotion regulation. Reports that alexithymia, similar to ED, is stable during remission and episode periods of mood disorders, suggest that alexithymia and ED have a different neurobiological basis from mood symptoms.[33] There is no study investigating the relationship between alexithymia and ED in BD patients. In a study conducted on pathological gamblers, it was reported that ED is effective in the tendency of alexithymic individuals to gambling behaviors.[34] Previous studies have found that alexithymia may favor the use of dysfunctional emotion regulation as a way of increasing emotional arousal and avoiding negative emotions.[35] It was emphasized that approaches that deal with alexithymia and emotional dysregulation together can provide more positive results.[34] Similarly, in our study, we found that there was a significant correlation between ED and TAS scale scores. In the multiple hierarchical regression analysis performed to investigate the factors predicting alexithymia, it was found that gender and age at onset of BD had no effect on alexithymia scores, and ED total scores and education level predicted alexithymia. These results we obtained suggest that handling alexithymia together with ED in bipolar patients may be important in the treatment processes.

A recent study emphasized that alexithymic individuals tend to addictive behaviors through emotion-regulation difficulties.[34] In our study,

alexithymia and ED were found to be in close relationship. The negative effects of ED and alexithymia on quality of life and functionality in bipolar patients have been shown in some studies.[16,32] Therefore, it seems important to present psychotherapeutic approaches targeting these 2 clinical domains.

It has been reported that somatization symptoms are seen at a high rate in the bipolar patient group.[17] There is no study in the literature investigating the relationship between somatization and ED in bipolar patients. As a result of hierarchical regression analysis, we determined that ED predicted somatization symptoms. Similar to alexithymia, education level was also found to predict somatization. It has been shown that a low education level is associated with somatization.[36] Therefore, it seems to be important to evaluate bipolar patients with low education levels in terms of somatization symptoms and to evaluate bipolar patients with higher ED levels in terms of somatization symptoms.

Our study has some limitations. The cross-sectional design prevents the establishment of a cause–effect relationship. The relatively low sample size is another limitation. Since our study was conducted on a single group, it was not possible to compare the relationship between the scales with other populations. Since only euthymic patients were included, it could not be determined whether the scale scores differed significantly in symptomatic bipolar patients. In addition, since the study was conducted only with BD-1 patients, it was not possible to evaluate other patients in the bipolar spectrum in terms of ED, alexithymia, and somatization. It would be beneficial for future studies to include both symptomatic patients and bipolar patients other than BD-1. New studies in this area, where there are limited studies, may contribute to the importance and effectiveness of non-pharmacological interventions in BD.

In light of our results and emerging studies in this area, practitioners may focus on interventions targeting emotional dysregulation in bipolar patients. In a study by Afshari[37], dialectical behavior therapy was found to be effective in reducing emotional dysregulation-related problems. Considering the possible role of executive dysfunction on emotional dysregulation, rumination-based cognitive behavioral studies were reported to be effective and may be an important intervention.[4]

In conclusion, our study found that ED predicted alexithymia and somatization. Psychotherapeutic interventions in bipolar patients are generally performed to increase treatment compliance, gain insight, and recognize the antecedent symptoms of the disease.[5] We think that therapeutic approaches targeting these 3 clinical domains that may negatively affect patients' quality of life and functionality will provide positive results. New perspectives and studies regarding possible interventions should be warranted.

Ethics Committee Approval: *Ethics committee approval was received from the Clinical Research Ethics Committee of Erenköy Mental and Nervous Diseases Training and Research Hospital (2021.2.1/8).*

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