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Cognitive distortions and perfectionism during bipolar and unipolar depressive episode

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Abstract

Background The aim of the current study was to compare bipolar depression (BD) and unipolar depression (UD) patients and healthy controls in terms of their cognitive distortions and perfectionist traits during acute depressive episodes.

Results The current dissertation study is a cross-sectional study consisting of 80 patients with unipolar depression, 80 patients with bipolar depression, and 80 healthy controls. Sociodemographic and Clinical Data Form, Cognitive Distortion Scale (CDS), Frost's Multidimensional Perfectionism Scale (FMPS), Hamilton Anxiety Rating Scale (HARS), Hamilton Depression Rating Scale (HDRS), and Young Mania Rating Scale (YMRS) were used as measurement tools. Healthy controls were selected on the basis that they had the same gender and age distribution as the other participants. It was found that patients with unipolar and bipolar depression had statistically equal but higher total CDS interpersonal and personal achievement scores than healthy controls, and all subtypes of the CDS labeling score were higher in the unipolar depression group than in the other groups. It was found that both depression groups had higher FMPS self-oriented and social-oriented perfectionism scores than healthy controls, lower others-oriented perfectionism scores than healthy controls, and there were no statistically significant differences between them in terms of perfectionism subtypes.

Conclusions In the light of the research data, it was found that the patients with bipolar/unipolar depression had more cognitive distortion than healthy controls and cognitive distortion was not significantly different in the two groups. According to the research data, it is observed that perfectionism is higher in unipolar depression than in bipolar depression. The data obtained have the potential to provide a theoretical basis for a psychotherapeutic approach.

Keywords Cognitive distortions, Bipolar depression, Unipolar depression, Perfectionism

Background

Both unipolar and bipolar depression are mental disorders that can cause disability despite medication and are considered as an important public health problem. The search for new treatments has been driven by the fact that depression is an important public health problem. Thus, various clinical evidence has emerged to investigate the efficacy of cognitive behavioral therapy (CBT) [1]. The starting point of CBT is the observation of irrational, exaggerated, and dysfunctional thought errors in patients with unipolar and bipolar depression, which contribute to the persistence of the illness. These errors, also defined as cognitive distortions, negatively affect people's perception of reality, thoughts, and emotions. A review of the

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literature shows that while there are many studies on cognitive distortions in unipolar depression, there are only a limited number of studies examining the characteristics of cognitive distortions in bipolar depression. It has been observed that in most of the studies on cognitive distortions in BD, participants were included in the study without distinguishing between remission, manic, or multiple episodes [2]. However, it has been found that depressive symptoms mostly affect functionality both during remission and throughout life in BD [3]. Thus, further research examining the cognitive traits of the depressive episode in BD are required. The relationship between perfectionism and psychopathology has been previously examined by various researchers. Most of these studies were conducted in unipolar depression samples [4, 5]. In the few studies examining the relationship between perfectionism and bipolar disorder, it was concluded that perfectionism was examined as a single dimension [6], and in fact, perfectionism should be examined with its subscales in accordance with the cognitive models of bipolar disorder.

The current study will be the first study to examine unipolar and bipolar depression patients together in terms of their differences in cognitive distortion and perfectionism. As the scales can be affected by anxiety symptoms, controlling anxiety levels also adds a unique value to the research. The aim in the research was to show statistically significant differences between patients with bipolar–unipolar depression and healthy controls in the areas of cognitive errors and perfectionism.

Methods

The present study consisted of the study groups including 80 patients with unipolar depression and 80 patients with bipolar depression who applied to the University Psychiatry Clinic, both received treatment from outpatient clinic and were hospitalized, were diagnosed with UD based on DSM-5 as well as 80 healthy volunteers who were not diagnosed with any DSM-5 psychiatric diagnosis as a result of clinical interviews. Patients diagnosed with depression with psychotic traits were not included in the study with patients having unipolar/bipolar depression as they were thought to affect the results of the scales. The first endpoint of the study, which started in April 2020, was reached in February 2021, with a target of reaching 80 patients each with unipolar and bipolar depression. In the statistical analysis performed during the first endpoint, both depression groups were classified into three dimensions according to age using stratified sampling (young < 31, 31–45 = middle age and old > 45). The thresholds for determining stratification in the classification were determined by ensuring homogeneous distribution in both depression groups for all three age groups. It was observed that the number of participants in these three age groups was not statistically significantly different in both groups. Participants in each age dimension were distributed in similar gender ratios in the unipolar and bipolar depression groups. The sample distribution of the healthy control group was planned to consist of 24 young (18 women/6 men), 27 middle-aged (20 women/7 men) and 29 elderly (22 women/7 men) groups after the age and gender categories in the unipolar and bipolar depression groups were summed and divided into two, and the secondary endpoint was completed by obtaining the targeted sample in April 2021 (Fig. 1 shows the flow chart of the study).

Adults diagnosed with Unipolar/Bipolar Depression and healthy controls were first administered the HDRS, HARS, and YMRS by the researcher and then, the Sociodemographic and Clinical Data Form was completed by the interviewer. The subjects who met the inclusion and exclusion criteria were included in the study and then the CDS and FPMS were completed by the participants. Exclusion criteria were visual-hearing impairment, neurological disease, unstable active medical illness, and history of head trauma, or CNS infection.

Sociodemographic and Clinical Data Form: This form was designed by us to collect socio-demographic and clinical information from the sample and control groups. It was completed by the researcher during the interview with the patients. The form includes data on gender, educational status, marital status, employment status, previous psychiatric admissions, current psychiatric treatments, family history of mental illness, previous suicide attempts, previous psychiatric hospitalizations, age at onset, onset episode, total number of episodes, number of hypomanic, manic, and depressive episodes, age at first depressive episode, and number of days of current illness episode. Measurement of socioeconomic status (SES): Classification was made according to the education and occupational class of the participants, and the Hollingshead index was used as a result of the classification. For scoring, the classification used in the Turkish sample was preferred [7]. To determine socioeconomic groups, five educational levels and five job categories were employed. The lowest level of education and employment received a score of 0, while the greatest received a score of 4. On the basis of the total of scores, three socioeconomic groups were determined, ranging from lowest to highest.

Cognitive Distortions Scale (CDS): The scale was developed by Covin and colleagues [8] and its Turkish validity and reliability study was conducted by Ardanıç [9]. The scale consisted of 10 cognitive distortions(mindreading, catastrophizing, all-or-nothing thinking, emotional reasoning, labeling, mental filter, overgeneralization, personalization, should statements, and minimizing the

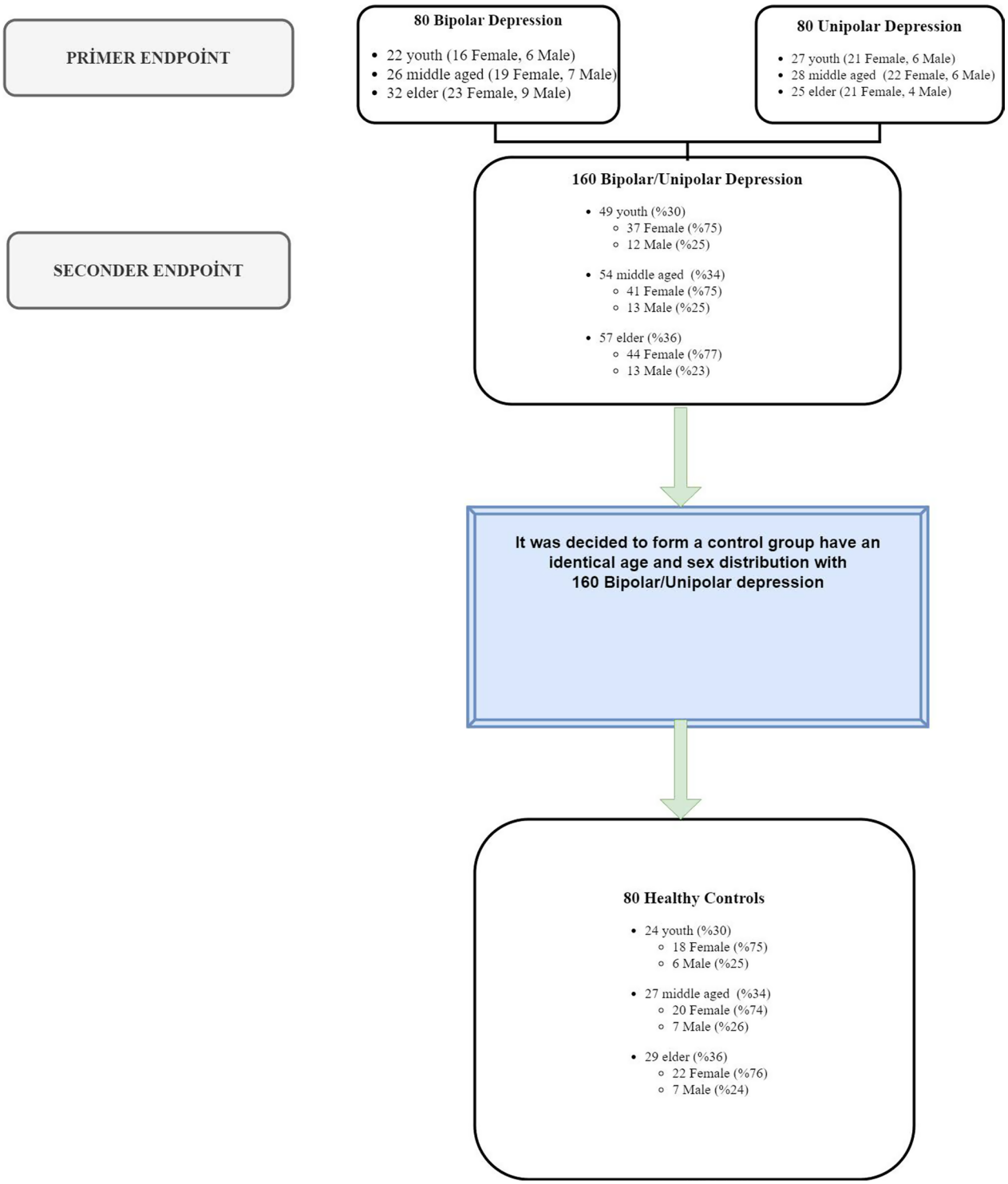

Fig. 1 Flow chart showing the inclusion of participants

positive), and each item was structured to assess cognitive distortions separately in the interpersonal (IP) and personal achievement (PA) domains. The scale was a self-report measure. The response options on the scale, which was a7-point Likert scale, ranged from 1 "Never"to7 "Always." In the analysis conducted for the internal validity of the scale, Cronbach's alpha value was reported as 0.85. For the interpersonal (social) and personal

achievement subscales, values of 0.75 and 0.79, respectively, were reported.

Frost's Multidimensional Perfectionism Scale (FMPS): Hewitt and Flett examined perfectionism in three dimensions and developed the 45-item 7-point Likert-type Multidimensional Perfectionism Scale, which is scored between 1 and 7 (1 = Strongly disagree; 7 = Strongly agree) [10]. The scale was adapted into Turkish by Kagan [11]. Hewitt and Flett measure the dimensions of perfectionism in this scale they developed; 1. Self-focused perfectionism (items no. 1, 6, 8, 12, 14, 15, 17, 20, 23, 28, 32, 34, 36, 40, 42), 2. Other-oriented perfectionism (items no. 2, 3, 4, 7, 10, 16, 19, 22, 24, 26, 27, 29, 38, 43, 45) 3. Socially focused perfectionism (items no. 5, 9, 11, 13, 18, 21, 25, 30, 31, 33, 35, 37, 39, 41, 44) [10]. In the study conducted by Kagan, Cronbach's alpha coefficients of the scale were found to be 0.91 for the Self-Oriented Perfectionism sub-scale, 0.73 for the Other-Oriented Perfectionism sub-scale, and 0.80 for the Social-Oriented Perfectionism sub-scale.

Hamilton Depression Rating Scale (HDRS): The original scale prepared by Hamilton has 17 items [12]. Reliability and validity were established in Turkish by Akdemir and colleagues in 1996 (13). In the internal consistency study, Cronbach's alpha value was found to be 0.75 and the reliability coefficient was 0.76.

Hamilton Anxiety Rating Scale (HARS): The scale was developed by Hamilton [13] to determine the level of anxiety and symptom distribution in individuals and to measure the change in severity. Turkish validity and reliability study was conducted by Yazıcı and colleagues in 1998 [14].

Young Mania Rating Scale (YMRS): Young and colleagues developed the mania rating scale (YMRS) in 1978 [15]. The Turkish validity and reliability study of the YMRS was conducted in 2001 by Karadağ and colleagues [16].

Study data were analyzed using SPSS for Windows 25.0 (SPSS Inc, Chicago, IL). The comparison of cognitive distortion and perfectionism variables between the groups was made with one-way variance (ANOVA), Kruskal–Wallis and covariance (ANCOVA) analyses and anxiety scores were determined as covariance. In Post-Hoc evaluations, standardized residual values were used for multiple Chi-square. Tukey comparison test was used when homogeneity of variances was met in ANOVA analysis. In cases where homogeneity of variances was not met in the ANOVA analysis, the Games–Howell comparison test was used, and the Mann–Whitney *U* test was used in the Kruskal–Wallis analysis. In the current study, the significance level was accepted as $p < 0.05$.

Results

Descriptive data and statistics for unipolar/bipolar depression and healthy controls are shown in the Additional file 1: Tables S1–S2. Tables 1 and 2 show he scores and comparisons of unipolar/bipolar depression and healthy controls on the CDS and FMPS scales. When the frequencies of the subscale scores of the CDS were examined, it was found that the most common cognitive distortion was overgeneralization in all depression patients (8.85 ± 3.16), mind reading in unipolar depression (9.03 ± 2.66), and overgeneralization in bipolar depression (8.71 ± 3.31). Since only the variables and comparisons shown in Table 3 can meet the conditions of homogeneity of regression curves and variances, which are the conditions of ANCOVA analysis among the comparisons between all three groups, the variables shown in Table 3 were included in the ANCOVA analysis.

Those with high and low socioeconomic levels were compared in terms of cognitive distortions, and it was determined that those with low socioeconomic levels made more cognitive distortions in the total-interpersonal (social) and personal success sub-domains. (statistical differences are significant at $p < 0.001$ level, cognitive distortion total: $t(237) = 6.91$, cognitive distortion social: $t(237) = 7.14$, cognitive distortion success: $U = 3744.50$, $z = 6.13$). However, to exclude the confounding effect of HADS and HDRS scores, depression patients with low and high socioeconomic levels were compared among themselves after assigning HADS and HDRS scores as covariances in a sample of 160 people consisting of the unipolar–bipolar depression group. As a result of ANCOVA analysis, total cognitive distortion (mean of squares: 413.43, F(1) = 0.954, P = 0.330), interpersonal cognitive distortion (mean of squares: 95.35, F(1) = 0.849, $P = 0.358$) and personal achievement cognitive distortion (mean squares: 94.18, F(1) = 0.780, $P = 0.379$) did not create a significant difference between the two groups.The age variable was compared in three groups: young-middle-aged and elderly, and no statistically significant difference was found (cognitive distortion total: F(2,237) = 0.996, $p = 0.371$; cognitive distortions social: F(2,237) = 2.039, $z = 0.132$; cognitive distortion success: Kruskal–Wallis H (df = 2) = 0.794, $p = 0.672$).

The depression sample of 160 patients, consisting of unipolar and bipolar depression patients, was divided into two groups according to the number of depressive episodes: 0–3 depressive episodes (51.9%) and 4 ≤ depressive episodes (48.1%); No statistically significant difference was detected between the groups in terms of cognitive distortions.

Table 1 Comparison of CDS scores

Variables	UD X ± SD	BD X ± SD	HC X ± SD	*F* value[b]	Kruskal–Wallis *H* value	Post-Hoc	n^2
CDS total	85,21 ± 20,23	77,98 ± 23,35	40,98 ± 13,99		121.9*	[a]UD = BD > HC	0.50
CDS social	43,47 ± 10,16	39,01 ± 12,06	20,66 ± 7,37		118.4*	[a]UD = BD > HC	0.49
CDS success	41,85 ± 11,17	38,95 ± 11,68	20,32 ± 6,92		119.3*	[a]UD = BD > HC	0.49
Mind reading total	9,03 ± 2,66	8,17 ± 3,19	4,53 ± 2,20		84.36*	[a]UD = BD > HC	0.34
Social	4,63 ± 1,38	4,11 ± 1,59	2,31 ± 1,86		85.71*	[a]UD = BD > HC	0.35
Success	4,4 ± 1,49	4,06 ± 1,73	2,22 ± 1,09	67.20*		[d]UD = BD > HC	0.30
Catastrophizing total	8,91 ± 2,94	7,98 ± 3,46	4,41 ± 2,30	66.54*		[d]UD = BD > HC	0.30
Social	4,35 ± 1,61	3,95 ± 1,88	2,31 ± 1,28	44.96*		[d]UD = BD > HC	0.23
Success	4,56 ± 1,58	4,03 ± 1,83	2,10 ± 1,15	73.72*		[d]UD = BD > HC	0.32
All or nothing total	8,28 ± 3,17	7,77 ± 2,98	3,85 ± 1,56	96.65*		[d]UD = BD > HC	0.35
Social	4,35 ± 1,78	3,75 ± 1,70	1,92 ± 0,89	78.67*		[d]UD = BD > HC	0.31
Success	3,93 ± 1,73	4,02 ± 1,60	1,92 ± 0,88	77.84*		[d]UD = BD > HC	0.30
Emotional reasoning total	8,91 ± 2,99	7,73 ± 3,26	4,30 ± 2,11	73.36*		[d]UD = BD > HC	0.32
Social	4,57 ± 1,58	3,9 ± 1,74	2,25 ± 1,2	60.74*		[d]UD > BD > HC	0.29
Success	4,33 ± 1,73	3,81 ± 1,67	2,05 ± 1,16		70.45*	[a]UD = BD > HC	0.28
Labeling total	8,23 ± 3,19	6,6 ± 3,22	3,71 ± 2,27		76.03*	[a]UD = BD > HC	0.31
Social	4,1 ± 1,63	3,36 ± 1,69	1,95 ± 1,25		66.25*	[a]UD = BD > HC	0.27
Success	4,13 ± 1,71	3,23 ± 1,69	1,76 ± 1,17		73.80*	[a]UD = BD > HC	0.30
Mental filter total	8,33 ± 2,81	7,91 ± 3,0	4,16 ± 1,89	80.90*		[d]UD = BD > HC	0.31
Social	4,02 ± 1,5	3,96 ± 1,62	1,98 ± 0,93	76.92*		[d]UD = BD > HC	0.31
Success	4,28 ± 1,58	3,95 ± 1,57	2,17 ± 1,16	58.52*		[d]UD = BD > HC	0.29
Overgeneralization total	8,98 ± 3,02	8,71 ± 3,31	4,17 ± 2,07	94.03*		[d]UD = BD > HC	0.37
Social	4,57 ± 1,64	4,38 ± 1,87	2,17 ± 1,15	75.0*		[d]UD = BD > HC	0.32
Success	4,41 ± 1,76	4,32 ± 1,74	2,0 ± 1,12	79.45*		[d]UD = BD > HC	0.33
Personalization total	7,83 ± 3,07	7,48 ± 3,03	4,28 ± 2,54		60.75	[a]UD = BD > HC	0.24
Social	3,95 ± 1,69	3,75 ± 1,58	2,12 ± 1,39	32.77*		[c]UD = BD > HC	0.21
Success	3,87 ± 1,72	3,73 ± 1,55	2,16 ± 1,38	33.02*		[d]UD = BD > HC	0.19
Should statements total	8,58 ± 2,78	7,67 ± 3,18	3,92 ± 2,24		88.23*	[a]UD = BD > HC	0.36
Social	4,36 ± 1,54	3,8 ± 1,73	1,8 ± 0,11		83.33*	[a]UD = BD > HC	0.34
Success	4,22 ± 1,59	3,87 ± 1,61	2,05 ± 1,26	56.44*		[d]UD = BD > HC	0.29
Discounting the positive total	8,45 ± 3,33	8,0 ± 3,48	3,61 ± 1,99		86.60*	[a]UD = BD > HC	0.35
Social	4,3 ± 1,78	4,12 ± 1,91	1,83 ± 1,05		78.11*	[a]UD = BD > HC	0.32
Success	4,15 ± 1,79	3,87 ± 1,71	1,77 ± 1,05		80.96*	[a]UD = BD > HC	0.33

n^2Eta square (effect size): 0.02–0.12 = small effect, 0.13–0.25 = medium effect, 0.26 ≤ large effect

CDS Cognitive distortions scale, *SD* Standard deviation

* All are significant at $p < 0.001$

[a] Pairwise comparison test was applied with Mann–Whitney U test

[b] One-way analysis of variance (ANOVA) was applied

[c] Tukey post-hoc analysis was applied

[d] Games–Howell post-hoc analysis was applied

Bipolar depression patients are divided into three groups according to the number of past manic episodes: there were 0–2 episodes (38.8%), 3–4 episodes (33.7%) and 5 ≤ episodes (27.5%). Cognitive distortions between the 3 groups were compared with the ANOVA test, and no statistical significance was detected.

Discussion

The aim of the study was to compare the cognitive distortion levels and perfectionism dimensions of unipolar/bipolar depression and healthy control group. It was found that the cognitive distortion levels of unipolar and bipolar depression patients were not statistically different

Table 2 Comparison of FMPS scores

Variables	UD X ± SD	BD X ± SD	HC X ± SD	*F* value[a]	Post-Hoc	n^2
FMPS total	193,62 ± 25,82	180,87 ± 26,45	149,60 ± 28,46	56.55*	Tukey: UD > BD > HC	0.32
Self-oriented	68,3 ± 9,09	65,56 ± 11,82	47,2 ± 16,93	48.74	Games–Howell: UD = BD > HC	0.34
Social-oriented	64,27 ± 10,35	61,52 ± 11,39	40,8 ± 12,01	103.5*	Tukey: UD = BD > HC	0.46
Other-oriented	59,32 ± 11,95	55,16 ± 10,2	61,43 ± 8,98	8.56	Games–Howell: HC > BD = UD	0.05

n^2: Eta square (effect size): 0.02–0.12 = small effect, 0.13–0.25 = medium effect, 0.26 ≤ large effect

FMPS Frost's multidimensional perfectionism scale, *SD* Standard deviation

* All are significant at $p < 0.001$

[a] One-way analysis of variance (ANOVA) was applied

Table 3 Results of ANCOVA analysis controlling for the HADS score

Variables	*F* value	*P* value	Partial n^2	Groups compared	Adj. R^2
Mind reading total	0,909	0.34	0.006	UD = BD	0.034
Mind reading social	2.09	0.150	0.013	UD = BD	0.036
Labeling total	5.85	0.017	0.036	UD > BD	0.095
Labeling social	5.24	0.023	0.033	UD > BD	0.079
Labeling success	5.31	0.022	0.033	UD > BD	0.091
Personalization social	9.16	0.003	0.055	UD > HC	0.251
Discounting the positive total	2.53	0.114	0.016	UD = BD	0.012
Discounting the positive social	2.45	0.119	0.016	UD = BD	0.029
Discounting the positive success	2.08	0.151	0.013	UD = BD	0.002
FMPS total	10.74	0.001	0.064	UD > HC	0.435
FMPS social-oriented	15.71	< 0.001	0.092	UD > HC	0.432

$n^2 = 0.01$ small effect; $n^2 = 0.06$ medium effect; $n^2 = 0.14$ large effect

Adj.R^2 explained variance, *BD* Bipolar depression, *FMPS* Frost's multidimensional perfectionism scale, *HC* Healthy control, *UD* Unipolar depression

from each other but were higher than healthy controls, unipolar depression group used labeling more frequently than bipolar depression group, unipolar depression patients were more perfectionist than bipolar depression patients and bipolar depression patients were more perfectionist than healthy controls, both depression groups had higher self-oriented and social-oriented perfectionism subtypes than healthy controls and lower others-oriented perfectionism.

According to the results of the current study, the frequency of cognitive distortions has a higher effect size than perfectionism and its sub-scales when comparing depression patients and healthy controls. According to a study conducted in Turkey with bipolar/unipolar depression and healthy controls with different sample size and distribution, it was found that UD had more cognitive distortions than BD and BD had more cognitive distortions than healthy controls [6]. However, the aforementioned research could not provide data on the sub-scales of cognitive distortions. According to the results of a recent study conducted in Turkey with a sample of 100 people with bipolar disorder, major depression and healthy controls, the major depression group showed more cognitive distortions than the bipolar disorder group and the bipolar disorder group showed more cognitive distortions than healthy controls. However, in the current study, the inclusion of the bipolar disorder and major depression groups without differentiating between depressive episode and remission reduces the homogeneity of the data [2]. The current study also found that the labeling was more frequent in patients with unipolar depression after controlling for anxiety level. Labeling has previously been found to be more frequent in unipolar depression than in controls [17]. In this sense, the fact that patients with bipolar depression, in contrast to patients with unipolar depression, have experienced an increase in self-esteem during manic episodes in the past, whereas patients with unipolar depression have less frequent periods of high self-esteem, may be a predisposing factor for the more frequent use of labeling in unipolar depression. Although there are not enough data on labeling in the current literature, it has been found that self-stigmatization (internalized stigmatization), which is closely related to labeling, is associated with the duration,

severity, and number of depressive episodes in mood disorders [18]. In fact, the longer duration of depressive episodes among unipolar depression patients in our research sample may have led them to have more negative life experiences that would affect self-esteem.

The results show that total perfectionism is higher in UD than in BD and in bipolar depression than in healthy controls. When similar studies were examined, Batmaz and colleagues found that there was no difference between UD/BD patients in perfectionism as measured by dysfunctional attitudes, but it was higher than in healthy controls [6]. In the current study, since most of the healthy control group was equalized with depression patients in terms of age and gender as planned, all of them were obtained during the COVID-19 pandemic, which reduces the homogeneity of the study. During the pandemic, both measures of social isolation have been reported to increase individuals' feelings of loneliness and pave the way for depression due to economic concerns [19]. The perceived stress of perfectionists is thought to further complicate major life events and has been described as a perfectionism epidemic [19]. On the other hand, since patients with BD have been coming to the outpatient clinic for longer and are relatively more accustomed to outpatient services, their participation in the study is more distant from the effects of the COVID-19 process. As a matter of fact, in other studies similar to the study of Batmaz [6], both in terms of sample characteristics and measurement tools, it was found that bipolar and unipolar depression patients did not show any difference in terms of two different cognitive attitudes, perfectionism and need for approval [20].

A review of the literature reported that socially oriented perfectionism is actually a predictor of reactive depression rather than endogenous depression [5]. Before the research, as UD had more socially oriented perfectionism than BD, UD is more similar to reactive depression triggered by life stressors, and BD is similar to neurobiologically based endogenous depression, and it was expected that socially oriented perfectionism would be higher in UD and self-oriented perfectionism would be higher in BD. However, our research data suggest that socially oriented perfectionism is higher in UD/BD than in healthy controls, however, does not differ statistically between UD/BD groups. A possible reason for the same level of socially oriented perfectionism in both depression groups in the current study may be the cultural structure of the sample [21]. It has been previously reported that Turkish society, living in a more collectivistic and dependent culture, has a socially oriented success motivation and this feature may predispose to depression due to social demands and pressures [22].

Self-oriented perfectionism was also found to be higher in patients with UD/BD than in healthy controls, but there was no statistical difference between the two groups. Self-oriented perfectionism leads to depressive symptoms through social isolation, according to recent meta-analyses [23]. The progression to depression can be accelerated by the high goals people set for themselves and how often they think about those goals. Cognitive explanations of BD suggest that cognitive style is characterized by perfectionism, self-criticism, and goal striving [20]. Therefore, we expected to higher self-oriented perfectionism in BD than UD before the research results. However, the results showed no difference between UD/BD. Self-focused perfectionism has significant developmental origins, which theorists suggest emerges from child–parent relationships characterized by parental criticism and control [24]. The current research did not investigate cofounding effect of the parent–child relationship. The literature tends to indicate that others-oriented perfectionism is a positive trait and that it is not associated with psychopathology [25]. The results of the current study are consistent with the literature in this sense.

The current study has some limitations in the data on cognitive distortions due to the sampling environment and some disadvantages of the included patient population. First, comorbid psychopathology and personality disorders were not excluded in our study to increase the generalizability of the results reduces the homogeneity of our sample. In addition, the socioeconomic level of the healthy control group was higher than that of the patients with depression as the conditions for inclusion were different. In addition, perfectionists may have a misleading and defensive tendency to present themselves better and hide their flaws due to self-image bias and social esteem motivation. Further research may use different data collection methods (for example, relative reports or perfectionism diaries) to overcome this limitation [26]. A number of studies have shown that CBT adapted for perfectionism leads to a reduction in perfectionism, anxiety, and depression [27, 28]. Thus, our results should be extended to include studies of psychotherapeutic interventions for perfectionism.

The fact that the study was conducted in depressed patients and healthy controls made it possible to draw inferences about the cognitive styles observed during an acute depressive episode. While selecting the healthy control group, the age and gender distribution of UD and BD groups were considered, and the same gender distribution was obtained in the same age groups. The selection procedure ensured that the sample was maximally independent of age and gender effects. Controlling for the severity of anxiety, which may affect the scale scores

in each UD/BD groups, to the extent that the distribution of other scales allows, strengthens the scientific validity of their conclusions.

Conclusions

In the light of the research data, it was found that the patients with UD/BD had more cognitive distortion than healthy controls, and cognitive distortion was not significantly different in the two groups. According to the research data, it is observed that perfectionism is higher in UD than in BD. It is important to clarify whether these three psychological markers persist outside the depressive episode in studies with large samples that include other mood episodes in UD and BD.

Abbreviations

ANCOVA	Analysis of covariance
ANOVA	One-way variance
BD	Bipolar depression
CBT	Cognitive behavioral therapy
CDS	Cognitive distortions scale
FMPRS	Frost's multidimensional perfectionism scale
HARS	Hamilton anxiety rating scale
HDRS	Hamilton depression rating scale
SES	Socioeconomic status
UD	Unipolar depression
YMRS	Young mania rating scale

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s41983-023-00749-w.

Additional file 1: Table S1. Comparison of categorical variables between the three groups. **Table S2.** Comparison of descriptive variables and clinical features between the three groups.

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Author contributions

Concept—AEA,GS, AA; design—AEA,GS, AA; supervision—AEA,GS, AA; resource—AEA,GS, AA; Materials—AEA, AA; data collection and/or processing—AEA, AA; analysis and/or interpretation—AA; literature search—AEA; writing—AEA,GS, AA; critical reviews—AEA,GS, AA.

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Availability of data and materials

The data that support the findings of this study could be sent following a reasonable request.

Declarations

Ethics approval and consent to participate

The study protocol was conducted accordance with the Helsinki Declaration and the International Council for Harmonisation Note for Guidance on Good Clinical Practice. The required approval for conducting the study was obtained from the Ethics Committee of the Faculty of Medicine, Ondokuz Mayis University (Date 28,03,2020/Number 2020-129).). Informed consent forms were signed applicable by Local Ethical Committee, as well.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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