The validity and reliability of the Turkish version of the bipolar depression rating scale

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Abstract

Introduction: Unipolar depression and bipolar depression differ in their clinical presentations, and the conventional depression rating scales fail to capture these differences. Recently, a new scale to rate the severity of depression in bipolar disorder was developed, and this study aims to evaluate the validity and reliability of this scale in a Turkish clinical sample.

Methods: A total of 81 patients (30 males, 51 females) diagnosed with bipolar depression according to the DSM-IV-TR criteria at three different sites in Turkey were interviewed with the Bipolar Depression Rating Scale (BDRS), the Montgomery Asberg Depression Rating Scale, the Young Mania Rating Scale, and the Positive and Negative Syndrome Scale Depression and Excitement subscales. Internal consistency, interrater reliability and concurrent validity of the BDRS were evaluated.

Results: The Turkish version of the BDRS had an acceptable internal consistency (Cronbach's alpha = 0.786). Moderate to strong correlations between the BDRS, and the MADRS (r = 0.808), and the PANSS-D (r = 0.426) were observed, and the BDRS correlated weakly to moderately with the PANSS-E (r = 0.297), and the YMRS (r = 0.368). The mixed symptom cluster score of the BDRS significantly correlated with the YMRS (r = 0.755), and the PANSS-E (r = 0.712). Exploratory factor analysis showed a three-factor solution. These factors corresponded to somatic depression, psychological depression, and mixed symptoms.

Conclusions: This study shows that the Turkish version of the BDRS is a valid and reliable instrument to measure depressive symptomatology in bipolar disorder. The scale has good internal validity, strong interrater reliability, and moderate to strong correlations with other depression rating scales.

1. Introduction

The phenomenologies of unipolar and bipolar depression differ significantly from each other [1]. Some of these differences between unipolar and bipolar depression may be summarized as atypical features, psychomotor retardation, mixed states, a more recurrent pattern of illness, postnatal episodes, abrupt onset and offset of episodes, irritability, mood lability, psychotic symptoms, premorbid hyperthymic or cyclothymic temperaments, positive family history of bipolar disorder, etc., all of which are clinical characteristics encountered more frequently in bipolar depression [1–5]. Yet, currently available depression rating scales are more sensitive to the features of unipolar depression [6], and the most widely used scales to measure depression severity in bipolar disorder are the Hamilton Depression Rating Scale (HAM-D) [7] and Montgomery Asberg Depression Rating Scale (MADRS) [8], which were originally developed and validated for use in unipolar depression. It is suggested that these scales fail to capture the key diagnostic aspects of bipolar depression, e.g. the mixed and atypical symptoms of the disorder [6]. Therefore, the Bipolar Depression Rating Scale (BDRS) was developed to compensate for this unmet need. The BDRS reflects the characteristic features of bipolar depression, and is also sensitive to the atypical and mixed symptoms of bipolar depression [9].

The literature review of the previously published BDRS studies revealed only 3 other studies, apart from the original BDRS development study. In these studies, the psychometric properties of the BDRS were evaluated, and the internal consistency of the scale was found to range between 0.81 and 0.92 [9–12]. Some of these studies also applied a

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hierarchical cluster analysis, and they also reported to have found that the scale consists of two different clusters, i.e. items related to depressive symptoms, and items related to mixed symptomatology [11,12]. These studies differed slightly from each other when the items that grouped together to form the clusters of the scale were investigated [9–12]. The previous studies also reported strong and positive correlations of the BDRS with depression rating scales, and the mixed symptoms cluster was repeatedly found to be positively correlated with mania rating scales [9–12].

The BDRS consists of 20 clinical items associated with the depressive phase of bipolar disorder. The depression items were found to be strongly correlated with the HAM-D, and MADRS [9–11]. The scale's mixed cluster items correlated significantly with the Young Mania Rating Scale (YMRS) [9–11]. These two correlations indicate that the BDRS is a useful tool in assessing both depressive and mixed features of bipolar depression [9]. The BDRS is administered by the clinician, and each item is rated from 0 to 3.

In the present study, the overall objective was to explore the validity and reliability of the Turkish version of the BDRS. Internal consistency, interrater reliability, and concurrent validity of the BDRS were evaluated.

2. Method

2.1. Subjects and Procedure

The sample of the current study consisted of 81 participants diagnosed with bipolar disorder according to the DSM-IV-TR criteria [13] who presented to three outpatient psychiatric clinics, i.e. Diskapi YB Training and Research Hospital (Ankara, Turkey), Mersin State Hospital (Mersin, Turkey), and Ataturk Training and Research Hospital (Ankara, Turkey), between March 2013 and September 2013. The participants were required to be in a depressive episode at the time of the interview. After the study protocol was explained to the participants, and to their significant others if necessary, a written informed consent was obtained. The participants were interviewed face-to-face by one of the four authors of the study. All of the participants were receiving treatment as usual at the time of recruitment. This study was in accordance with the Declaration of Helsinki, and an approval was obtained from the local ethics committee.

2.2. Measures

2.2.1. Bipolar Depression Rating Scale (BDRS) [9]

The BDRS is a 20-item, clinician administered scale used to rate the severity of the depressive phase of bipolar disorder, with a unique feature, i.e. the possibility to rate the atypical and mixed features of the disorder, which differentiates it from the conventional depression rating scales. The rater notes the responses of the patient on a Likert type scale that ranges from 0 to 3 according to a rating manual describing the characteristics of each individual item. The score obtained from this scale may range from 0 to 60, where a higher score indicates a more severe depressive episode.

2.2.2. Montgomery Asberg Depression Rating Scale (MADRS) [8]

This scale was developed by Montgomery and Asberg (1979) [8] for the purpose of rating depressive symptoms and detecting the change of depression scores sensitively. An interviewer rates for every single item of the ten items on a Likert type scale from 0 to 6. Accordingly the minimum score may be 0, whereas the maximum score may reach 60 points. The Turkish version of the scale was shown to be valid and reliable [14].

2.2.3. Young Mania Rating Scale (YMRS) [15]

This scale, developed by Young et al. (1978) [15], consists of 11 items. Each item is rated by a trained clinician on a Likert type scale from 0 to 4, except for the items 5, 6, 8, and 9, which are rated from 0 to 8. Accordingly the minimum score may be 0, whereas the maximum score may be 60 points. Its validity and reliability in a Turkish sample were shown [16].

2.2.4. The Positive and Negative Syndrome Scale (PANSS [D and E subscales]) [17]

This scale was developed and standardized by Kay et al. (1987) [17]. It consists of 30 items devoted to measure different types of psychopathology for schizophrenia. An interviewer rates the items on a Likert type scale from 1 to 7. In the current study, two subscales of the original PANSS were used: The *depression (*PANSS-D) *and excitement subscales* (PANSS-E) [18,19]: PANSS-D has four items which are somatic concern (G1), anxiety (G2), guilt feeling (G3), and depression (G6), and PANSS-E has four items which are excitement (P4), hostility (P7), uncooperativeness (G7), and poor impulse control (G14). The whole scale and its subscales were shown to be valid and reliable in a Turkish sample [20].

2.3. Statistical Procedure

All analyses were conducted by using SPSS for Windows version 15 (SPSS Inc.; Chicago, IL). After the Kaiser–Meyer–Olkin measure of sampling adequacy statistics was undertaken, the structure of the scale was analyzed by extracting the factors using unweighted least squares and oblique (Promax) factor rotation, as the dimensions were intercorrelated. Interrater reliability at the scale level was assessed using intraclass correlations for agreement. Internal consistency was evaluated by using Cronbach's α values. We compared item–total score correlations by using Pearson correlation coefficients. The associations between all the measures were also assessed by using Pearson correlations. A *p* value of <0.05 was considered to be statistically significant.

3. Results

Sociodemographic data, medication usage profile and comorbidity status are shown in Table 1. The mean age of the participants was 38.74 ± 11.85 years, and their mean educational level was 11.70 ± 3.71 years. Twenty of the patients (24.7%) had a family history of unipolar depression, 21 (25.9%) had a family history of bipolar spectrum disorder, 3 (3.7%) had a family history of schizophrenia or other psychotic disorder, and 2 (2.5%) had a history of some other psychiatric disorder, whereas 35 (43.2%) participants reported no family history of any psychiatric disorders. Clinical data including the mean duration of illness, the mean total number of depressive episodes, the mean duration of treatment, and the mean time elapsed until the first treatment was introduced (all variables are shown in years) are shown in Table 2. The mean score of the BDRS was 26.57 ± 5.87 (minimum = 18, maximum = 43). The mean MADRS scores of the patients was 28.46 ± 7.25 (minimum = 16, maximum 48), and the means of the PANSS-D scores, the PANSS-E scores, and the YMRS scores were 13.62 ± 2.44 (minimum = 8, maximum = 19), 4.76 ± 1.76 (minimum = 4, maximum = 12), and 1.64 ± 3.22 (minimum = 0, maximum = 17), respectively (Table 2).

Table 1
Clinical and sociodemographic characteristics of the participants (n = 81).

	Clinical Descriptor	Number of Patients	Percentages %
Gender	Male	30	37%
	Female	51	63%
Marital Status	Married	41	50.6%
	Single	21	25.9%
	Other (widowed, divorced, or separated)	19	23.5%
Employment Status	Employed	40	49.4%
	Unemployed	41	50.6%
Education Level	Up to 5 years	7	8.6%
	5 to 8 years	13	16%
	8 to 11 years	29	35.8%
	Over 11 years	32	39.5%
Diagnosis	Bipolar Disorder I	47	58%
	Bipolar Disorder II	30	37%
	Bipolar Disorder NOS	4	4.9%
Medication	Antidepressant	28	34.6%
	Lithium	35	43.2%
	Anticonvulsant (Mood Stabilizer)	45	55.6%
	Antipsychotic	45	55.6%
	Benzodiazepine	2	2.5%
	Other medication (e.g., Anticholinergics etc.)	15	18.5
	None	3	3.7%
Comorbidity	Anxiety Disorders	18	22.2%
	Alcohol/Substance Use Disorders	6	7.4%
	None	53	65.4%

Due to missing variables some percentages could not reach 100.
NOS = not otherwise specified

Table 2
Descriptive characteristics of the patients.

	Min	Max	Mean	SD
Duration of Illness (Years)	1	40	11.09	8.29
Total Number of Depressive Episodes	1	30	4.97	4.63
Duration of Treatment (Years)	0	35	8.74	7.42
Time to Treatment (Years)	0	22	2.35	3.13
BDRS Total Score	18	43	26.57	5.87
MADRS Total Score	16	48	28.46	7.25
PANSS-D Score	8	19	13.62	2.44
PANSS-E Score	4	12	4.76	1.76
YMRS Total Score	0	17	1.64	3.22

BDRS: Bipolar Depression Rating Scale, PANSS-D: Positive and Negative Syndrome Scale—Depression Subscale, PANSS-E: Positive and Negative Syndrome Scale—Excitement Subscale, YMRS: Young Mania Rating Scale, MADRS: Montgomery Asberg Depression Rating Scale, SD: Standard Deviation, min: Minimum, max: Maximum

Internal consistency as indicated by the calculation of the Cronbach's α coefficient was acceptable (Cronbach's α = 0.786). If item 16 was removed, the Cronbach's α coefficient value rose up to 0.810, i.e. good (Table 3).

To test the concurrent validity of the scale, Pearson correlation coefficients were computed between the total score of the BDRS, and the MADRS, and the PANSS-D total scores (r = 0.808, $p < 0.001$; r = 0.426, $p < 0.001$, respectively). The composite depression cluster score of the BDRS, and the total MADRS score, and the PANSS-D score were significantly correlated (r = 0.793, $p < 0.001$; r = 0.440, $p < 0.001$, respectively). The mixed symptom cluster score of the BDRS was also significantly correlated with the YMRS total score, and the PANSS-E score as expected (r = 0.755, $p < 0.001$; r = 0.712, $p < 0.001$, respectively). The

Table 3
Internal consistency feature of the BDRS.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item–Total Correlation	Cronbach's Alpha if Item Deleted
BDRS01	24.1923	32.599	.400	.775
BDRS02	25.0385	31.622	.380	.775
BDRS03	24.9103	29.433	.510	.765
BDRS04	24.2949	31.379	.529	.766
BDRS05	24.5769	31.520	.443	.771
BDRS06	24.5000	31.968	.499	.769
BDRS07	24.7308	31.394	.495	.768
BDRS08	25.0256	32.259	.358	.777
BDRS09	24.5385	30.537	.598	.761
BDRS10	25.5769	32.689	.218	.789
BDRS11	24.6282	32.912	.269	.783
BDRS12	24.5385	33.291	.272	.782
BDRS13	25.4231	31.416	.484	.769
BDRS14	24.8205	33.422	.259	.782
BDRS15	26.1923	31.846	.546	.767
BDRS16	25.0513	35.686	−.081	.810
BDRS17	26.1410	33.110	.281	.781
BDRS18	26.2179	33.783	.236	.783
BDRS19	26.3462	34.671	.200	.785
BDRS20	26.2692	33.862	.276	.782

BDRS: Bipolar Depression Rating Scale

mixed cluster symptom scores, and the psychological, somatic and composite depression scores were not correlated. And the other relevant correlations observed between the BDRS total score, and the PANSS-D score (r = 0.426, $p < 0.001$), the PANSS-E score (r = 0.297, $p = 0.007$), and the YMRS score (r = 0.368, $p = 0.001$) were also significant (Table 4). The correlations of each BDRS cluster score, and the total BDRS score with the other measures are also shown in Table 4.

The BDRS was factor analysed to elicit the optimal number of factors to describe the scale. An unweighted least squares factor analysis was followed by oblique (Promax) rotations of 2–5 factors. Prior to rotation, the eigenvalues for the first three factors were 3.959, 3.607, and 1.707, with corresponding percentages of variance accounted for of 19.76%, 18.04%, and 8.53%. The three factors accounted for a variance of 46.37%. Therefore the three-factor solution with an oblique rotation was judged to provide a useful account of the data. Table 5 shows the factor loadings. The three factors were labeled as somatic depressive symptoms cluster (Factor 1), psychological depressive symptoms cluster (Factor 2), and mixed symptoms cluster (Factor 3). The depressive symptoms clusters were also considered to form a composite depressive symptoms cluster (psychological and somatic depressive symptoms clusters) as a

Table 4
Correlations between the individual items, clusters, and the total score of the BDRS, and the PANSS-D, PANSS-E, YMRS, and MADRS total scores.

	PANSS-D	PANSS-E	YMRS	MADRS
BDRS01	.270*	−.035	−.062	.510**
BDRS02	−.107	.484**	.496**	.335**
BDRS03	.145	.174	.244*	.498**
BDRS04	.384**	−.031	.105	.583**
BDRS05	.205	−.059	−.021	.551**
BDRS06	.379**	.031	.050	.514**
BDRS07	.223*	−.119	−.162	.513**
BDRS08	.255*	.452**	.410**	.305**
BDRS09	.378**	.123	.213	.510**
BDRS10	−.345**	.372**	.455**	.248*
BDRS11	.411**	−.367**	−.383**	.264*
BDRS12	.573**	−.304**	−.248*	.366**
BDRS13	.303**	−.139	−.054	.475**
BDRS14	.427**	−.357**	−.389**	.260*
BDRS15	.024	.783**	.780**	.249*
BDRS16	.099	−.019	−.066	−.028
BDRS17	−.026	.507**	.561**	.201
BDRS18	.090	.220*	.189	.172
BDRS19	.042	.050	.229*	.189
BDRS20	.145	.634**	.741**	.256*
Somatic Depression	0.319**	0.132	0.189	0.731**
Psychological Depression	0.405**	−0.213	−0.172	0.479**
Composite Depression	0.440**	0.001	0.063	0.793**
Mixed Symptom	0.137	0.712**	0.755**	0.344**
BDRS Total Score	0.426**	0.297**	0.368**	0.808**

BDRS: Bipolar Depression Rating Scale, PANSS-D: Positive and Negative Syndrome Scale—Depression Subscale, PANSS-E: Positive and Negative Syndrome Scale—Excitement Subscale, YMRS: Young Mania Rating Scale, MADRS: Montgomery Asberg Depression Rating Scale
  * Correlation is significant at the 0.05 level.
  ** Correlation is significant at the 0.01 level.

Table 5
Factor loadings of the scale.

	Factor		
	1	2	3
BDRS05	.752	−.018	−.263
BDRS07	.725	.021	−.193
BDRS03	.707	−.238	.076
BDRS01	.653	.060	−.256
BDRS06	.626	.169	−.023
BDRS09	.579	.065	.281
BDRS04	.548	.242	.165
BDRS02	.446	−.397	.112
BDRS11	.137	.886	.026
BDRS14	.158	.703	−.053
BDRS12	.204	.661	.041
BDRS13	.246	.561	.375
BDRS10	.231	.495	.295
BDRS16	−.242	.468	.073
BDRS17	−.155	−.021	.867
BDRS19	−.148	.121	.682
BDRS20	−.080	−.162	.635
BDRS18	−.130	.198	.567
BDRS15	.164	−.281	.531
BDRS08	.172	−.010	.245

Extraction Method: Unweighted Least Squares.
Rotation Method: Promax with Kaiser Normalization.
BDRS: Bipolar Depression Rating Scale

whole. In the columns of the factor solutions, the symptoms that load together are shown in bold (Table 5). The correlations of each item with the BDRS total score, and the other clusters of the scale are shown in Table 6. The correlations between the BDRS clusters, and the total BDRS score are shown in Table 7.

A subgroup of 20 patients was interviewed by two different raters to examine the interrater reliability of the scale. Because the BDRS is a Likert type scale, an *intraclass correlation coefficient (ICC)* was computed for the total score, and its cluster scores. The following results were found: ICC = 0.901 for the psychological depressive symptoms cluster [95% confidence interval (CI) 0.768–0.960], ICC = 0.966 for the somatic depressive symptoms cluster (95% CI 0.917–0.986), ICC = 0.949 for the composite depressive symptoms cluster (%95 CI 0.876–0.979), ICC = 0.773 for the mixed symptoms cluster (95% CI 0.511–0.904), and ICC = 0.931 for the total score of the BDRS (95% CI 0.834–0.972). Although the correlation coefficient for the mixed symptoms cluster showed a weaker consistency between the raters, it was sufficient (Table 6).

4. Discussion

The results of this study suggest that the Turkish version of the BDRS is a valid and reliable scale for the measurement of the severity of depression in bipolar disorder, with good internal validity and interrater reliability. The internal consistency of the scale was shown to be acceptable.

Table 6
Correlations of each individual BRDS item with the total BDRS score, and the other BDRS cluster scores, and interrater correlation coefficients.

	Somatic Depression	Psychological Depression	Composite Depression	Mixed Symptoms	BDRS Total Score	ICC
BDRS01	0.637	0.215**	0.593**	−0.068	0.468**	0.880**
BDRS02	0.586**	−0.078	0.413**	0.331**	0.484**	0.957**
BDRS03	0.802**	0.002	0.619**	0.258*	0.626**	0.943**
BDRS04	0.606**	0.331**	0.626**	0.175	0.597**	0.943**
BDRS05	0.677**	0.265*	0.648**	−0.014	0.537**	0.775**
BDRS06	0.662**	0.282*	0.645**	0.070	0.569**	0.829**
BDRS07	0.710**	0.239*	0.662**	−0.019	0.546**	0.911**
BDRS08	0.218	0.137	0.233*	0.615**	0.451**	0.749**
BDRS09	0.708**	0.189	0.636**	0.327**	0.669**	0.922**
BDRS10	0.304**	−0.103	0.185	0.495**	0.361**	0.733**
BDRS11	0.093	0.837**	0.474**	−0.237*	0.297**	0.894**
BDRS12	0.182	0.654**	0.454**	−0.130	0.326**	0.871**
BDRS13	0.340**	0.641**	0.570**	0.103	0.520**	0.897**
BDRS14	0.107	0.730**	0.433**	−0.219*	0.271*	0.815**
BDRS15	0.305**	−0.081	0.196	0.798**	0.497**	0.800**
BDRS16	−0.236*	0.548**	0.081	−0.039	0.052	0.903**
BDRS17	0.096	−0.002	0.073	0.777*	0.385**	0.915**
BDRS18	0.043	0.152	0.106	0.534**	0.312**	0.687**
BDRS19	0.045	0.027	0.048	0.495**	0.246*	0.209
BDRS20	0.075	−0.119	0.001	0.782**	0.327**	0.433*

BDRS: Bipolar Depression Rating Scale, ICC: Interrater Correlation Coefficient
* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

Moderate to strong correlation coefficients of the BDRS with the MADRS, and the PANSS-D, respectively, indicate that the scale assesses depressive symptomatology well. This shows that the BDRS is an appropriate tool the measure the severity of depression in bipolar patients.

The BDRS correlates weakly to moderately with the PANSS-E, and the YMRS, respectively, as expected. Yet, this is an important finding, since many bipolar depressed patients still suffer from subsyndromal mania related symptoms, and the BDRS seems to capture these symptoms according to this significant correlation.

The strong correlations of the mixed symptoms cluster of the scale with the YMRS, and the PANSS-E confirm the utility of the scale in accurately assessing mixed symptomatology encountered in bipolar depressed patients. This is an important aspect of the scale, as it is vital to evaluate the patients' mixed symptomatology, and to rate their severity in bipolar depression, which may be overlooked by conventional depression rating scales.

The non-significant correlations between the psychological, somatic, and composite depressive symptoms clusters, and the mixed symptoms cluster suggest that these clusters measure different aspects of bipolar depression. This is in line with the previous reports that indicated that the BDRS consisted of two non-overlapping clusters [11].

Further, this study adds another piece of evidence to the already present literature on rating the severity of depression in bipolar disorder [9–12], and points out to the conclusion that the measurement of depressive symptomatology in bipolar disorder by scales like the MADRS, or the HAM-D, which are scales developed to measure the severity of symptoms in unipolar depression, may not be sufficiently covering all the aspects of bipolarity, and may result in wrong interpretations of treatment response, or the severity of the psychopathology of the disorder.

Factor analyses of the scale showed that a three-factor solution gave the best account of the data. This was in line with the original scale's structure [9]. As expected, the

Table 7
Correlations between the BDRS cluster scores, and the BDRS total score.

	Somatic Depression	Psychological Depression	Composite Depression	Mixed Symptoms	BDRS Total Score
Somatic Depression	1				
Psychological Depression	0.239*	1			
Composite Depression	0.885**	0.664**	1		
Mixed Symptoms	0.218	0.025	0.180	1	
BDRS Total Score	0.831**	0.566**	0.912**	0.568**	1

BDRS: Bipolar Depression Rating Scale
* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

psychological and somatic depressive symptoms clusters correlated strongly with the composite depressive symptoms cluster, but the correlation between these two depressive symptoms clusters was rather weak. This result might be explained by the different item loadings of the Turkish version of the scale. On the other hand, neither depressive symptoms cluster was significantly correlated with the mixed symptoms cluster. This is an expected finding, as depressive and mixed symptoms clusters tend to represent unrelated aspects of bipolar depression.

The only item that failed to correlate significantly with the total score of the BDRS was item 16, i.e. irritability. This item was found to load in the psychological depressive symptoms cluster. This is in line with Berk et al.'s study (2007) [9], but the same item also failed to correlate with any of the other rating scales. Item 16 was also reported to have the weakest item–total score correlation in the study by Shabani et al. (2010) [10], and the authors of that study claimed that irritability may not be a symptom for all bipolar spectrum disorders, which was also demonstrated by Perlis et al. (2009) [21]. Therefore, the scoring of item 16 may be problematic, and further studies specifically investigating the effect of irritability in bipolar depression should be undertaken to overcome this issue.

The only item that showed no significant ICC was item 19, i.e. increased speech. This item also had a very low interrater reliability in Berk et al.'s study [9], which implies that raters might interpret patients' reports of increased speech in a subjective way. This is also important to emphasize the need of a standardized rating scale manual, which is available for the BDRS.

The items which formed the clusters differed from the previous studies. Factor 1, i.e. somatic depressive symptoms cluster, consisted of items 1–7, and item 9; factor 2, i.e. psychological depressive symptoms cluster, consisted of items 10–14, and item 16; factor 3, i.e. mixed symptoms cluster, consisted of item 8, item 15 and items 17–20. In Berk et al.'s study [9], item 8, i.e. anxiety, loaded in the psychological depressive symptoms cluster, but this Turkish sample study showed that anxiety loaded in the mixed symptoms cluster. This discrepancy may be explained by the clinical picture of anxiety, which may reflect an agitated state of the patient, and therefore anxiety may be regarded as a feature of excitement, which is closely related to mixed symptoms. Berk et al.'s study [9] also demonstrated that item 4, i.e. social impairment, and item 9, i.e. anhedonia, loaded on different depressive symptom clusters than the present study. Although these two clinical features are conventionally grouped together under the psychological depressive symptoms cluster, because these features are also strongly related to motivation and anergia, it is a rational expectation that these features can also be grouped under the somatic depressive symptoms cluster.

Strengths of the study include the fact that three different sites were involved with a wide range of individuals with differing levels of severity presenting to these sites. This is

also the first bipolar depression specific rating scale to be investigated in a Turkish population, and the cultural differences between the Turkish sample and the Western world might provide insight into the rating of individual items of the scale.

Some limitations of the study might be summarized as follows: The sample size of 81 was relatively small for factor analysis of a 20-item scale, and the subgroup for which interrater reliability ratings was available was even smaller. The examination of the scale in the subtypes of bipolar disorder was also not undertaken. Also, the study had a cross-sectional design, and the patients were not evaluated whether the severity of bipolar depression was sensitive to change with treatment.

This is the first Turkish scale tailored to measure the severity of bipolar depression. The scale includes items to rate mixed features, and it is sensitive to many phenomenological elements encountered in bipolar depression, which may be overlooked by the conventional rating scales developed for unipolar depression. This study provides further evidence of the validity and reliability of the BDRS, with good internal validity, strong interrater reliability, and moderate to strong correlations with other depression rating scales.

Acknowledgment

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