The Mood Spectrum and Temperamental Instability in Unipolar and Bipolar Disorder

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ABSTRACT

Background: The current categorical split of mood disorders in bipolar (BP) disorders and depressive disorders has recently been questioned. The presence of a significant number of manic/hypomanic symptoms in patients with recurrent unipolar depression seems to challenge the traditional dichotomy of unipolar-BP disorder. Two highly unstable personality features, i.e., the cyclothymic temperament (CT) and borderline personality disorder, have been found to be more common in BP disorder than in major depressive disorder. Aim: The aim was to assess the distributions of the number of mood spectrum, CT, and borderline personality items between two groups. Finding no bimodal distribution (a “zone of rarity”) of these items would support a continuity between the two disorders. Methods: Forty euthymic BP disorder patients and forty unipolar depression patients were administered the Structured Clinical Interview for the Mood Spectrum, which assesses lifetime symptoms, traits, and lifestyles that characterize threshold and subthreshold mood episodes. CT was assessed using Temperament Evaluation of Memphis, Pisa, Paris and San Diego-A relative to CT and borderline personality trait (BPT) was assessed using Structured Clinical Interview for DSM Disorders II personality questionnaire relative to BPT. The distribution of the number of CT and BPT items was studied by Kernel density estimate. Result: Patient with recurrent depression endorsed manic/hypomanic items though less than BP group. However, the Kernel density estimates distributions of the number of hypomanic/manic items, CT and BPT items in the entire sample had a normal-like shape (i.e. no bimodality). Conclusion: Normal-like curves in the distributions of mood symptoms, number of CT and BPT items in the entire sample, suggest significant amount of overlap of these characteristic in both the groups. Using the bimodality approach, continuity between BP and major depressive disorder (MDD) seems to be supported, questioning the current categorical splitting of BP and MDD based on classic diagnostic validators.

Key words: Bipolar disorder, mipoal II disorder, major depressive disorder, mixed depression

INTRODUCTION

The current diagnostic systems split mood disorders categorically in bipolar disorders and depressive disorders,¹,² on the basis of classic diagnostic validators, such as age at onset and family history.³ Recent studies have instead supported a continuity/spectrum of mood disorders, including overlapping and dimensional...
disorders ranging from bipolar I (BP-I) and BP-II disorders to major depressive disorder (MDD), following Kraepelin’s unitary view of mood disorders.

The presence of a significant number of manic/hypomanic items in patients with recurrent unipolar depression seems to challenge the traditional unipolar-BP dichotomy and bridge the gap between these two categories of mood disorders. The mood spectrum approach hypothesizes that a unitary and continuous approach to the assessment of both manic-hypomanic and depressive symptoms coupled with the longitudinal, lifetime perspective offered by changes in management of these disorders, might better conform to clinical reality, and lead to more refined approaches to treatment. The mood symptoms are assessed using Structured Clinical Interview for the Mood Spectrum (SCI-MOODS) which assesses lifetime symptoms, traits, and lifestyles that characterize threshold and subthreshold mood episodes as well as “temperamental” features related to mood dysregulation.

According to Kraepelin, the disorders united in his “manic-depressive insanity” (illness) (manic/hypomanic states, depressive states, mixed states, fundamental states) were “without sharp boundaries.” A “permanent morbid state” (“fundamental states”) continuing in the intervals between the “attacks” was “the foundation of the whole morbid state” (i.e., “manic-depressive insanity”). He described several fundamental states (temperaments). Special value was given to the cyclothymic temperament (CT) seen as “the inevitable introduction” to manic/depressive insanity. CT was defined as “frequent, more, or less regular fluctuations of the psychic state to the manic or to the depressive side.” Akiskal has defined operationally the diagnostic criteria of CT, including items describing long-term, high instability of mood, thinking, and behavior in several domains. CT can be assessed using the Temperament Evaluation of Memphis, Pisa, Paris and San Diego-A (TEMPS-A) questionnaire.

Another highly unstable personality is borderline personality disorder (BPD), mainly defined by symptoms related to affective instability and to impulsivity. The clinical pictures of CT and of BPD partly overlap. These two personality features closely match Kraepelin’s concept of CT. CT and BPD have been found to be much more common in BP disorder than in MDD (Benazzi, 2000) suggesting that these personality features could distinguish the two disorders.

According to Kendell and Jablensky, finding a bimodality in distribution (a “zone of rarity”) of distinguishing clinical features between two related syndromes would support a categorical distinction and no bimodality would support continuity.

In the present study, we measured the mood symptoms by SCI-MOODS and we studied whether the patients with recurrent major depression without discrete lifetime hypomanic episodes nonetheless reported lifetime hypomanic/manic symptoms. We further explored distribution of total lifetime manic/hypomanic items and total depressive items to see whether they are uniformly distributed among the two groups.

We also measured cyclothymic temperament (CT) and borderline personality trait (BPT) simultaneously using TEMPS-A relative to CT and Structured Clinical Interview for DSM Disorders II (SCID II) personality questionnaire (PQ) relative to BPT, respectively, and assessed the distributions of the number of CT and borderline personality items between BP and unipolar disorders patient.

Finding no bimodal distribution (a “zone of rarity”) of these items would support continuity between the two disorders.

METHODS

The study was carried out in the Institute of Psychiatry, Kolkata, in patients coming to OPD. The present study was a hospital-based, cross-sectional study.

Sample

The study was conducted on forty euthymic BP patients and forty unipolar depression patients diagnosed as per Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision. Patients were in the age range of 18–60 years who were able to communicate properly and give informed consent and reliable information. The patients with general medical condition, neurological disorder, mental retardation, substance-related disorders, and other associated Axis-I comorbid diagnosis were excluded from the study.

Assessment instrument and procedure of data collection

The protocol was approved by the Ethics Committee of Institute of Postgraduate Medical Education and Research, Kolkata. The process of data collection was begun with an explanation to the patients about the aim and procedure of the study. Informed consent was obtained from all participants after explaining the details of study. A specially designed semistructured pro forma was used to obtain sociodemographic data and clinical variables from the patients themselves and the informants. All the patients were first rated on
YMRS[18] and HAMD[19] to confirm that they were in their euthymic state.

SCI-MOODS (Fagiolini et al. 2002), SCID-II PQ.[20] and TEMPS-A relative to CT[21] were applied one by one.

SCI-MOODS is an instrument that allows for the simultaneous assessment of both overt and subtle components of depression and mania along a continuum of diverse psychopathological dimensions, different levels of mood dysregulations. The MOODS instruments focus on the presence of manic and depressive symptoms, traits, and lifestyles that characterize the “temperamental” affective dysregulations that make up both fully syndromal and subthreshold mood disturbance. SCI-MOODS instruments consist of 161 items coded as present or absent for one or more periods of at least 3–5 days through the patient’s lifetime or over the past week or month and organized into four domains, (1) moods, (2) energy, (3) cognition, (4) rhythmicity. Clinician version of this scale was used in this study.

SCID-II PQ[20] relative to borderline personality is a part of SCID-II PQ having fifteen yes, no type of questions to assess BPT TEMPS-A relative to CT[21] is a 17-item yes, no type of autoquestionnaire and was used to measure CT of the patient in this study.

Statistical analysis
The statistical analyses were done with the help of Statistical Package for Social Sciences-13 (SPSS-13, (SPSS Inc., Chicago, IL)) and STATA Statistical Software, Release 11.2 (Stata Corporation, TX, USA, 2003). P values were two-tailed, and alpha level was set at 0.05, given the exploratory nature of the study. In both the groups, the sociodemographic variables (both continuous and discrete data) were summarized with the help of frequency, percentages, and mean and standard deviation as per the applicability. For measuring the difference among various sociodemographic and clinical variables, Chi-square was applied for discrete variables. For continuous variables, t-test was applied. The distribution of the number of CT, BPT, and MOODS items was studied by the univariate Kernel density estimation,[22] using the default width of STATA (to avoid any possible bias related to the choice of a width more or less likely to show a normal-like distribution). For correlation, parametric test – Pearson’s correlation coefficient – (r) was used.

RESULTS
Table 1 shows the comparison of sociodemographic variables (the categorical one as well as continuous variable, i.e., age) between the two groups (BP and unipolar disorders). They were comparable with

| Table 1: Sociodemographic characteristics of euthymic bipolar patient (n=40) and patient with major depressive disorder (n=40) |
|---------------------------------------------------------------|
| Variables | Bipolar disorders (n=40) | Major depressive disorder (n=40) | χ² and t | df | P     |
|-----------|-------------------------|-------------------------------|----------|----|-------|
| Sex, n (%) |                         |                               |          |    |       |
| Male      | 20 (50.0)               | 16 (40.0)                     | 0.808    | 1  | 0.5   |
| Female    | 20 (50.0)               | 24 (60.0)                     |          |    |       |
| Education, n (%) |               |                               |          |    |       |
| Illiterate | 6 (15.0)               | 1 (3.3)                       | 0.364    | 3  | 0.948 |
| Primary   | 27 (67.5)               | 15 (50.0)                     |          |    |       |
| Secondary | 4 (10.0)                | 4 (13.3)                      |          |    |       |
| Graduate  | 3 (7.5)                 | 10 (33.3)                     |          |    |       |
| Occupation, n (%) |                 |                               |          |    |       |
| Employed  | 8 (20.0)                | 3 (7.5)                       | 4.033    | 2  | 0.133 |
| Unemployed | 10 (25.0)              | 7 (17.5)                      |          |    |       |
| Student, homemaker, laborer | 22 (55.0) | 30 (75.0)                     |          |    |       |
| Marital status, n (%) |                |                               |          |    |       |
| Married   | 27 (67.5)               | 35 (87.5)                     | 4.588    | 1  | 0.032*|
| Single    | 13 (32.5)               | 5 (12.5)                      |          |    |       |
| Family type, n (%) |                  |                               |          |    |       |
| Nuclear   | 25 (62.5)               | 30 (75.0)                     | 1.455    | 1  | 0.228 |
| Joint     | 15 (37.5)               | 10 (25.0)                     |          |    |       |
| Economic status (Rs.), n (%) |                 |                               |          |    |       |
| 5000 and below | 35 (87.5) | 30 (75.0)                     | 1.455    | 1  | 0.228 |
| >5000     | 5 (12.5)                | 10 (25.0)                     |          |    |       |
| Religion, n (%) |                 |                               |          |    |       |
| Hindu     | 31 (77.5)               | 28 (70.0)                     | 0.581    | 1  | 0.446 |
| Muslim    | 9 (22.5)                | 12 (30.0)                     |          |    |       |
| Age (in years), mean±SD |               |                               |          |    |       |
| 18-60     | 31.75±8.47             | 37.40±10.621                  | t: 2.629  | 78 | 0.010**|

*P<0.05 – statistically significant; **P<0.01 – statistically significant; ***P<0.001 – statistically significant. SD – Standard deviation
respect to sex ($P = 0.5$), education ($P = 0.948$), occupation ($P = 0.133$), family type ($P = 0.228$), economic status ($P = 0.228$), and religion ($P = 0.446$). Mean age was significantly higher for unipolar group ($37.40 \pm 10.621$) as compared to BP group ($31.75 \pm 8.471$) ($P = 0.010$).

Table 2 shows the comparison of clinical variables between the two groups. Age of onset was higher in case of unipolar ($31.97 \pm 10.32$) as compared to BP ($25.57 \pm 7.32$) disorder ($P = 0.002$). BP patients were having more recurrences as compared to unipolar patients ($P = 0.019$).

Table 3 shows the frequency of CT and BPT items in two patient groups. Scores on both of them are higher in BP group than unipolar group, but it has not reached the statistical significance ($P = 0.287$ for CT, $P = 0.182$ for BPT).

Table 4 shows the frequency of mood spectrum items endorsed by the patient in both the groups. The mean number of items endorsed by the patient with BP disorder was $52.55 \pm 6.27$ and unipolar disorder was $49.27 \pm 9.46$ [Figures 1-4].

**DISCUSSION**

**Discussion of the methods**

Polarity is the pillar of the current categorical unipolar-BP division of mood disorders. However, genetic studies on these polarity-based phenotypes have been largely inconclusive. Recent clinical and epidemiological studies seem to support more of a continuum than a splitting of mood disorders. Age-at-onset and recurrence have been suggested to be more clinically and genetically useful in the phenotyping of mood disorders (Benazzi, 2009).

Hence, we took the approach of measuring unstable personality trait (CT and BPT) together with mood spectrum to see their distribution in entire population.

According to Kendell and Jablensky, the current best approach to the categorical versus dimensional classification of mental disorders would be to study if there are “zones of rarity” (i.e., bimodality) in the distribution of some clinical features between two related syndromes. Univariate Kernel density estimation was done to study zone of rarity. While histograms provide accurate pictures of categorical variables, smooth density functions (Kernel estimators) are better to represent noncategorical (continuous) variables. Kernel estimators can be regarded as nonparametric histogram smoothers which can reveal skewness and multimodality.

**Discussion of result**

Age of onset was significantly higher in unipolar group

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**Table 2: Clinical characteristics of the bipolar and unipolar groups**

| Variables                        | Mean±SD in Bipolar Disorder | Mean±SD in Unipolar Disorders | $t$  | df   | $P$   |
|----------------------------------|-------------------------------|--------------------------------|------|------|-------|
| Age of onset in years            | $25.57\pm7.32$               | $31.97\pm10.32$               | 3.198| 78   | 0.002**|
| Number of episodes               | $3.82\pm2.36$                | $2.72\pm1.70$                 | 2.385| 78   | 0.019* |
| Total duration of the illness in years | $6.17\pm4.92$               | $5.42\pm6.05$                 | 0.607| 78   | 0.545  |

*$P<0.05$ – statistically significant; $**P<0.01$ – statistically significant. SD – Standard deviation.

**Table 3: Scores on the Structured Clinical Interview for DSM Disorders II personality questionnaire for borderline personality trait and Temperament Evaluation of Memphis, Pisa, Paris, and San Diego A for computed tomography in euthymic bipolar and unipolar patients**

| SCID personality questionnaire for BPT | TEMPS A for CT |
|---------------------------------------|----------------|
| Mean±SD                               | Mean±SD       |
| Range                                 | Range         |

- **Bipolar disorder**: 7.3±1.97, 2-11; 9.57±2.67, 2-14
- **Major depressive disorder**: 6.62±2.47, 1-13; 8.92±2.73, 3-14

SD – Standard deviation; BPT – Borderline personality trait; TEMPS – Temperament Evaluation of Memphis, Pisa, Paris, and San Diego; CT – Computed tomography.

**Table 4: Scores on the structured clinical interview for the spectrum of mood disorders in both the groups**

|                          | Bipolar disorder | Major depressive disorder |
|--------------------------|------------------|--------------------------|
| Mean±SD                  | Mean±SD          |
| Range                    | Range            |

- **Total manic/hypomanic component**: 25.52±2.88, 20-31; 18.90±3.96, 13-30
- **Total depressive component**: 19.02±3.533, 11-28; 21.20±4.61, 15-42
- **Psychosis**: 1.10±1.64, 0-10; 0.35±0.62, 0-2
- **Suicidality**: 0.50±0.75, 0-2; 0.62±0.86, 0-3
- **Rhythmicity**: 8.00±2.34, 4-13; 9.17±2.45, 5-14
- **Total score**: 52.55±6.27, 40-65; 49.27±9.46, 36-82

SD – Standard deviation.

**Figure 1**: Kernel density estimates distribution of the number of cyclothymic temperament items in the entire sample (a normal curve is superimposed).
as compared to BP. Our finding is similar to finding from cross-national epidemiology of major depression and BP disorder[24] and other studies.[25,26] Recurrence rate was more in BP disorder as compared to unipolar disorder. There was a significant difference in marital status in both the groups. In BP group, there was more unmarried member. This can be due to early age of onset and higher rate of recurrences in BP group and also due to more psychosis associated with BP disorders.

CT and BPD are clinical features shown to distinguish BP and MDD and have been found much more common in BP patient (Benazzi, 2000).[14,12,13] On the basis of these previous studies, the distribution of the number of CT and BPT items was expected to be bimodal. Instead, in the present study, it was shown that the number of CT and BPT items had a normal-like distribution. Finding no “zone of rarity” in the distribution of these items thus support continuity between BP and unipolar disorder which is similar finding with other studies (Benazzi, 2005).

We also investigated the lifetime mood spectrum characteristics of the patients using the SCI-MOODS disorders. Symptoms such as paranoid ideation and auditory hallucinations were significantly more frequent in BP patients than in unipolar patients, which is in line with findings from literature.[7,27] Patient with MDD endorsed lifetime manic/hypomanic items though less than BP disorder. However, when distribution of total manic/hypomanic items was studies using Kernel density plot, it showed no bimodality (no zone of rarity) again supporting continuity between unipolar and BP disorder. Similar result was obtained when distribution of total depressive item was studied.

CONCLUSION

The current categorical split of mood disorders in BP disorders and depressive disorder seems to be questioned by study results. However, using classic diagnostic validators,[3] differences were found between BP disorder and MDD on age at onset, course (frequency of recurrences), family history, and depression clinical features.[25,26,28] These differences on diagnostic validators would support a categorical distinction between BP disorder and MDD.[3] The study results may have been related to the significant subgroup of “pseudounipolar” MDD shown to have BP signs and a closer link to BP-II than to “pure” MDD on BP validators (such as age at onset and BP family history).[5,7,29] At present, it is not clear which is the best approach for studying the categorical versus dimensional classification, i.e., looking for bimodality of distinguishing features or using classic diagnostic validators. The results of the present study seem to question the validity of the current splitting of BP and unipolar disorder by following the bimodality approach.
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Conflicts of interest
There are no conflicts of interest.

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