Psychopathology

Early Mood Swings as Symptoms of the Bipolar Prodrome: Preliminary Results of a Retrospective Analysis

Seza Özgürdal[a] Elisabeth van Haren[a] Marta Hauser[b] Andreas Ströhle[b]
Michael Bauer[c] Hans-Jörg Assion[a] Georg Juckel[a]

[a]Department of Psychiatry, Ruhr University Bochum, LWL University Hospital Bochum, Bochum,
[b]Department of Psychiatry, Charité Mitte, Berlin, and [c]Department of Psychiatry, TU Dresden, Dresden, Germany

Abstract

Background/Aims: Temperament and mood swings are promising indicators for the characterization of mood spectrum vulnerability. The aim of this study was to investigate the relationship between affective temperament and mood swings in bipolar disorder. We explored these clinical features retrospectively. ***Methods:*** Patients who met the criteria for bipolar I disorder were enrolled in the study. Exclusion criteria were partial remittance and a full affective or psychotic episode. Data concerning illness and family history, mood swings (semistructured interview for mood swings) and depression (Beck, Depression Inventory) were obtained. We examined premorbid temperament with the validated German version Temps-M of the original version Temps-A. Patients with and without mood swings were compared with respect to the dominant temperament. ***Results:*** Out of 20 bipolar patients, 6 subjects reported mood swings prior to the onset of affective disorder. Subjects with mood swings prior to the onset of bipolar disorder significantly correlated with a positive family history of affective disorders. Concern-ing cyclothymic and irritable temperament, bipolar affective patients with mood swings had higher scores. No differences were found between males and females. ***Conclusion:*** Our findings go in line with previous results that mood swings, as represented by the cyclothymic temperament, are present prior to the first onset of bipolar disorder in a subset of patients. These traits may represent vulnerability markers and could presumably be used to identify individuals at high risk for developing bipolar disorder in order to prevent this illness. Further studies are indicated to clarify the correlation with genetic risk factors.

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Introduction

Bipolar disorders vary in their prevalence due to the applied diagnostic criteria. However, if all bipolar spectrum disorders were taken into account, the prevalence rates are between 2.6 and 8.3% [1, 2]. Besides their high

H.-J.A. and G.J. contributed equally.

Prof. Georg Juckel, MD, PhD
Department of Psychiatry, Ruhr University Bochum, LWL Hospital
Alexandrinenstrasse 1
DE–44791 Bochum (Germany)
Tel. +49 234 5077 201, Fax +49 234 5077 204, E-Mail georg.juckel@wkp-lwl.org

incidence rate, bipolar disorders have major impacts on the social functioning of affected individuals. There have been many approaches to identify high-risk subjects of the disorder. Prodrome characteristics of mania and schizophrenia present themselves with considerable overlap [3]. However, researchers are still not able to identify high-risk subjects according to so-called prodromal or early symptoms. Nevertheless, the identification of individuals in subsyndromal or attenuated symptom 'prodromal' stages of bipolar disorder seems to be an underresearched area that holds considerable promise and therefore deserves increased attention [4]. Among the known risk factors such as genetic transmission and depressive mood, the most prominent one seems to be 'mood swings' [5, 6]. However, little is known about this milder form of 'ups and downs', and it should not be confused with cyclothymic disorder. Moreover, it is unknown as to whether these mood swings are related to an underlying temperament, especially referring to the cyclothymic type, or whether they represent distinct prodromal symptoms [7, 8].

The specific characteristics of mood swings as referred to within the cyclothymic temperament are defined as personality characteristics and therefore have their onset in early adulthood and can remain stable for years. Thus, it should be examined whether there were any subjectively perceived changes in the form of more frequent or severer mood swings prior to the first onset of a bipolar disorder than the 'ups and downs' which a person has experienced before.

The aim of the study was to investigate whether bipolar patients retrospectively reported any 'ups and downs' prior to the onset of the disease, and to further define the onset and nature of these mood swings. For the purpose of this study, a semistructured interview for mood swings was constructed according to the items of cyclothymic temperament concentrating on mood swings, as cyclothymic personality characteristics seem to be present premorbidly in a subset of bipolar patients [9]. Thus, this study aimed to further examine the phenomena of mood swings as presented in the cyclothymic temperament by exploring criteria such as quality of being new/different, duration, intensity and frequency of occurrence of mood swings prior to the onset of the first episode, in order to investigate whether reported mood swings are related to an underlying specific temperament or whether they build up distinct prodromal symptom criteria. Additionally, the patients were asked to retrospectively evaluate their premorbid temperament on the Temps-M [7, 10, 11].

Table 1. Demographic variables of the participants

	Patients with bipolar I diagnosis (n = 20)
Mean age ± SD, years	43.85 ± 9.38
Mean age at onset ± SD, years	32.61 ± 7.09
Gender (male/female)	7; 13
Mean duration of illness ± SD, years	11.89 ± 6.97
Family history of affective disorders (first-grade relatives; yes/no)	7; 11

Methods

Participants

All participants were recruited either directly at the Department of Psychiatry, Ruhr University, Bochum, or in self-regulating communities in Bochum, Germany. Twenty-nine patients with bipolar I disorder were screened for the study, but only the data of 20 subjects could be used for the analysis. Nine patients were excluded due to the severity of illness measured by their high scores on the Beck Depression Inventory [12] – above 9 points – and because they displayed psychotic or manic behavior during the interview. The remaining 20 participants, 13 females and 7 males, with a mean age of 43.85 ± 9.38 years, were diagnosed as having bipolar I disorder according to ICD-10. The duration of illness was defined as the time period between the first hospitalization, due to a manic or depressive episode, and the date of the interview, with a mean of 11.89 ± 6.97 years. For demographical data see table 1. The patients were declared as remitted according to their psychopathological state and their results of the Beck Depression Inventory (below 9 points) and received medication at the time of testing. They were asked to answer the Temps-M retrospectively. After that, the patients were given the half-structured and demographic interview. All probands gave their written informed consent to take part in the assessment. The study was approved by the ethics committee of the Ruhr University, Bochum.

Instruments

Semistructured Interview for Mood Swings

The semistructured interview for mood swings built up a retrospective requirement of the questions whether there were frequent 'ups and downs' in mood prior to the onset of the disease and whether there had been subjectively perceived changes in the quality (new/different) of mood swings prior to the first manifestation. The definition of mood swings was presented according to the items focusing on mood within the cyclothymic temperament (Temps-M items: 8: 'I get sudden shifts in mood and energy'; 10: 'my mood changes often for no reason'). In case of any subjectively experienced changes, further items followed for specific timing of onsets, duration and frequency as well as quality and intensity of mood, for instance whether the mood shifts produced any subjective burden. In case of a negative response to the questions mentioned above, the person was asked to give report about whether there had been any changes in mood at all prior to the disease. Then the mood and possible behavioral (e.g. changes in

Table 2. Dominant affective temperaments of the patient sample according to the average scores in Temps-M and number of patients with reported mood swings

Dominant temperaments within the Temps-M	Patients with bipolar I diagnosis (n = 20)
Depressive temperament	1
Cyclothymic temperament	4
Hyperthymic temperament	1
Irritable temperament	3
Anxious temperament	2
Mood swings (yes/no)	6; 14

Table 3. Correlation coefficients (r) of mood swings and temperaments

Temperaments	Mood swings
Family history of affective disorders (first-grade relatives)	r = 0.509*
Cyclothymic temperament	r = 0.551**
Irritable temperament	r = 0.517*

* p < 0.05: significant difference; ** p < 0.01: significant difference.

activity, social activity) and subjective manifestations (e.g. low self-opinion versus overconfidence) were further specified. An English version of the semistructured interview for mood swings is provided in Appendix A.

Mood instability within the course of illness was also retrospectively assessed. Besides that, the patients were asked to report any other first signs of the illness. Furthermore, all the subjects were asked about their family history of mood disorders.

Temps M
The patients were asked to fill in the German language condensed version of Temps-A [13] (known as Temps-M) constructed and validated by Erfurth et al. [14]. The subjects had to give retrospective self-reports about depressive, hyperthymic, irritable, cyclothymic and anxious traits concerning the time before the first hospitalization. The shorter version Temps-M includes 35 items from the original 110 and requires answers which have to be assessed on a 5-point anchored Likert-type scale with a range from 1 to 5 [14].

Data Analysis
Statistical analyses were performed with SPSS for Windows 15.0 software. Quantitative data were presented as mean values (±SD). Spearman correlations were done between mood swings and types of temperament as well as family history of affective

disorders and types of temperament. Correlations of these dimensions were computed with clinical characteristics (duration of illness, age at onset) and sociodemographic data using 2-sided Spearman ρ for dichotomous variables. Student's t test was applied in order to reveal if there were gender differences. Statistical analyses were tested for significance at an α level of 0.05.

The semistructured interview provides quantitative and qualitative data. The patients' answers to open questions were collected by nonnumerical written notes. Manual interview analysis was done by counting and arranging the answers.

Results

Quantitative Data
The average scores of the Temps-M, sorted by the different types of temperament for all patients with values above 70% of the total result, were regarded as above average and therefore determined as the dominant temperament. A cutoff score of 70% represents values of 2 standard deviations above average and was chosen because of the lack of a control group. Table 2 gives an overview of the number of dominant temperaments in the patient sample. There was no prevailing temperament type in the present sample of bipolar patients.

Only 6 out of 20 patients reported mood swings prior to the onset of affective disorder. There was a significant positive correlation between reported mood swings and family history of bipolar disorders (table 3). Moreover, significant positive correlations were found between reported mood swings and the values for cyclothymic and irritable temperament. A positive correlation was also found between mood swings and hyperthymic temperament measured by the Temps-M (table 3). Student's t test revealed no gender differences concerning the distribution of temperaments.

Qualitative Data
As mentioned above, only 6 patients reported frequent 'ups and downs', which they were aware of, prior to the first hospitalization. These probands described mood swings which are characteristic of the cyclothymic temperament, that means that they gave a positive response to at least one of both cyclothymic items and did not experience any remarkable changes in the perceived quality of mood changes. Whereas mood swings prior to the onset of the disease were experienced as 'mood changes for no reason', shifts in mood and energy after the first episode of illness could be related to life events and lasted for a period of time with distinct onsets and offsets in this group of probands.

Table 4. First depressive and manic episodes

	Bipolar I patients with lifetime mood swings (n = 6)	Bipolar I patients without lifetime mood swings (n = 14)
First episode depressive	4	10
First episode manic	2	4

The remaining 14 patients in this study reported experiencing instable mood after the first episode of depression or mania, with intense and long-lasting high or low mood for the first time in their lives. As shown in table 4, the bipolar disorder began with a depressive episode in this sample. Table 4 displays the initial episodes of the bipolar disorders for all patients. Other aspects of the first signs of this illness could not be evaluated as the sample size was too small to establish any considerable criteria.

Discussion

Although previous bipolar disorder risk studies reported mood dysregulations in terms of 'ups and downs' as the strongest risk factor [7, 6] and could display cyclothymia or cyclothymic temperament as predictors of bipolar disorders [9], our data show that bipolar I disorder does not necessarily begin with mood swings or cyclothymic temperament. Most of the patients in the present study reported the lack of such fluctuations in mood prior to the onset of the disorder.

It should be considered that the results obtained in the present study are limited to bipolar I disorder. As suggested by Akiskal et al. [5], it could be most likely that a cyclothymic affective condition becomes rather a bipolar II disorder than a bipolar I disorder, which could explain why the majority of the bipolar patients within the present study reported a lack of 'ups and downs'. Interestingly, the patients with mood swings had a significantly higher familial risk of affective disorder compared to those without mood swings. These findings are linked to the hypothesis of mood swings as a characterization of mood spectrum vulnerability. It is assumed that mood swings and temperament as a primary phenotype is genetically transmitted. Mood swings hint at the underlying neurobiology and the genetic risk factors. Positive correlations between family history of affective disorders and mood swings in this study are consistent with previous reports of a familial basis between cyclothymia or mood swings and bipolar I disorder [15, 16]. Thus, it could be speculated that a cyclothymic temperament occurring with familial risk increases the likelihood of bipolar disorder; some authors used the term 'cyclotaxia' to refer to early symptoms of mania and parental risk according to the definition of 'schizotaxia' in terms of high-risk individuals with early symptoms of schizophrenia and genetic risk [17].

The results of this study suggest that mood swings seem to be more related to the underlying temperament than to bipolar disorder. The data presented in this study show that mood swings were significantly correlated to cyclothymic and irritable temperament. No correlations were obtained between anxious, hyperthymic and depressive temperament and frequent 'ups and downs'. As shown by Blöink et al. [13], the depressive and anxious temperament and the cyclothymic and irritable temperament are closely linked. It is not surprising that mood swings seem to be more related to cyclothymic and irritable temperament, as this finding is in line with theoretical considerations and empirical data which have revealed that they share variance with each other [7, 18].

We could not find a prevailing dominant temperament in this sample of bipolar patients as shown in previous studies [19]. This could be due to the fact that we referred only to extreme values, since our study did not include a control group. In a preliminary report on mixed and pure manic episodes, bipolar patients did not exhibit significantly higher scores with regard to cyclothymic and irritable temperament [20]. In a recently published study, the patients with prior mixed episodes had significantly higher scores with respect to depressive, cyclothymic, irritable and anxious temperament than those who did not experience mixed manic episodes [21]. Other studies have shown that bipolar disorder begins with a depressive episode, and this was also observed in the present sample [22].

One limitation of our study is that we did not have a control group. However, we overcame this problem by only presenting data with a cutoff of 2 standard deviations above average. Moreover, the sample size of the study as well as the group of persons with mood swings were small and could not give answers to the nature of precursor symptoms beside the temperament. It should also be mentioned that the validity and reliability of variables gained by the semistructured interview are not established yet. Further efforts should be made in order to

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explore whether the semistructured interview is a proper way to distinguish the cyclothymic temperament from other precursor symptoms. However, the main aim was to conduct an exploratory inquiry as to whether there were occurrences of mood swings and if so, to examine the nature of these mood swings prior to the disease. The temperament types were also assessed retrospectively. Thus, the effects of the illness could not be controlled, and a recall bias should be considered, although the Temps-M is a standardized questionnaire. In order to respond to this problem, all patients were fully remitted. As the items for the characterization of mood swings were based on 2 items out of the cyclothymic temperament, the correlations between mood swings and the cyclothymic temperament could partly be explained by this overlap, though several other items built up this temperament type: individuals classified as having a cyclothymic temperament can also experience changes in energy and thinking in daily functioning. Thus, it should be mentioned that the results obtained in the present study are preliminary and should serve as information for prospective study purposes.

The main focus of further investigations of bipolar prodrome should be on untypical courses after first depressive episodes such as hypomanic states or new experienced mood shifts into high mood. It seems that 'frequent ups and downs', known as a predictor of the bipolar disorder, make up the cyclothymic temperament. However, as mentioned before, the results are preliminary, especially concerning that they only refer to bipolar I disorder. Further prospective studies are needed to investigate the role of cyclothymic temperament as a predictor of bipolar disorders, particularly in the context of familial risk as well as bipolar II disorder. Therefore, studies should focus on the genetic risk factors for bipolar disorder in correlation with mood swings as potential prodromal symptoms of affective illness.

Appendix A

Many people with bipolar disorders report lifetime mood swings, even before the first onset of an episode of the bipolar mood disorder. We would like to ask you whether you had experienced any remarkable changes in your mood concerning the time before the illness occurred.

(1) Mood swings
(a) I experienced sudden shifts in mood and energy.
  If yes,
  check for any differences prior to the first onset of bipolar disorder → quality of being new/different
    – If changes have occurred, continue with the questions in part 2.
    – If changes occurred after the first episode, note here and go to the questions in part 2.
    – If no changes occurred, note and go to item 1b.
  If no,
  check for first onset of mood swings, and then continue with the questions in part 2.
(b) My mood changed often for no reason.
  If yes,
  check for any differences prior to the first onset of bipolar disorder → quality of being new/different
    – If changes have occurred, continue with the questions in part 2.
    – If changes occurred after the first episode, note here and go to the questions in part 2.
    – If no changes occurred, note and quit here.
  If no,
  check for first onset of mood swings and then continue with the questions in part 2.

(2) Quality of changes
(a) Could you please describe what the difference was/how you experienced the difference?
(b) Please specifiy mood (depressive or hypomanic) and note for each episode:
  (1) Onset
  (2) Duration
  (3) Related to life events?
  (4) Intensity (subjective burden)
    (a) Failure of mood regulation strategies?
    (b) Behavioral manifestations (e.g. changes in activity)
    (c) Subjective manifestations (exaggerated self-opinion or a low self-opinion)
  (5) Frequency: (a) monthly, (b) weekly, (c) daily changes

References

1 Bauer M, Pfennig A: Epidemiology of bipolar disorders. Epilepsia 2005;46(suppl 4):8–13.
2 Goldney RD, Fisher LJ, Dal Grande E, Taylor AW, Hawthorne G: Bipolar I and II disorders in a random and representative Australian population. Aust NZ J Psychiatry 2005;39:726–729.
3 Correll CU, Penzner JB, Frederickson AM, Richter JJ, Auther AM, Smith CW, Kane JM, Cornblatt BA: Differentiation in the preonset phases of schizophrenia and mood disorders: evidence in support of a bipolar mania prodrome. Schizophr Bull 2007;33:703–714.
4 Correll CU, Penzner JB, Lencz T, Auther A, Smith CW, Malhotra AK, Kane JM, Cornblatt BA: Early identification and high-risk strategies for bipolar disorder. Bipolar Disord 2007;9:324–338.

5 Akiskal HS, Maser JD, Zeller PF, Endicott J, Coryell W, Keller M, Warshaw M, Clayton P, Goodwin F: Switching from unipolar to bipolar II: an 11-year prospective study of clinical and temperamental predictors in 559 patients. Arch Gen Psychiatry 1995;52:114–123.

6 Angst J, Gamma A, Endrass J: Risk factors for the bipolar and depression spectra. Acta Psychiatr Scand Suppl 2003;418:15–19.

7 Akiskal HS, Brieger P, Mundt C, Angst J, Marneros A: Temperament and affective disorders: the Temps-A Scale as a convergence of European and US-American concepts. Nervenarzt 2002;73:262–271.

8 Hauser M, Pfennig A, Özgürdal S, Heinz A, Bauer M, Juckel G: Early recognition of bipolar disorder. Eur Psychiatry 2007;22:92–98.

9 Kochmann FJ, Hantouche EG, Ferrari P, Lancrenon S, Bayart D, Akiskal HS: Cyclothymic temperament as a prospective predictor of bipolarity and suicidality in children and adolescents with major depressive disorder. J Affect Disord 2005;85:181–189.

10 Erfurth A, Gerlach AL, Hellweg I, Boenigk I, Michael N, Akiskal HS: Studies on a German (Münster) version of temperament autoquestionnaire Temps-A: construction and validation of the brief Temps-M. J Affect Disord 2005;85:53–69.

11 Kesebir S, Vahip S, Akdeniz F, Yüncü Z, Alkan M, Akiskal H: Affective temperaments as measured by Temps-A in patients with bipolar I disorder and their first-degree relatives: a controlled study. J Affect Disord 2005;85:127–133.

12 Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J: Beck Depression Inventory. Bern, Huber, 1961.

13 Blöink R, Brieger P, Akiskal HS, Marneros S: Factorial structure and internal consistency of the German Temps-A scale: validation against the NEO-FFI questionnaire. J Affect Disord 2005;85:77–83.

14 Erfurth A, Arolt V: The spectrum of bipolar disorders. Nervenarzt 2003;74:55–70.

15 Klein DN, Depue RA, Slater JF: Inventory of cyclothymia. IX. Validation in offspring of bipolar I patients. Arch Gen Psychiatry 1986; 43:441–445.

16 Evans L, Akiskal HS, Keck PE Jr, McElroy SL, Sadovnick AD, Remick RA, Kelsoe JR: Familiality to temperament in bipolar disorder: support for a genetic spectrum. J Affect Disord 2005;85:153–168.

17 Findling RL, Youngstrom EA, McNamara NK, Stansbrey RJ, Demeter CA, Bedova D, Kahana SY, Calabrese JR: Early symptoms of mania and the role of parental risk. Bipolar Disord 2005;7:623–634.

18 Placidi GF, Signoretta S, Liquori A, Gervasi R, Maremmani I, Akiskal HS: The semistructured affective temperament interview (Temps-I): reliability and psychometric properties in 1010 14- to 26-year-old students. J Affect Disord 1998;47:1–10.

19 Akiskal KK, Savino M, Akiskal HS: Temperament profiles in physicians, lawyers, managers, industrialists, architects, journalists, and artists: a study in psychiatric outpatients. J Affect Disord 2005;85:201–206.

20 Brieger P, Roettig S, Ehrt U, Wenzel A, Bloink R, Marneros A: Temps-A scale in 'mixed' and 'pure' manic episodes: new data and methodological considerations on the relevance of joint anxious-depressive temperament traits. J Affect Disord 2003;73:99–104.

21 Röttig D, Röttig S, Brieger P, Marneros A: Temperament and personality in bipolar I patients with and without mixed episodes. J Affect Disord 2007;104:97–102.

22 Bauer MS, Simon GE, Ludman E, Unutzer J: Bipolarity in bipolar disorder: distribution of manic and depressive symptoms in a treated population. Br J Psychiatry 2005;187:87–88.