

Research report

## Temperament in the clinical differentiation of depressed bipolar and unipolar major depressive patients

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### Abstract

**Objective:** To examine differences in temperament profiles between patients with recurrent unipolar and bipolar depression. **Method:** Depressed individuals with recurrent major depressive disorder (MDD) ( $n=94$ ) and those with bipolar ( $n=59$ ) disorders (about equally divided between types I and II) were recruited by newspaper advertisement, radio and television announcements, flyers and newsletters, and word of mouth. All patients were interviewed using the Structured Clinical Interview for DSM III-R (SCID) and had the severity of their depressive episode assessed by means of the 17-item Hamilton Rating Scale for Depression. All patients filled out the TEMPS-A, a validated instrument. **Results:** Temperament differences between bipolar and MDD patients were examined using MANCOVA. Overall significant effect of the fixed factor (bipolar vs. unipolar) was noted for the temperament scores [Hotelling's  $F_{(5,142)}=2.47$ ,  $p<0.05$ ]. Overall effects were found for age [ $F_{(5,142)}=2.40$ ,  $p<0.05$ ], but not for gender and severity of depression [ $F_{(5,142)}=1.65$ ,  $p=0.15$  and  $F_{(5,142)}=0.66$ ,  $p=0.66$ , respectively]. Dependent variables included the five subscales of the TEMPS-A, but only the cyclothymic temperament scores showed significant between-group differences. **Limitation:** Small bipolar subsample cell sizes did not permit to test the specificity of the findings for bipolar II vs. bipolar I patients. **Conclusion:** The finding that the cyclothymic subscale is significantly elevated in the bipolar vs. the unipolar depressive group supports the theoretical assumptions upon which the scale is based, and suggests that it might become a useful tool for clinical and research purposes.

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### 1. Introduction

The roots of the concept of temperament can be traced back to the beginnings of Western medicine in the 4th century BC, with Hippocrates' seminal de-

scription of the melancholic, phlegmatic, choleric, and sanguine temperaments (Klibansky et al., 1964). Modern concepts of temperament, however, emanate from the work of Kraepelin (1921), who described four “fundamental states”: depressive, manic, irritable and cyclothymic. In his conceptual framework, these states could be viewed as different modalities of subclinical long-term traits of mood disorders.

However, the construct of the “fundamental states” failed to get accepted by mainstream psychiatry until the 1970s, when Akiskal et al. (1977, 1979) managed to rescue it from its relative obscurity. This perspective recognizes the unity of the mood disorders. Since 1960s, influential authors, such as Angst et al. (1973) in Switzerland and Winokur et al. (1969) in the United States, have proposed that, despite sharing many phenomenological aspects, major depressive and bipolar disorders represent fully independent entities. However, studies demonstrating high prevalence of major depression among relatives of bipolar probands have provided increasing support for Akiskal et al.’s (1977) and Depue et al.’s (1981) contention that these disorders are but different clinical expressions of the same underlying pathophysiological mechanisms (Gershon et al., 1982). In particular, Akiskal (1983) conceptualized mood disorders as a clinical continuum he termed the “bipolar spectrum,” extending from subclinical manifestations to full-blown bipolar I disorder and encompassing major and minor depression, dysthymia, cyclothymic disorder, and bipolar II disorder, and beyond.

The other concept of Kraepelin of fundamental importance for mood disorders is that of “temperament,” which appears in the English translations of his work as a synonym for “personal disposition.” This concept was revitalized by Akiskal and others in a neo-kraepelinian perspective. Consistent with this approach, diagnostic criteria for depressive, cyclothymic, hyperthymic and irritable temperament have been conceived as subthreshold expressions of mood disorders (Akiskal et al., 1977, 1979; Depue et al., 1981; Akiskal and Mallya, 1987; Klein, 1990), leading to the development of standardized diagnostic instruments (Depue et al., 1981; Eckblad and Chapman, 1986; Placidi et al., 1998; Akiskal et al., 1998). Later, the generalized anxious temperament was conceptualized and diagnostic criteria were proposed (Akiskal, 1998).

The TEMPS-A is a self-report (auto-)questionnaire, designed to quantify temperament in psychiatric patients and healthy volunteers. Its original 110 items were developed from the diagnostic criteria established by Akiskal and his collaborators (Akiskal et al., 1977, 1979; Akiskal and Mallya, 1987; Akiskal, 1998). Using a principal components analysis with a Varimax rotation, our research group has identified 39 items loading on five factors: depressive, cyclothymic, hyperthymic, irritable, and anxious temperaments. The validation procedures and psychometric properties of the TEMPS-A are described elsewhere (Akiskal et al., 2005a,b, in press).

The present study used the TEMPS-A to examine differences between patients with recurrent unipolar and bipolar depression. We tested the hypothesis that bipolar patients would show higher scores in cyclothymia, hyperthymia, and irritability than unipolar patients. In contrast, the two groups were expected to exhibit comparable scores on the depressive and anxious temperament subscales.

## 2. Patients and methods

Depressed individuals with recurrent major depressive disorder (MDD,  $n=94$ ; 56 men, 38 women; age  $\pm$  S.D. =  $46.04 \pm 10.24$  years); were recruited by newspaper advertisement, radio and television announcements, flyers and newsletters, and word of mouth. Volunteers were telephone screened by trained research center personnel for 30–45 min, and individuals with (a) history of an active alcohol or substance use disorder within the last six months; (b) history of head trauma or seizures; (c) family history of bipolar disorder; and (d) active suicidal ideation were excluded. These patients were selected because they met criteria for research studies conducted by the Mental Health Clinical Research Center at the University of California, San Diego.

Depressed individuals with either bipolar I ( $n=32$ ) or bipolar II ( $n=26$ ) disorders (34 men, 23 women; age  $\pm$  S.D. =  $42.81 \pm 14.07$  years) were originally recruited through the same methods described above for a multicenter genetic study on bipolar disorders. All patients were interviewed using the Structured Clinical Interview for DSM III-R (SCID) by research fellows, psychologists, and research assistants. High

inter-rater reliability was found (Kappa scores ranged from 0.82 to 0.86). Final diagnoses were made by consensus teams led by three of the authors (JCG, MHR, and JRK), using the SCID interview, the clinical impression of the interviewer, and a review of available medical records. Severity of depression was evaluated using the HDRS-17 (Hamilton, 1960). The Kappa scores for raters after the semi-annual HDRS-17 reliability sessions were consistently between 0.82 and 0.88.

After giving written informed consent, patients were asked to complete the TEMPS-A. The questionnaires were then coded using a scoring key created by H.S. Akiskal based on the assumption that the instrument comprised five factors. Only the 39 validated items selected through the principal components analysis, and conforming to this assumption, were scored (Akiskal et al., in press, this issue). Questionnaires with more than 10% of missing items were excluded from the analysis. Mean replacement was used for cases with up to three missing items.

### 3. Results

HDRS-17 mean score  $\pm$  S.D. in MDD was  $11 \pm 5.52$ , and in bipolar  $9.00 \pm 7.20$ .

Temperament differences between bipolar and MDD patients were examined using MANCOVA. Overall significant effect of the fixed factor (bipolar vs. MDD) was noted for the temperament scores [Hotelling's  $F_{(5,142)}=2.47$ ,  $p<0.05$ ]. Overall effects

were found for age [ $F_{(5,142)}=2.40$ ,  $p<0.05$ ], but not for gender and severity of depression [ $F_{(5,142)}=1.65$ ,  $p=0.15$  and  $F_{(5,142)}=0.66$ ,  $p=0.66$ , respectively]. Dependent variables included the five subscales of the TEMPS-A. As shown in Table 1, only cyclothymic temperament showed significant between-group differences.

### 4. Discussion

Mood disorders are known to affect as much as 20% of the general population (Kessler et al., 1994; Weissman et al., 1996). Reports have suggested that marked temperamental dysregulations in individuals with major depression are associated with poorer outcome (Kukopulos et al., 1983; Cassano et al., 1989). The development of valid and reliable instruments to measure temperament variations is therefore essential in order to help identify individuals at risk and to reduce this significant public health and clinical challenge.

In the present study, we found that only cyclothymic temperament differentiated between depressed bipolar and MDD patients, with the former scoring significantly higher than the latter. This suggests that inter-episodic mood shifts are more commonly experienced by depressed bipolar patients. This has been shown to precede bipolarity in a prospective large cohort study in the NIMH depression collaborative database (Akiskal et al., 1995). We submit that the 12 items of the cyclothymic temperament subscale of the TEMPS-A assess lifelong experience of rapid shift in mood, interest, self-confidence, sleep patterns, and energy levels, rather than the symptoms of major mood episodes. This, in turn, is due to the fact that the cyclothymic subscale of TEMPS-A was in part derived from the mood lability traits found predictive of bipolar II in the NIMH study (Akiskal et al., 1995). Overall, our data, along with the NIMH study, lend support to the concept of the bipolar spectrum in which temperament represents the subthreshold expression of clinical bipolarity (Akiskal et al., 1977; Akiskal, 1983, 2002).

It could not be inferred from our data, however, that cyclothymic temperament scores provide a definite cutoff value that differentiates between

Table 1  
MANCOVA assessing differences between depressed bipolars and depressed unipolars

	Value	<i>F</i>	<i>p</i>	
Hotelling	0.78	2.24	0.05	
Univariate <i>F</i> -test				
Temperament	Depressed bipolars ( <i>n</i> =57)	Depressed MDD ( <i>n</i> =94)	<i>F</i>	<i>p</i>
Depressive	3.53 $\pm$ 2.40	3.12 $\pm$ 2.41	0.49	0.48
Cyclothymic	7.59 $\pm$ 3.28	5.56 $\pm$ 3.38	11.07	0.001
Hyperthymic	3.00 $\pm$ 2.23	3.15 $\pm$ 2.38	0.04	0.84
Irritable	2.55 $\pm$ 2.22	2.01 $\pm$ 1.97	1.73	0.19
Anxious	0.90 $\pm$ 0.85	0.84 $\pm$ 0.84	0.20	0.66

depressed unipolar and bipolar patients. According to Akiskal (1995), temperaments are intermediary processes between genetic predisposition, developmental factors, gender, and stressors on the one hand, and clinical episodes of mood disorder on the other. Differences in life circumstances, gender, and stressors may ultimately determine whether temperamental dysregulation will manifest itself as major depression, as bipolar disorder, or just as a personality trait. It would be important to know whether MDD patients showing relatively high cyclothymic temperament scores are at higher risk of switching to a bipolar disorder. Along these lines, there is strong prospective evidence suggesting that mood lability predicts switching to bipolar II disorder among patients with major depressive disorder (Akiskal et al., 1995).

Contrary to our expectation, hyperthymic, depressive and irritable temperament scores did not differentiate between bipolar and MDD patients. This is consistent, however, with an earlier study that found that “hypomanic personality” traits were conspicuously absent in recovered patients with bipolar disorder and that in this aspect the latter were not different from recovered “unipolar” patients (Hirschfeld et al., 1986). Such data might, in turn, be due to the fact that many patients classified as nonbipolar MDD in DSM-IV might in reality be “pseudo-unipolar” or “hyperthymic depressives” and belong to a broad bipolar spectrum (Akiskal, 1983; Akiskal and Akiskal, 1988; Akiskal and Pinto, 1999).

The cyclothymic temperament scores of bipolar patients contrasted with those of MDD patients. Given the relatively small subsample sizes for bipolar I and bipolar II in our study, it remains unclear whether patients with bipolar I and bipolar II disorders exhibit similar temperamental profiles. It is likely that cyclothymic mood lability is more characteristic of bipolar II depressives (Akiskal et al., 1995; Hantouche et al., 1998). It remains also uncertain if our findings can be generalized to recovered patients with mood disorders. Despite these limitations, the findings generated with the use of the TEMPS-A support the theoretical assumptions upon which the scale is based, and suggest that it might become a useful tool for clinical and research purposes. From a clinical standpoint, showing differences in BP vs. MDD in clinically

unwell individuals is actually an advantage, because that is when a screening tool is most needed. For this reason, because of its utility for such screening, the cyclothymic scale of the TEMPS-A is reproduced in Appendix A.

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### Appendix A. TEMPS-A Cyclothymic Subscale

We are interested in the kind of person you are. Please circle the following items only if they apply to you for much of your life.

1. My ability to think varies greatly from sharp to dull for no apparent reason.
2. I constantly switch between being lively and sluggish.
3. I get sudden shifts in mood and energy.
4. The way I see things is sometimes vivid, but at other times lifeless.
5. My mood often changes for no reason.
6. I go back and forth between being outgoing and being withdrawn from others.
7. My moods and energy are either high or low, rarely in between.
8. I go back and forth between feeling overconfident and feeling unsure of myself.
9. My need for sleep varies a lot from just a few hours to more than 9 h.
10. I sometimes go to bed feeling great, and wake up in the morning feeling life is not worth living.
11. I can really like someone a lot, and then completely lose interest in them.
12. I am the kind of person who can be sad and happy at the same time.

Extracted from Akiskal et al. (2005a,b in press).

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