

The Reliability of Self-assessment of Affective State in Different Phases of Bipolar Disorder

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Abstract: Some studies have indicated that the capacity of self-assessment of affective state is more compromised during mania than during depression. In the present study, we investigated whether the reliability of self-assessment in bipolar disorder varies as a function of actual affective state (*i.e.*, euthymia, mania, or depression). Sixty-five patients with a diagnosis of type I and type II bipolar disorder were evaluated with regard to the occurrence of an affective syndrome using the Clinical Global Impressions Scale for use in bipolar illness, the Positive and Negative Syndrome Scale, and the Global Assessment of Functioning scale. In parallel, we applied the Analog Visual Mood Scale, a self-assessment tool to evaluate mood changes. The same individual prospectively completed the self-assessment scale in different affective states. During depression, the patients' evaluation was significantly different from when they were in manic or euthymic mood states. However, when in mania, the patients evaluated their mood state similarly to when they were euthymic. The bipolar patients in mania but not in depression did not reliably evaluate themselves with regard to their affective state.

Key Words: Insight, mood, self-assessment, bipolar disorder.

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Several self-assessment tools have been created to evaluate affective states in mood disorders. Some of them are specific for manic states, whereas others are specific for depressed states (Picardi, 2008). However, self-assessment scales are modestly used to evaluate manic states. Compromised cognition, judgment, or insight and the lack of cooperation of patients in a manic state can lead to unreliable results (Goodwin and Jamison, 2007).

A number of studies have indicated that insight is impaired in mania (Ghaemi et al., 1995) but preserved in depression (Ghaemi et al., 1997). In addition to influencing prognosis, treatment compliance, and functioning (McEvoy, 2004; Yen et al., 2002), poor insight also interferes in clinical evaluation. In this regard, approximately 40% of bipolar disorder patients are erroneously diagnosed as having unipolar depression (Ghaemi et al., 2000) because they report more frequently depressive symptoms relative to mania symptoms (Ghaemi et al., 2002).

Some studies have reported that patients with bipolar disorder evaluated their affective states more reliably when they were in a

depressed state as opposed to a manic state. Platman et al. found in 1969 that mood self-assessment in individuals with bipolar disorder coincided more with the researcher's objective evaluation when the patients were in a depressed state compared with a manic state. Goodwin and Jamison (2007) investigated the self-assessment of affective states in 69 patients with bipolar disorder using a visual analog scale with 22 items represented by pairs of opposite adjectives (*e.g.*, good/bad, strong/weak, complex/simple) placed at the extremes of the continuum. The self-assessments performed by the patients who were hypomanic were very different from the self-assessment performed by patients who were depressed, but they were similar to that by euthymic patients.

A previous study (Silva et al., 2013) with a sample of 165 patients with bipolar disorder used the Analog Visual Mood Scale (AVMS; *i.e.*, an affective state self-assessment tool) (Norris, 1971). Patients with mania responded to the questionnaire similarly to patients with euthymia on 14 of the 16 items. However, patients in a depressed state responded to the questionnaire similarly to patients with euthymia on only two items. These results suggest that patients with bipolar disorder who were manic but not depressed evaluated their mood unreliably, possibly reflecting impairments of insight in the manic syndrome. Different individuals composed the groups (*i.e.*, euthymic, depressed, and manic). Therefore, changes in the self-assessment of the same individual were not studied in different affective states.

The present study investigated whether the reliability of self-assessment in bipolar disorder varies as a function of the actual affective state (*i.e.*, euthymia, mania, and depression). In contrast to previous studies, the same individual prospectively completed a self-assessment scale in different affective states. Therefore, the subjects served as their own controls.

METHODS

Sample

This study was performed in an ambulatory clinic at the Psychiatry Institute of the Federal University of Rio de Janeiro. This study was conducted during a 2-year period between November 2008 and November 2010. During this period, all patients referred to the service were consecutively assessed and received a psychiatric diagnosis. The criteria for inclusion were the following: diagnosis of type I or type II bipolar disorder according to *Diagnostic and Statistical Manual of Mental Disorders, Fourth edition, Text Revision (DSM-IV-TR)*, criteria; at least 18 years of age; signing a free and informed consent term; and the occurrence of at least two different affective states among the three considered herein (*i.e.*, euthymia, mania, and depression) during the period of study. Patients who did not agree to take part in the study or who had serious nonpsychiatric conditions (*e.g.*, congestive heart failure, renal insufficiency) were excluded. The local ethics committee approved the study.

One hundred sixty-five patients diagnosed with bipolar disorder constituted the initial sample. Among these 165 patients, only 65 (63 with type I and type II) presented at least two different affective

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states during the study period and were selected. Forty-nine male and 16 female patients (mean [SD] age, 45.55 [11.39] years) constituted the sample. All assessments were conducted in the outpatient unit, and no patient needed inpatient treatment during any affective state. Only two patients did not complete the study, with both cases being considered dropouts. The range of medications used by the patients was quite heterogeneous, with 60% on lithium, 15.4% on valproic acid, 18.5% on carbamazepine, 43.1% on antipsychotics, 9.2% on antidepressants, and 44.6% on benzodiazepines.

Clinical Evaluation

The identification and socioeconomic data of all patients were recorded. The psychiatric diagnosis was based on the criteria of the *DSM-IV-TR*, using the Semi-Structured Clinical Interview of the *DSM-IV-TR* (Del-Ben et al., 2010).

In each consultation, the affective state of each patient was evaluated using the *DSM-IV-TR* criteria for a manic episode, major depression episode, and mixed episode. Evaluations of periods of mixed states were excluded for convenience because the main goal of the current study was to compare insight during mania and depression.

In parallel, we applied a self-assessment tool, the AVMS, to assess the occurrence of mood changes (Norris, 1971), which was translated to Portuguese and adapted for Brazil (Zuardi and Karniol, 1981). This scale is composed of 16 items, each of which refers to a pair of adjectives with opposite meanings: alert/sleepy, calm/agitated, strong/weak, confused/with clear ideas, agile/clumsy, apathetic/dynamic, satisfied/dissatisfied, worried/unconcerned, difficult thinking/per-spicious, tense/relaxed, attentive/distracted, incompetent/competent, happy/sad, hostile/cordial, interested/disinterested, and retracted/sociable. On the tool's sheet of paper, each adjective is separated from its antonym by a 10-cm line on which the subjects should mark the point that best describes their self-perception at that moment. On this scale, responses are given on a continuum and not in predetermined intervals. The following instruction was given to the participants: "Please rate how you are feeling right now in relation to the items below. Consider each line as a representation of each dimension, with the extremities indicating the maximum state for each emotion. Place a mark across the line at the point which best represents how you are feeling now."

Three other tools for objective evaluation were applied, including the Positive and Negative Syndrome Scale—positive symptom subscale (PANSS-p; Chaves and Shirakawa, 1998), the Clinical Global Impressions Scale for use in bipolar illness (CGI-BP; Spearing et al., 1997), and the Global Assessment of Functioning (GAF) scale (Hall, 1995). The PANSS-p allows the evaluation of the presence and intensity of psychotic symptoms. In the present study, a psychotic episode was operationalized as the presence of at least one delusion or hallucination episode of any nature. The CGI-BP presents a global score related to the severity of the affective episode. The GAF evaluates overall social, occupational, and psychological functioning.

The present study focused on correlations among affective states (*i.e.*, mania, depression, and euthymia) and the results of the AVMS. The objective was to evaluate whether the same patient with bipolar disorder evaluates himself/herself differently when experiencing different affective states. Mania versus euthymia, depression versus euthymia, and mania versus depression comparisons were made between the AVMS results. Because the same patient could present the same affective state more than once during the study period, we considered the results of only the first phase of euthymia, mania, or depression for each patient.

Statistical Analysis

Because of the small sample of patients who experienced all three mood states ($n = 16$), using repeated-measures analyses of variance (ANOVAs) was not possible. There was, nevertheless, a

considerably larger sample of patients who experienced two different mood states. To rely on this larger sample of patients, increasing our statistical power, paired *t*-tests between two mood states (mania versus depression, euthymia versus depression, and euthymia versus mania) were used for each item of the AVMS. To avoid increasing the occurrence of type I errors caused by multiple testing, a Bonferroni-Hochberg's correction was used for each comparison (Hochberg, 1988).

Differences between mood states in variables such as PANSS and GAF scores were calculated using paired *t*-tests. When differences were found, the *t*-tests were recalculated as one-way repeated-measures ANOVAs to allow the inclusion of covariates with regard to the use of covariates in repeated-measures designs (Delaney and Maxwell, 1981). A one-way repeated-measures ANOVA, with mood state as a factor (manic/depressed), produces the same results as a paired-sample *t*-test. The only difference is that an *F* statistic is calculated instead. Because of limited statistical power, only one covariate was included in each analysis. Finally, differences in the frequency of psychotic symptoms were explored using McNemar's tests.

RESULTS

Among the 65 patients, only 16 presented euthymia, mania, and depression at different times. Fifteen patients were euthymic and had manic episodes but not depressive episodes. Twenty-six patients were euthymic and had depressive episodes but not manic episodes. Eight patients had both manic and depressive episodes but were never euthymic. Sociodemographic information about the participants is presented in Table 1.

Depression vs. Mania

The comparison of manic and depressive episodes included a total of 24 patients. Among these, 16 also presented a euthymic period, which did not occur for the other eight patients.

The clinical characteristics of the mood states in the patients who presented both manic and depressive episodes are presented in Table 2. The McNemar's test did not reveal significant differences in the frequency of psychosis between depressed and manic states. The total scores on the CGI-BP and the GAF were similar across both mood states. In contrast, PANSS-p scores were significantly higher during mania.

Paired-sample *t*-tests indicated differences on 11 items of the AVMS as follows (n.b., the following *p*-values were adjusted using Bonferroni-Hochberg's corrections): item 1 ($t_{23} = 4.7, p = 0.001$), item 2 ($t_{23} = 5.1, p = 0.001$), item 3 ($t_{23} = 4.6, p = 0.001$), item 5 ($t_{23} = 4.1, p = 0.001$), item 6 ($t_{23} = 5.1, p = 0.001$), item 7 ($t_{23} = 3.6, p = 0.009$), item 11 ($t_{23} = 3.6, p = 0.009$), item 12 ($t_{23} = 3.3, p = 0.018$), item 13 ($t_{23} = 3.9, p = 0.009$), item 15 ($t_{23} = 6.0, p = 0.001$), and item 16 ($t_{23} = 4.7, p = 0.001$). The pattern of responses divided by affective state is presented in Table 3. No changes were found in the results when PANSS score was included as a covariate, and no interactions were found with this factor.

TABLE 1. Sample Sociodemographic Characteristics

Variable	Bipolar Patients ($n = 65$), Mean (SD)/Range
Age (MV = 0)	45.5 (11.4)/25–78
Sex ^a (MV = 0)	49/16
Years of education (MV = 1)	12.8 (2.9)/5–18

^aNumber of female/male patients.
MV indicates missing values.

TABLE 2. Clinical Characteristics of Mania and Depression (*n* = 24)

	Mania, Mean (SD)	Depression, Mean (SD)	<i>p</i>
PANSS-p	13.7 (4.5)	9.1 (2.2)	>0.001
GAF	55.3 (9.8)	55.7 (9.1)	0.855
CGI-BP	3.6 (0.6)	3.8 (0.8)	0.233
Frequency of psychotic symptoms ^a	3/21	4/20	0.999

^aNumber of patients with/without symptoms.

Mania vs. Euthymia

The comparison between manic episodes and euthymic periods included a total of 31 patients. Among these, 16 also presented a period of depression, which did not occur in the other 15 patients.

The clinical characteristics of the mood states in the patients who presented both manic episodes and euthymic periods are presented in Table 4. The McNemar’s test did not reveal any significant differences in the frequency of psychosis between depressed and manic mood states (*p* = 0.375). The CGI (*t*₃₀ = 12.7, *p* < 0.001) and PANSS (*t*₃₀ = 8.9, *p* < 0.001) scores were significantly higher in mania, and GAF scores were significantly lower (*t*₃₀ = 8.1, *p* < 0.001).

TABLE 3. Results (Mean [Standard Deviation]) of the AVMS: Mania vs. Depression (*n* = 24)

	Mania	Depression
Alert/sleepy	3.09 (3.00)	7.18 (2.54)*
Calm/agitated	6.18 (2.96)	3.55 (3.01)*
Strong/weak	3.28 (1.92)	7.44 (2.27)*
Confused/clear ideas	4.85 (2.88)	3.99 (3.46)
Agile/clumsy	3.58 (2.84)	7.22 (2.64)*
Apathetic/dynamic	6.77 (2.39)	2.75 (2.65)*
Pleased/displeased	3.33 (2.86)	7.12 (3.06)*
Worried/unconcerned	3.91 (3.04)	2.76 (2.85)
Difficult thinking/perspicacious	5.64 (2.83)	3.30 (3.21)
Tense/relaxed	3.23 (2.67)	4.80 (3.69)
Attentive/distracted	3.06 (2.47)	6.35 (2.82)*
Incompetent/competent	6.73 (2.60)	3.37 (2.58)*
Happy/sad	4.00 (2.77)	7.38 (2.64)*
Hostile/cordial	5.77 (3.46)	4.55 (3.30)
Interested/disinterested	2.41 (2.27)	7.15 (2.79)*
Retracted/sociable	6.49 (3.22)	3.27 (3.18)*

**p* < 0.05, different from the mania group.

TABLE 4. Clinical Characteristics of Mania and Euthymia (*n* = 31)

	Mania, Mean (SD)	Euthymia, Mean (SD)	<i>p</i>
PANSS-p	13.8 (3.8)	8.2 (1.6)	>0.001
GAF	53.8 (9.5)	73.3 (13.6)	>0.001
CGI-BP	3.8 (0.8)	1.5 (0.5)	>0.001
Frequency of psychotic symptoms ^a	6/25	3/28	0.375

^aNumber of patients with/without symptoms.

Paired-sample *t*-tests did not reveal any significant differences in the AVMS items (in all cases, *p* > 0.05; Table 5). Significant interactions were found between PANSS scores and items 1, 6, and 13, but no change in the results was found after correcting for multiple testing. The results also remained unchanged after including GAF score as a covariate.

Depression vs. Euthymia

The comparison between depressive episodes and euthymic periods included a total of 42 patients. Among these, 16 also presented a period of mania, which did not occur in the other 26 patients.

The clinical characteristics of the mood states in the patients who presented both depressive episodes and euthymic periods are presented in Table 6. The McNemar’s test did not reveal any significant differences in the frequency of psychosis between depressed and manic mood states. CGI scores were significantly higher in depression, and GAF scores were significantly lower, but no significant differences were found with PANSS scores.

Paired-sample *t*-tests indicated differences on 12 items of the AVMS as follows (n.b., the *p*-values were adjusted using Bonferroni-Hochberg’s corrections): item 3 (*t*₄₁ = 4.7, *p* = 0.001), item 4 (*t*₄₁ = 2.7, *p* = 0.045), item 5 (*t*₄₁ = 3.2, *p* = 0.018), item 6 (*t*₄₁ = 4.2, *p* = 0.001), item 7 (*t*₄₁ = 3.9, *p* = 0.001), item 8 (*t*₄₁ = 3.5, *p* = 0.009), item 9 (*t*₄₁ = 3.4, *p* = 0.016), item 11 (*t*₄₁ = 3.4, *p* = 0.016), item 12 (*t*₄₁ = 5.1, *p* = 0.001), item 13 (*t*₄₁ = 5.3, *p* = 0.001), item 15 (*t*₄₁ = 4.6, *p* = 0.001), and item 16 (*t*₄₁ = 4.6, *p* = 0.001). The pattern of responses divided by affective state is presented in Table 7. When GAF score was included as a covariate, only items 3, 6, and 12 remained significant, but this was not the case after correcting for multiple testing.

DISCUSSION

In the present study, the patients in mania evaluated their affective states similarly to when they are in euthymia. However, the evaluation of the patients in depression was different from the evaluation during episodes of mania and euthymia on most of the AVMS items. In a previous study (Silva et al., 2013), we also found that bipolar patients in mania tended to not reliably evaluate their affective state, which did not occur with bipolar patients in a depressive episode. Although the sample size was larger (165 patients) in the previous study, only one episode of each patient was considered. However, in the present study, the comparisons were performed during mania, depression, or euthymia in the patients who had at least two of these mood states, using a within-subjects design in which the participants served as their own controls.

The results from our study indicate that self-evaluation of patients in mania is usually impaired. Reduced reliability in self-assessment in patients in a manic state was also observed in at least three previous studies that performed comparisons between self-completion tools and objective evaluation scales. Gazalle et al. (2007) used a quality of life self-assessment tool, the World Health Organization’s Quality of Life Instrument–Short Version (WHOQOL-BREF), with bipolar disorder patients in different affective states (40 manic, 40

TABLE 5. Results (Mean [Standard Deviation]) of the AVMS: Mania vs. Euthymia (n = 31)

Alert/sleepy	Mania	3.85 (3.19)
	Euthymia	5.22 (3.09)
Calm/agitated	Mania	5.34 (3.44)
	Euthymia	3.53 (3.24)
Strong/weak	Mania	3.73 (2.72)
	Euthymia	4.06 (2.90)
Confused/clear ideas	Mania	5.81 (3.27)
	Euthymia	6.47 (3.24)
Agile/clumsy	Mania	3.55 (3.00)
	Euthymia	4.31 (3.30)
Apathetic/dynamic	Mania	6.82 (2.79)
	Euthymia	6.16 (2.82)
Pleased/displeased	Mania	3.47 (2.98)
	Euthymia	4.37 (3.55)
Worried/unconcerned	Mania	4.29 (3.43)
	Euthymia	4.40 (3.48)
Difficult thinking/perspicacious	Mania	5.68 (3.24)
	Euthymia	6.36 (3.00)
Tense/relaxed	Mania	3.93 (3.30)
	Euthymia	5.12 (3.37)
Attentive/distracted	Mania	2.70 (2.77)
	Euthymia	3.87 (2.92)
Incompetent/competent	Mania	7.20 (2.52)
	Euthymia	7.18 (2.39)
Happy/sad	Mania	3.65 (2.87)
	Euthymia	4.17 (3.04)
Hostile/cordial	Mania	6.13 (3.52)
	Euthymia	6.68 (3.18)
Interested/disinterested	Mania	2.24 (2.29)
	Euthymia	3.13 (3.06)
Retracted/sociable	Mania	7.25 (2.84)
	Euthymia	6.29 (3.29)

There were no statistical differences.

depressed, and 40 euthymic) and healthy controls. In parallel, an objective evaluation of the patients' performance was performed using the GAF. The results showed that the manic patients reported the same level of overall quality of life compared with the euthymic patients and the controls, with an elevated level of quality of life compared with the depressed patients despite presenting the lowest scores on the GAF. Moreover, Altman et al. (2001) used three self-completion scales to evaluate manic states—the Internal State Scale (ISS), the Self-Report Manic Inventory (SRMI), and the Altman Self-Rating Mania Scale—in patients with acute mania. The findings were compared with evaluations performed by practitioners who used the Clinician-Administered

TABLE 6. Clinical Characteristics of Depression and Euthymia (n = 42)

	Depression, Mean (SD)	Euthymia, Mean (SD)	p
PANSS-p	8.4 (1.8)	7.9 (1.4)	0.111
GAF	59.4 (9.6)	74.7 (12.6)	>0.001
CGI-BP	3.6 (0.7)	1.5 (0.5)	>0.001
Frequency of psychotic symptoms ^a	3/39	3/39	0.999

^aNumber of patients with/without symptoms.

Rating Scale for Mania (CARS-M). The authors found contrasting results between the self-completion scale and the scale completed by the examiner. The SRMI results underestimated the severity of manic symptoms, and the ISS presented low sensitivity, detecting only 45% of the mania cases diagnosed by the CARS-M. Dodd et al. (2009) investigated the reliability of the Mood Disorder Questionnaire (MDQ), a self-completion tool that is used to track bipolar disorder based on the recollection of manic and hypomanic symptoms. The authors studied a community sample of 1066 women and found that the MDQ detected only 25% of the cases of bipolar disorder diagnosed based on the Structured Clinical Interview for DSM-IV-TR, Research Version, Non-patient Edition.

Greater impairments in insight in the manic phase may be responsible for the lower reliability of the results obtained with self-assessment scales. Indeed, some studies indicated that insight in patients with bipolar disorder seems to be compromised when they are in a manic state as opposed to a depressive state. Yen et al. (2007) followed 65 patients with bipolar disorder for 2 years. They evaluated variations in levels of insight using the Assessment of Insight-Extended Version in different phases of the disorder. They found that the same patient presented greater impairments in insight during manic periods compared with periods of euthymia or depression. These results are consistent with Dell'Osso et al. (2000). In the latter study, levels of insight were evaluated using the Scale of Unawareness of Mental

TABLE 7. Results (Mean [Standard Deviation]) of the AVMS: Depression vs. Euthymia (n = 42)

Alert/sleepy	Depression	6.07 (3.18)
	Euthymia	4.83 (3.02)
Calm/agitated	Depression	3.90 (3.03)
	Euthymia	4.39 (2.89)
Strong/weak	Depression	6.83 (2.90)*
	Euthymia	4.01 (2.52)
Confused/clear ideas	Depression	4.72 (3.49)*
	Euthymia	6.43 (2.72)
Agile/clumsy	Depression	5.99 (2.87)*
	Euthymia	4.30 (2.65)
Apathetic/dynamic	Depression	3.23 (2.88)*
	Euthymia	5.82 (2.52)
Pleased/displeased	Depression	6.43 (3.05)*
	Euthymia	4.35 (2.93)
Worried/unconcerned	Depression	2.66 (2.87)*
	Euthymia	4.72 (3.00)
Difficult thinking/perspicacious	Depression	3.84 (3.16)*
	Euthymia	5.71 (2.80)
Tense/relaxed	Depression	4.41 (3.34)
	Euthymia	4.72 (2.89)
Attentive/distracted	Depression	6.16 (3.15)*
	Euthymia	4.18 (2.41)
Incompetent/competent	Depression	4.08 (3.12)*
	Euthymia	6.57 (2.30)
Happy/sad	Depression	7.27 (2.45)*
	Euthymia	4.72 (2.62)
Hostile/cordial	Depression	6.07 (3.18)
	Euthymia	6.65 (2.71)
Interested/disinterested	Depression	6.02 (3.14)*
	Euthymia	3.37 (2.68)
Retracted/sociable	Depression	3.90 (3.11)*
	Euthymia	6.46 (2.94)

*p < 0.05, different from the euthymia group.

Disorders (SUMD) in 125 hospitalized bipolar patients who were in different affective states. Manic patients presented lower levels of insight. Finally, Peralta and Cuesta (1998) evaluated levels of insight in 54 bipolar patients in different affective states using the Spanish version of the Manual for Assessment and Documentation in Psychopathology. Patients with depression presented better levels of insight compared with patients with mania.

The results of the present study indicate that the self-assessment of bipolar patients in depression can be more reliable than when the self-assessment occurs during the manic phase. This is in line with evidence, across clinical populations, that depression is associated with adequate insight (David, 2004). The direction of causality, however, remains unclear. It is possible that people with depression show a negative bias when reporting problems, with the term *depressive realism* being suggested to describe the lack of positive or optimistic bias that is usually associated with euthymia (Ghaemi, 1999). As an alternative theory, it is possible that increased insight of difficulties leads to lower mood state, which would imply that clinical management of insight should take into account consequences in terms of negative mood change (Ghaemi, 1999).

A possible limitation of the current study is that the frequency and intensity of psychotic symptoms were higher during mania than during depression or euthymia. The presence of psychotic symptoms is typically associated with increased impairment in insight (Güçlü et al., 2011). In this sense, Yen et al. (2003) observed that patients in mania with psychotic symptoms showed lower insight about treatment effects than patients with the same diagnosis but without psychotic symptoms. Similarly, Peralta and Cuesta (1998) showed that patients with depression without psychotic symptoms had better insight than those with psychotic symptoms. Considering these studies, one cannot rule out the possibility that reduced reliability in self-assessment is related in fact to presence of psychotic symptoms and not to affective state. Another important limitation of the current study is that although insight is a multifaceted phenomenon, with multiple objects (Markova and Berrios, 2001), with our data, it was not possible to determine which aspects of insight were impaired and whether the difficulties found in insight into affective disorder would also extend to insight about illness, illness consequences, or treatment.

CONCLUSIONS

The present results indicate that patients with bipolar disorder tend to less reliably evaluate their affective states when they are in a manic state, possibly reflecting important insight impairments that are observed during this phase of the mental disorder. This finding challenges the application of self-completion tools in patients with mania.

DISCLOSURE

The authors declare no conflict of interest.

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