

Insight and Neuropsychological Function in Patients With Schizophrenia and Bipolar Disorder With Psychotic Features

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Objectives: This study investigates the pattern of association between patient unawareness of illness and neuropsychological tests of frontal lobe function in subjects with schizophrenia and bipolar disorder (BD) with psychotic features.

Method: We administered the Wisconsin Card Sort Test (WCST) and a shortened version of the Scale to Assess Unawareness of Mental Disorder (SUMD) to a sample of 64 patients with psychosis (42 with schizophrenia and 22 with BD).

Results: None of the correlations between WCST scores and insight scores were statistically significant, either in the total group or in each group analyzed separately. Further, no differences were seen in insight scores between sexes and between the diagnostic groups.

Conclusions: The 3 insight dimensions (that is, awareness of mental disorder, awareness of social consequences of mental disorder, and awareness of the benefits of medication) do not appear to be associated with frontal impairment, as measured by the WCST.

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Clinical Implications

- This study indicates a need to further explore the causes underlying poor insight.
- This study furthers efforts to better understand clinical features of psychotic disorders.

Limitations

- Evaluating insight during a remission phase of the illness could have influenced the study findings.
- The selection of patients with particularly severe bipolar disorder (BD) may have reduced the differences in insight and in the Wisconsin Card Sort Test (WCST) observed between the 2 sample groups.

Key Words: *insight, neuropsychological function, schizophrenia, bipolar disorder*

The etiopathogenetic mechanisms of lack of insight in patients with schizophrenia are to date unknown, although several hypotheses have been suggested. At first, lack of insight was understood as a denial of illness (for example, as an abnormal coping mechanism or an abnormal psychological defense) (1). A neuropsychological approach has also been described, and finally, an alternative clinical hypothesis has been proposed, based on the independence of lack of insight from positive and negative schizophrenia symptoms. This hypothesis considers that lack of insight arises directly from

the illness process and can be considered as a “primary” and “basic” symptom, in Bleulerian terminology (2).

The idea of a complex relation between insight and neuropsychological function induced some investigators, using the Wisconsin Card Sort Test (WCST), to explore insight impairment in subjects with schizophrenia, with positive findings (3–5). Conversely, other research groups did not find a significant relation between insight and neuropsychological performance (6–8).

Table 1 Demographic, clinical and neuropsychological scores

Variable	Bipolar disorder patients (n = 22)	Schizophrenia patients (n = 42)
Sex (men/women)	12/10	26/16
Current age (years): mean (SD)	36.68 (11.84)	37.39 (12.15)
Length of illness (years): mean (SD)	9.41 (7.08)	13.39 (10.99)
Education (years): mean (SD)	11.05 (3.18)	10.76 (3.87)
SAPS: mean (SD)	2.46 (0.67)	2.49 (1.14)
SANS: mean (SD)	1.3 (1.16)	2.38 (0.94) ^f
SUMD: mean (SD)		
Mental disorder: mean (SD)	2.18 (0.79)	2.12 (0.83)
Social consequences: mean (SD)	2.36 (0.79)	2.12 (0.86)
Effects of medication: mean (SD)	1.91 (0.75)	1.76 (0.88)
WCST		
Categories achieved: mean (SD) ^{ae}	3.54 (2.54)	3.37 (2.31)
Perseverative errors: mean (SD) ^{be}	16.77 (11.47)	20.26 (13.19)
Unique errors: mean (SD) ^{ce}	2.77 (4.46)	3.15 (4.81)
Total errors: mean (SD) ^{de}	32.31 (15.65)	35.33 (17.80)
SANS = Scale for the Assessment of Negative Symptoms; SAPS = Scale for the Assessment of Positive Symptoms; SUMD = Scale to Assess Unawareness of Mental Disorder; WCST = Wisconsin Card Sort Test.		
Scheffé post hoc analysis		
^a F = 11.54; P < 0.000	Bipolar disorder < Control sample Schizophrenia < Control sample	
^b F = 5.21; P < 0.0076	Schizophrenia < Control sample	
^c F = 0.072; P = 0.9301	ns	
^d F = 8.59; P < 0.0004	Schizophrenia < Control sample	
^e One-way ANOVA results vs control subjects (n = 40; men/women = 20/20), matched for age, sex, and education, selected from those reported in Rossi and others (28).		
^f t = - 3.66; df 54; P < 0.001.		

Evidence has also accumulated suggesting that this clinical issue can be identified in bipolar disorder (BD); impairment in insight may be a common feature of patients with BD (9).

Several studies have examined insight in mood disorders (9–12), and all show that lack of insight is relevant in BD at a level either equivalent to or slightly less pronounced than that found in schizophrenia. However, few studies have investigated the possible relation between neuropsychological indexes and the lack of insight in BD (3,6,8,13).

In this study, we further explore the hypothesis that there is a relation between illness awareness and neuropsychological performance in patients with psychosis who suffer from either schizophrenia or BD.

Methods

Subjects

Study participants were 64 patients consecutively admitted for the treatment of a psychotic episode at Villa Serena Medical Center (VSMC), a psychiatry tertiary referral centre. Among these, 42 were schizophrenia patients (26 men and 16 women), and 22 were BD patients presenting mania with

psychotic features (12 men and 10 women). All subjects received a diagnosis according to DSM-IV criteria (14), ascertained from a personal interview by a senior psychiatrist and by medical chart reviews. We excluded subjects with suspected or documented organic impairment and those with salient histories of severe substance abuse. Table 1 shows demographic data. All patients were taking classic antipsychotics; at the time of evaluation, the mean chlorpromazine-equivalent daily dosage (15) was 545.13 mg (SD 415.12 mg) for the schizophrenia patients and 650.12 mg (SD 105.80 mg) for the BD patients. In addition, BD patients were taking the following medications: classic neuroleptics (all subjects), lithium (n = 5), carbamazepine (n = 7), and valproic acid (n = 10). Each patient provided informed consent and participated voluntarily.

Procedure

We assessed the patients during a remission phase of the index episode of illness, 1 week before planned hospital discharge. To evaluate insight, we used a shortened version of the Scale to Assess Unawareness of Mental Disorder (SUMD) (16). The SUMD assesses awareness of mental disorder on several

dimensions, using the following 4-point scale: 0 = symptom not present, 1 = aware of symptom, 2 = somewhat aware of symptom, 3 = unaware of symptom. Areas assessed included awareness of mental disorder, social consequences of illness, and effects of medication. We use the term “insight” to encompass all the aforementioned dimensions, unless otherwise stated.

All subjects were administered the WCST, a measure of executive function and potential frontal lobe impairment (17); we used this task because of its well-known sensitivity to impairment in concept formation, cognitive flexibility, and abstract thought (4).

We also evaluated the sample with the Scale for the Assessment of Positive Symptoms (SAPS) (18) and the Scale for the Assessment of Negative Symptoms (SANS) (19).

We used Spearman’s rank correlation to establish the association between insight scores and the neuropsychological test results. To evaluate between-group differences, we used the Mann–Whitney U test, Student’s *t*-test, and 1-way analysis of variance (ANOVA). All analyses yielding a *P*-value of 0.05 were considered significant (20).

Results

Table 1 presents data on SAPS, SANS, SUMD, and WCST variables. The 2 groups did not differ significantly on any demographic variable. We found no differences between the 2 groups in SAPS mean global score, although schizophrenia patients showed a higher SANS mean global score ($t = -3.66$; $df = 54$; $P = 0.001$). Insight scores did not differ between the sexes or among the 2 diagnostic groups. Similarly, WCST scores did not differ between the 2 groups. One-way ANOVA comparisons of the 2 clinical groups and our WCST normal control subject data showed that both patient groups demonstrated cognitive impairment, although this was more relevant in the sample of schizophrenia patients (Table 1). Insight scores did not correlate with age, years of education, duration of illness, or neuroleptic dosages. None of the correlations between SANS, SAPS, WCST, and SUMD item scores were significant ($P < 0.05$), either for the total group or for the 2 groups, separately analyzed.

Discussion

We further explored the issue of the correlation between insight and neuropsychological function, adding evidence that lack of insight and performance on the WCST are independent. This finding is in line with some previous reports (for example, 21) but not with others, both in cases of schizophrenia and in cases of BD (2,21). The WCST may not specifically measure frontal lobe function, since frontal symptoms do not necessarily imply the presence of a frontal lesion but may rather be a common consequence of global cerebral

impairment (22,23). However, if this test does measure frontal lobe impairment in patients with psychosis, the 3 insight dimensions (that is, awareness of mental disorder, awareness of social consequences of mental disorder, and awareness of benefits of medication) do not appear to be associated with frontal impairment. Conversely, because lack of insight is independent from positive and negative symptoms and from cognitive performance, the clinical hypothesis of insight mentioned above is reinforced. A possible limitation of the study is that we evaluated the patients in the remission phase of their illness, thereby probably lowering variance in both insight and symptoms and decreasing the chances of finding significant correlations. Interestingly, in an earlier evaluation of patients during an index acute psychotic episode (24), we found that lack of insight was more related to positive symptoms in the BD patients and more related to negative symptoms in the schizophrenia patients.

Not surprising is the lack of difference in insight and WCST scores between the 2 sample groups: several studies suggest that BD patients with psychotic features are difficult to distinguish from schizophrenia patients, at least in a cross-sectional perspective (24–27). Further, we may have selected a sample of patients with particularly severe BD with psychotic symptoms, owing to the tertiary referral features of our centre. This sample may share features of cognitive dysfunction with the schizophrenia patients (28).

Given the profound implications of lack of insight for the management of psychosis, this domain merits further research along phenomenological and neurobiologic lines of inquiry and is therefore the object of our ongoing research.

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Résumé: Connaissance et fonction neuropsychologique chez les patients souffrant de schizophrénie et de trouble bipolaire avec traits psychotiques

Objectifs : Cette étude évalue le modèle d'association entre l'ignorance du patient de sa maladie et les tests neuropsychologiques de la fonction du lobe frontal chez les sujets souffrant de schizophrénie et de trouble bipolaire (TB) avec traits psychotiques.

Méthode : Nous avons administré le test de tri des cartes du Wisconsin (WCST) et une version abrégée de l'échelle d'évaluation de l'ignorance du trouble mental (SUMD) à un échantillon de 64 patients souffrant de psychose (42 de schizophrénie et 22 de TB).

Résultats : Aucune des corrélations entre les scores au WCST et les scores de connaissance n'était statistiquement significative, soit dans le groupe au complet, soit dans chaque groupe analysé séparément. En outre, aucune différence n'a été constatée dans les scores de connaissance entre les sexes et entre les groupes diagnostiques.

Conclusions : Les 3 dimensions de la connaissance (c'est-à-dire, la connaissance d'un trouble mental, la connaissance des conséquences sociales d'un trouble mental et la connaissance des bienfaits des médicaments) se semblent pas être associées à la dysfonction frontale, selon la mesure du WCST.