Comparison of insight among schizophrenia and bipolar disorder patients in remission of affective and positive symptoms: Analysis and critique

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1. Introduction

Insight is defined as the recognition that one has a mental disorder, the ability to identify its symptoms, and cognizance of the need for treatment [12,4]. Lack of insight into having a mental disorder is found to be associated with a poorer clinical outcome, treatment noncompliance, and a more severe cognitive impairment [25,2,41]. Schizophrenia and bipolar disorder share several key aspects [e.g., biological, developmental and social factors that increase the risk for both disorders; 6]. Despite this overlap, only a limited number of studies compared schizophrenia and bipolar disorder patients on the basis of their insight into their disorder. While some studies found that patients with schizophrenia had poorer insight than bipolar disorder patients [41,8,28,43], other studies found no differences between the two [37,6]. These inconsistencies may have resulted from the inclusion of inpatients, patients in the throes of an acute episode, or patients who were still in recovery following an acute episode [as commented by: 12]. The acute stages of these disorders are characterized by functional abnormalities in prefrontal neural networks and corresponding severe impairments in insight [evident in the association between insight and the severity of symptoms and the fact that insight improves during hospitalization: 10,13]. Since differences in insight between patients with the two disorders may have been masked during the acute stages, the current study compared the insight of schizophrenia and bipolar disorder patients who were in symptomatic remission, a period during which these patients faced increasing functional challenges (e.g., in the vocational and relational domains). The study utilized recent criteria proposed for remission of depressive, manic and positive symptoms [35,5]. Because a pretest conducted by our research team indicated that only a small percentage of schizophrenia patients fulfilled the full symptomatic remission criteria proposed by Andreasen et al., [5], patients with negative symptoms were also included. The inclusion of said patients was in line with studies indicating a significant correlation between poor insight and severity of...
positive symptoms and an uncertain relationship between insight and negative symptoms [1]. We hypothesized that schizophrenia patients would have poorer insight than bipolar disorder patients. No specific hypotheses were made regarding awareness and attribution of specific symptoms due to the fact that patients were in remission, thereby reducing the number of patients who were experiencing clinical symptoms.

2. Subjects and methods

Subjects were schizophrenia (n = 32) and bipolar disorder patients (n = 34) between the ages of 18 and 60, recruited consecutively from the outpatient clinics. Diagnosis was made by two senior psychiatrists using the Structured Clinical Interview for DSM-IV-TR [SCID; 18]. All subjects were in remission of affective symptoms (Hamilton Depression Rating Scale (HAMD-17) ≤ 7; Young Mania Rating Scale (YMRS) < 8) and positive symptoms of schizophrenia (≤ 3 score on all the following Positive and Negative Syndrome Scale [PANSS] items; P1 [delusions], P2 [conceptual disorganization] and P3 [hallucinations]; G5 [mannerisms/posturing]; G9 [unusual thought content]). Subjects were excluded if they had any other axis-I psychopathology, neurological disorder, current drug/alcohol abuse or if they had undergone ECT 6 months prior to study entry. Subjects were also excluded if they had mental retardation or borderline intelligence (< 80 full scale I.Q.; according to the patients’ medical records or attendance in special education programs). Subjects signed a written informed consent form and underwent an assessment of clinical symptoms (Scale for Assessment of Negative Symptoms [SANS]), psychopathology (Clinical Global Impression [CGI]) and functional status (Global Assessment of Functioning Scale [GAF]; Social and Occupational Functioning Assessment Scale [SOFAS]).

Insight was assessed using a semi-structured interview scale, the Scale to assess Unawareness of Mental Disorder [SUMD; 19]. Three domains of insight were scored on a Likert scale from 1 (full awareness) to 5 (complete unawareness): (a) awareness of having a mental disorder, (b) awareness of the need for psychiatric medications, and (c) awareness of the social consequences of having a mental disorder. In addition, each subject was scored on awareness and attribution of symptoms relevant for both schizophrenia and bipolar disorder (1–5 Likert scale): (a) anhedonia-asociality, (b) blunted affect, and (c) attentional deficits. Only symptomatic patients were rated for insight with regard to specific symptoms: insight to anhedonia-asociality was rated if the PANNS item #N4 was ≥ 3, insight to blunted affect was rated if the PANNS item #N1 was ≥ 3, and insight to attentional deficits was rated if the PANSS #G11 was ≥ 3 or if the patient received a score of z < −1.5 in the continuous performance task [Rapid Visual Information Processing (RVIP); 20] or the Continuous Performance Test Automated Battery (CANTAB). General insight was also assessed using PANSS #G12 item (lack of judgment & insight). While both the SUMD and PANSS #G12 insight items assess general illness awareness, PANSS #G12 item also includes a judgment component (“... decisions characterized by poor anticipation of the consequences, and unrealistic short-term and long-range planning.”; PANSS manual, italics added) [22]. These two methods may therefore be viewed as complementary, promising converging validity if findings are replicated using both methods. Each of the raters co-rated five videotaped interviews of schizophrenia and bipolar disorder patients as part of their training. Relatively high inter-rater reliability for the SUMD was found using a similar training procedure; for example, intraclass correlations (ICC) for the three general items ranged from 0.78 to 0.90 in a study by Dell’Osso et al. [13]. All raters were blind to the hypotheses of the study.

Multivariate analyses of variance (MANOVA) were used to compare schizophrenia and bipolar disorder patients in the SUMD (three main domains of insight), PANSS (three subscales) and SANS (five subscales). For all other measures, the groups were compared using ANOVAs and chi-square analyses (for parametric and nonparametric variables, respectively). In order to keep the total chance of erroneously reporting a difference below α = .05, a Bonferroni correction was employed for each measure of awareness and attribution of specific symptoms in the SUMD (α = .016). Pearson product-moment correlations were conducted between insight and clinical symptoms and between insight and functioning. Insight and depressive symptoms were tentatively correlated using PANSS #G6 depression item (since HAMD-17 and YMRS data was collected as part of the ongoing treatment at the outpatient clinics and was not available for analysis). Power analysis using G*Power 3.1.2. software indicated a medium strength effect size (Cohen’s $f^2 = 0.028$) in the comparisons of the main insight domains of the SUMD [10]. Based on this effect size estimation (Tables 1 and 2 for additional effect sizes in analyses of insight), the power to detect the observed differences at the .05 and .01 α levels was 96 and 86%, respectively.

The research was approved by the institutional review board committee and is in accordance with the Declaration of Helsinki guidelines.

3. Results

3.1. General

Analyses of demographic and clinical variables are presented in Table 3. SUMD main insight item (awareness of having a mental disorder) was strongly correlated with PANSS #G12 (Pearson $r = .53$, $P < .001$). Correlations between PANSS #G12 item (i.e., general assessment of insight) and more specific insight domains were generally lower, mostly in the medium effect range (i.e., ranged from $r = .17$ for awareness of cognitive impairment to $r = .48$ for awareness of blunted affect). Note that lower correlations can be expected when general insight is correlated with specific domains of insight. Also, the sample size for specific insight domains was smaller (awareness of a specific symptom was assessed only if the patient was symptomatic).

3.2. Comparisons of insight between schizophrenia and bipolar disorder patients

Significant differences between the groups were found in the main domains of insight assessed using the SUMD ($F(3,62) = 5.4$, $P < .01$): follow-up ANOVAs indicated that the schizophrenia patients were less aware of having a mental disorder and of the social consequences of having a mental disorder than the bipolar disorder patients ($P < .01$ for both analyses). The schizophrenia patients were also less aware of their anhedonia-asociality (assessed using the SUMD) compared to the bipolar disorder patients ($P < .01$). Similar differences were also found when comparing the two patient groups in PANSS #G12 insight item ($P < .05$). Effect sizes for the significant comparison ranged from medium to large (i.e., SUMD awareness of anhedonia-asociality), according to the criteria set by Cohen [11]. No other significant differences were found in the awareness of symptoms and their attribution.

3.3. Assessing the effects of demographic differences among schizophrenia patients and bipolar disorder patients

Since the patient groups differed in age and education level (Table 3), we correlated the variables with measures of insight (using the combined sample of patients). Age was significantly correlated with SUMD awareness of having a mental disorder ($r = -.36$, $P < .01$), SUMD awareness of the social consequences of
having a mental disorder ($r = -0.30, P < 0.05$), SUMD awareness of anhedonia-asociality ($r = -0.64, P < 0.001$), and PANSS #G12 insight item ($r = -0.32, P < 0.01$). Note that higher scores in the SUMD and PANSS insight items indicate lower levels of insight. In contrast, education level was not significantly correlated with any of the insight measures. Therefore, the comparison of insight among the groups was repeated, each time with one of the demographic variables as a covariate, yielding the following results: (a) similar findings to those of the original MANOVA were found when using education level as a covariate (not presented), and (b) the analyses in which age was used as a covariate differed from the original analyses and indicated nonsignificant differences in insight among the patient groups (Table 2). In addition, we assessed the possible moderating effect of age on the relationship between the dependent (diagnosis) and independent (insight) variables. A Sobel test [32] was used to assess whether the reduction in variance explained by the age was significant (before asserting either partial or complete mediation). Regression analyses with the predictors entered simultaneously (enter method) were used to determine the strength of the direct (i.e., between diagnosis and insight) and indirect (i.e., between diagnosis and age and between age and insight) paths between dependent and independent variables. Analyses were repeated for each of the two main insight items; SUMD insight into having a mental disorder and PANSS #G12 insight item (Table 2). The Sobel tests indicated that age was not a true moderator of the relationship between diagnosis (patient group membership) and insight: (1) Sobel test of mediation = −1.41 for SUMD awareness of having a mental disorder ($P = .15; \text{two-tailed}$); (2) Sobel test of mediation = −1.34 for PANSS insight item ($P = .17; \text{two-tailed}$).

3.4. Correlations between insight and clinical symptoms

SUMD awareness of having a mental disorder was significantly correlated with two SANS subscales; affective flattening ($r = 0.26, P < 0.05$) and alogia ($r = 0.41, P < 0.001$); SUMD awareness of the social consequences of having a mental disorder was significantly correlated with SANS total score ($r = 0.35, P < 0.01$) and two subscales of the SANS: affective flattening ($r = 0.47, P < 0.001$) and alogia ($r = 0.34, P < .01$). A similar pattern of correlations was found for SUMD awareness of anhedonia-asociality (not presented). PANSS #G12 insight item was significantly correlated with SANS total score ($r = .31, P < .01$) and two subscales of the SANS: affective flattening ($r = .35, P < .01$) and attention ($r = .24, P < .05$). Overall, insight was inversely correlated with negative symptoms (especially affective flattening and alogia). The correlation between insight and PANSS #G6 item (depression) was nonsignificant.

3.5. Correlations between insight and functioning

SUMD awareness of the social consequences of having a mental disorder was significantly correlated with patients’ functioning (overall sample): $r = −.25$ with GAF score and $r = −.28$ with SOFAS score ($P < .05$ for both correlations). Among the bipolar disorder patients, a significant correlation was found between SUMD awareness of attentional deficits and the two measures of functioning ($r = .70$ with GAF score, $P < .05$; $r = .78$ with SOFAS score, $P < .01$). All other correlations were nonsignificant (including correlations among the schizophrenia patients).

4. Discussion

This study is among the first to compare the insight of schizophrenia and bipolar disorder patients who were in remission of affective and positive symptoms. Initial analyses suggested that the schizophrenia patients had poorer insight than the bipolar disorder patients, corresponding to findings of several of earlier studies [28,43]. Compared to the bipolar disorder patients, schizophrenia patients had poorer insight into having a mental disorder and into its social consequences (as assessed using the SUMD). Similar differences among the patient groups were found using the PANSS. It should be noted, however, that the patient groups differed in key demographic variables (i.e., age and education), potentially influencing the findings. Two lines of evidence support the significance of demographic variables with regard to patients’ insight. First, differences in insight became nonsignificant when age was used as a covariant. Second, significant correlations between age and insight were found in the current study, as well as in several earlier studies [25,37,39,15]. For example, it was suggested that age may be a crucial factor in determining the extent to which insight is open to intervention [8]. The relationship between age and insight therefore raises several concerns with regard to the interpretation of the findings of the current study. Moreover, significant age differences were found in many of the earlier studies that compared insight between the two patient groups [44,24,17]. The issue is therefore relevant to the interpretation of the findings of earlier studies as well.
The first issue that deserves consideration concerns the cause of age disparities between the two patient groups. Since schizophrenia and bipolar disorder show considerable overlap in several key aspects, including similar age of onset [23], these age differences are more likely to be related to sample characteristics (i.e., recruitment of patients to studies). When reviewing earlier studies we noted that age differences, when found, are in a similar direction (i.e., bipolar disorder patients recruited at an older age compared to the schizophrenia patients). Furthermore, psychotic patients and/or inpatients were included in many of the earlier studies in which the patient groups did not differ in age [e.g., 7,11,12]. Taking these facts into account, we can speculate that the inclusion of symptomatic patients increased the number of first-episode patients and consequently reduced age differences in the current study [44]. These speculations, however, are tentative. Only future studies in patients in remission can assess whether age differences are replicated in consecutively recruited schizophrenia and bipolar disorder patients. These future studies are also encouraged to take into account several methodological issues we encountered when reviewing earlier studies. First, many of these studies did not present separate demographic data for each patient group [e.g., 32, 33, 34]. Second, comparisons of several patient groups may have obscured age differences. For example, while Sharmilla and Ahmad [31] found no significant differences when comparing three patient groups (bipolar disorder, schizophrenia, and major depression), a comparison of schizophrenia and bipolar disorder patients indicates a significant age difference between the two groups.

A second issue that deserves consideration concerns the mechanisms through which age might exert its effect. Before beginning our discussion, it should be noted that the current study found age to be positively correlated with insight, contrasting with a degenerative model of insight (according to which insight deteriorates with age). In this regard, it should be interesting to include older age cohorts in future age cohorts in which more significant changes in the frontal lobe and its related neural circuits are to be expected; 36,37] studies and explore whether the positive correlation between age and insight found in the current study is replicated. As for the age cohorts assessed in the current study, the findings suggest that age may affect insight by acting as a proxy measure of other variables. More specifically, earlier studies provide tentative evidence for a learning process in which repeated and prolonged experience with the disorder influences the patients’ insight level. For example, Dias et al. [16] found that bipolar disorder patients with more hospital admissions had significantly better awareness of having a mental disorder. Similarly, Yen et al. [40] found that having a shorter duration of illness predicted poorer insight. A similar argument was raised with regard to education, contending that patients with a higher educational level seem to have more insight into their illness because they have more access to information and can better deal with it [16]. The same authors, however, argue that a learning process on its own does not justify better insight, since in their study older patients with patients with more hospital admissions did not show better insight levels [16]. A complicating factor are the effects of psychiatric episodes – frequent mood disturbance episodes may cause the patient’s insight to deteriorate [42], possibly through brain abnormalities that appear to develop with repeated affective episodes [34]. The effects of age and recurrent episodes may therefore work in opposite directions on the patients’ insight level. Prospective longitudinal studies and studies with larger samples will be needed in order to assess the possible differential contributions of age, illness duration and psychiatric episodes. These studies are also encouraged to explore whether the relationship between age and insight is manifested differently for each patient group (schizophrenia and bipolar disorder).

In analyzing the findings of the current study, we speculated that age may act as a moderator for the relationship between diagnosis and insight (i.e., age as a moderator). However, our analyses did not support this possibility, suggesting instead that the effect of diagnosis on insight became nonsignificant (when entering age as a covariate) simply because a trivial amount of variance was explained (i.e., not true mediation). It can therefore be argued that differences in insight were an artifact of differences between the two samples of patient groups (i.e., age as a confounder). While future studies will enable us to explore these possibilities (age as a moderator vs. age as a confounder), most of the earlier studies did not attempt to tackle the potential contribution of demographic variables to insight; differences in group characteristics were not adequately addressed, and no attempt to control them was applied by matching the patients or using covariants. Correspondingly, many studies in which the groups did not differ in demographic characteristics also found no differences in insight [e.g., 11,33]. This finding raises doubts regarding those studies which reported differences in insight between the two patient groups while disregarding significant differences in demographic characteristics [e.g., 5,10]. A notable exception was a study by Yen et al. [43] in which covariant analyses were used and in which–as in the current study–no differences in insight between the patient groups were found. Overall, the findings of both the current study and a review of...
earlier studies suggest that differences in the level of insight are weakened or disappear when demographic characteristics are controlled. This conclusion is strengthened by the fact that the groups in the current study did not differ in their awareness of their need for treatment or their awareness and attribution of most symptoms (with and without use of covariants) [see also: 9,42]. Furthermore, the groups did not differ in their severity of symptoms, psychopathology, or daily functioning (as assessed using the GAF and SOFAS). It may be argued that future studies should apply simple changes in study protocol and statistical analyses in order to avoid the confounding effects of differences in demographic characteristics (e.g., matching procedures and use of covariants). Regrettably, these changes may not be sufficient and may lead to erroneous conclusions [for a related discussion, see; 43]. If, in fact, the two patient populations differ in demographic variables (e.g., typical schizophrenia outpatients in remission younger than bipolar disorder patients in remission), a study that uses a matching procedure will not compare the typical patients arriving for treatment at psychiatric outpatient clinics (i.e., discarding the older bipolar disorder patients and younger schizophrenia patients). Overall, further theoretical thinking is needed with regard to the comparisons of insight between the two patient groups, including the possibility that differences in insight may be smaller than initially expected.

Future studies are advised to use larger samples of patients, allowing the use of more advanced statistical procedures (i.e., Structural Equation Modeling [SEM]). In addition to the possibility of exploring potential moderators, the use of these statistical analyses will enable us to examine several important issues for which we currently lack data: the relationships between insight and clinical symptoms and between insight and daily functioning [see; 44]. The current study found significant correlations between insight and negative symptoms (especially affective flattening and alogia), corresponding to the relationship between insight and prefrontal neural networks and between insight and executive functioning [e.g., 4]. Somewhat surprisingly, affective and positive symptoms were not correlated to insight. However, this can be expected in light of the range restriction in these symptoms (following the inclusion of patients who were in remission in these symptom domains). It should also be noted that the study was not devised in order to assess the relationship between insight and affective symptoms and the correlations that were conducted (with PANSS #G6 depression item) were therefore made only tentatively. With regard to daily functioning, the current study indicates that awareness of the social consequences of having a mental disorder (i.e., belief regarding the reason s/he has been admitted to the hospital, involuntarily hospitalized, fired from work etc.) may be particularly important. The current study also suggests a differential relationship between insight and key variables for each diagnostic group. More specifically, functioning was significantly correlated with awareness of cognitive functioning (attentional deficits) among the bipolar disorder patients, but
not among the schizophrenia patients. Lack of differences in insight between schizophrenia and bipolar disorder patients may therefore obscure differential relationships with real-life variables, such as daily functioning [for an example of research exploring a differential relationship of insight and psychosocial functioning among schizophrenia and bipolar disorder patients, see; 28].

Several potential limitations of the current study should be mentioned before concluding the article. Cohen [10,11] recommends a 0.8 level of power (80% chance to detect an effect if one genuinely exists). Based on these recommendations, our analyses indicate a satisfactory level of power. In addition, effect sizes for the significant findings ranged from medium to large. At the same time, our power calculations suggest that a somewhat larger sample size may have been more adequate for the current study (i.e., n = 82). We also note that the age disparity found in the current study may be more pronounced than that found in earlier studies. For example, Yen et al. [44] found a mean age of 40.8 (SD = 12.7) for bipolar disorder patients and mean age of 32.5 (SD = 8.1) for schizophrenia patients, while Sharmilla & Ahmad [31] found a mean age of 41.71 (SD = 12.28) for bipolar disorder patients and mean age of 35.53 (SD = 11.52) [see also; 45]. Again, this issue should be further assessed by future prospective studies. These future studies are encouraged to continue the focus of the current study, assessing patients who are in full symptomatic remission [using recently published criteria; 14,15], as well as exploring additional definitions of remission (e.g., syndromal remission). Such studies would help clarify the current ambiguity surrounding possible differences in insight between schizophrenia and bipolar disorder patients. The significant functional challenges that these patients face and the effect of insight on psychosocial functioning are strong incentives for such future research.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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References


