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ORIGINAL PAPER

Insight, Global Functioning and Psychopathology Amongst In-patient Clients with Schizophrenia

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Abstract To explore whether cognitive impairment and global functioning can predict the degree of insight into illness as well as whether insight is mediated by specific symptom dimensions of psychopathology in schizophrenia. A dimensional/cross sectional approach was used. A mixed group of clients ($n = 36$) were assessed as part of a routine clinical evaluation. The Wechsler Adult Intelligence Scale (WAIS) was used as a measure of intellectual performance, the Brief Symptom Inventory (BSI) was used as a measure of general psychopathology while the Global Assessment of Functioning (GAF) scale assessed clients' psychosocial functioning; insight was assessed with the Insight and Treatment Attitudes Questionnaire (ITAQ). The correlation matrix of all outcome variables was examined; confounding effects of illness duration were tested by partial correlation analyses. GAF correlated with insight ($\rho = 0.41$, $P = 0.01$) and the interpersonal sensitivity dimension of BSI ($\rho = -0.38$, $P = 0.03$. Insight correlated positively with the anxiety ($\rho = 0.38$, $P = 0.03$) and psychoticism ($\rho = 0.36$, $P = 0.04$) dimensions of BSI. Our results suggest that insight is part of the phenomenology in schizophrenia, not being determined by neurocognitive disturbances. Improved insight was associated with more frequent psychotic symptoms endorsement, higher levels of anxiety and less severe psychopathological symptoms and difficulties in psychosocial functioning; clients with more pronounced difficulties in their personal and social interactions exhibited worse psychosocial functioning and more severe psychopathological symptoms.

Keywords Insight · Schizophrenia · Recovery · Psychosocial function · Symptoms

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Introduction

Schizophrenia is a psychiatric disorder characterised by positive and negative symptom clusters [1] further subdivided into three syndromes, reality distortion (such as hallucinations and delusions), psychomotor poverty (negative symptoms) and disorganisation (thought disorder) [2]. It is widely acknowledged that schizophrenia is a severe and disabling mental illness, which impacts upon many functional areas, like independent living, marital status, social and occupational functioning in an adverse way. In recent years, there has been great emphasis not only on improvement of clinical symptoms but on functional recovery as well, targeting specifically these areas that are meaningful to both clients and families. Several factors can affect such functional outcomes in schizophrenia, for example amelioration of psychopathological symptoms, insight, cognitive functioning, and medication compliance.

Lack of insight is considered one of the most prominent symptoms in schizophrenia [3]. Insight may lead to poor compliance with psychiatric treatment because clients are unlikely to adhere to therapeutic interventions for a problem they do not believe to be either present ("There is nothing wrong with me") or mental in cause ("All I need is some sleep"). Therefore, understanding the basis of poor insight may have prognostic validity in terms of the prediction of treatment outcome [4–7].

Over the past decade, there has been an increase in research concerning the conceptualization and assessment of insight. Recently, there has been general agreement in the literature that insight is a multidimensional rather than unitary concept that includes recognition of the presence of mental illness, compliance with treatment, the ability to relabel unusual mental events as abnormal [8], attribution of symptoms to a mental illness, recognition of mental illness' social and medical consequences [9] and attitudes to past and future illness [10]. A range of assessment instruments exists to measure these various features of insight [11–13]. Significant intercorrelations have been found between most insight scales [14–17] suggesting that these measures target a common factor [18].

However, despite the proliferation of work in this area, the nature of the relationship between insight and neurocognitive impairment, severity of psychopathology or functional recovery still remains unclear [19–23]. On cross-sectional analyses, lack of insight has been closely linked to poor global functioning [24–26], and poor treatment compliance [27, 28]. Lack of insight has also been closely associated with severe psychopathology [4, 15, 29], although inverse or no direct relationships have also been reported [8, 16, 30] Similarly, a number of studies have reported an inverse [31–33] but also positive [34–36] relationship between insight and positive symptoms, suggesting therefore that insight may be largely independent of psychopathology severity [37, 38] as such, recent research interest has now been shifted onto specific symptom dimensions. For instance, weak to modest relationships have been reported between insight and anxiety [23, 39, 40] or depressive symptomatology [32, 41, 42]. Finally, significant but weak to modest relationships have been found between insight and general cognitive functioning [19, 23, 43, 44] although results appear inconsistent [45–48].

The current study sets out to delineate further the relationship between insight, cognitive performance, psychopathological symptoms and global functioning in a sample of thirty-six schizophrenic clients. The aims of our study were to explore whether (a) cognitive impairment and (b) global functioning can predict the degree of insight into illness and (c) whether insight is mediated by specific symptom dimensions of psychopathology in a mixed group of clients diagnosed with schizophrenia.

Materials and Methods

Subjects

Thirty six adults (25 males, 11 females) fulfilling criteria for schizophrenia according to the Diagnostic and Statistical Manual of Mental Disorders: Fourth edition, [49] were recruited from our inpatient units. The mean age (mean ± standard deviation) for all clients was 34.88 ± 9.84, ranging from 20 to 52 years and they have a mean of 12.44 ± 2.94 years of education. When split by ethnic group, 32 of the clients were white, two were mixed heritage, one was Asian and one black.

The mean number of previous hospital admissions was 6.6 (range 1–18) and the mean duration of illness was 12.4 years (range from 28 months to 28 years). Age of onset of schizophrenia was based on the age when clients first clearly manifested either delusions or hallucinations. All clients were on regular antipsychotic medication. Of the 40 participants for whom data on medication were available, 69.2% were taking an atypical antipsychotic and 30.8% a typical antipsychotic. The overall mean dose was 52.8% of the maximum dose.

The Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (SCID-I) was used in order to determine the primary consensus Axis I diagnoses (SCID). Exclusion criteria included concomitant neurologic disorder, organic brain conditions, chronic substance abuse, electroconvulsive therapy within 3 months of the assessment, inability to fully comprehend and/or follow test instructions.

Assessment

Subjects were interviewed and assessed on the following variables as part of an extended psychiatric routine clinical evaluation. All assessments were carried out by psychologists trained in the use of these scales.

General Cognitive Measures

The Wechsler Adult Intelligence Scale Revised (WAIS-III) [50] was used as a measure of general cognitive functioning. Full scale, performance and verbal IQ is being reported here (Table 1).

Insight

Insight was assessed with Insight and Treatment Attitudes Questionnaire (ITAQ) [51], this scale consists of 11 questions, each rated in terms of 0 = no insight; 1 = partial insight; 2 = good insight; the higher the score, the better the patient's insight. This questionnaire encompasses recognition of mental or (nerve) problems at the time of admission and currently (first five items), the possibility of future illness, the need for admission, monitoring and medication as well as the willingness to take medication (six items). A total score is being reported here (Table 1).

Table 1 Demographic details for total sample

Demographics	N	Percent (%)
Gender		
Males	26	72.2
Females	10	27.7
Employment		
Unemployed	36	100
Marital status		
Single	29	80.5
Cohabiting	1	2.8
Married	6	16.7
Ethnicity		
White	32	88.9
Black	1	2.8
Asian	1	2.8
Mixed heritage	2	5.55

General Psychopathology

General psychopathology was assessed with the Brief Symptom Inventory (BSI) [52], an abbreviated SCL-90 that contains 53 items (rated on 5-point scales with respondents asked to rate how distressing a problem is, from "not at all" to "extremely"). BSI items are grouped into nine symptom domains: somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. In addition to these primary clinical scales, the BSI profile includes three global indices of distress: a Global Severity Index (GSI), Positive Symptom Distress Index (PSDI) and Positive Symptom Total (PST). All scores are being reported here (Table 1).

Social Functioning

The Global Assessment of Functioning Scale (GAF), [49] was used to assess the overall psychosocial functioning and severity of psychopathology; a rating from 1 (most impaired) to 100 (least impaired) is assigned, with descriptors provided for each 10-point interval. A total score is being reported here (Table 1).

Data Analysis

The normality of distribution of all variables was examined using Kolmogorov–Smirnov one sample tests. Spearman's rank correlation coefficient analyses were used in order to examine relationships between all clinical and cognitive measures. Bonferroni corrections were used to correct for multiple comparisons. Partial correlation coefficient analyses were performed between insight and clinical and neuropsychological dimensions, with illness duration as a covariate in order to account for differences in length of illness among clients.

Results

Clinical and demographic characteristics of the sample are shown in Tables 1 and 2.

Table 2 Demographic and clinical data for total sample

Clinical characteristics	Mean ± SD	Range
Age	34.88 ± 9.84	20–52
Duration of illness (months)	149.04 ± 98.99	28–336
Age at illness onset	21.70 ± 5.77	12–38
Duration of current hospitalisation (days)	294.13 ± 213.80	3–776
Full scale IQ	73.41 ± 11.47	52–98
Verbal IQ	76.23 ± 12.84	55–103
Performance IQ	74.76 ± 9.01	57–98
GAF	33.97 ± 8.73	13–49
ITAQ	10.86 ± 6.34	1–20
BSI items		
Somatisation	53.20 ± 13.52	37–72
Obsessive compulsive	52.90 ± 12.91	32–71
Interpersonal sensitivity	52.32 ± 15.05	38–77
Depression	48.03 ± 11.91	35–64
Anxiety	49.29 ± 12.92	34–72
Hostility	50.35 ± 13.80	37–77
Phobic anxiety	52.41 ± 13.58	38–68
Paranoid ideation	52.03 ± 13.93	36–69
Psychoticism	50.64 ± 14.32	36–75
GSI	53.33 ± 8.55	34–68
PSDI	54.80 ± 11.64	35–80
PST	52.86 ± 11.40	34–80

GAF global assessment of functioning, *ITAQ* insight and treatment attitudes questionnaire, *BSI* brief symptom inventory, *GSI* global severity index, *PSDI* positive symptom distress index, *PST* positive symptom total

We examined the correlation matrix of all outcome variables. More specifically, Spearman's rank correlation coefficient analyses between duration of current hospitalisation, age at illness onset, Full scale IQ, Verbal IQ, Performance IQ, BSI items (somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism, GSI, PSDI and PST), GAF and ITAQ scores are shown in Table 3. Only correlations that survived Bonferroni correction are described here.

In bivariate correlations, GAF correlated positively with total insight ($\rho = 0.41$, $P = 0.01$) and negatively with the interpersonal sensitivity dimension of the BSI scale ($\rho = -0.38$, $P = 0.03$). Insight correlated positively with the anxiety ($\rho = 0.38$, $P = 0.03$) and psychoticism ($\rho = 0.36$, $P = 0.04$) dimensions of the BSI scale. Age at illness onset correlated positively with Full scale ($\rho = 0.57$, $P = 0.02$), Verbal ($r = 0.54$, $P = 0.03$) but not Performance ($r = 0.45$, $P = 0.08$) IQ. All nine primary symptom dimensions correlated with all global indices of distress (Table 4).

No statistically significant associations were found between insight and intellectual performance as measured by full scale, performance or verbal IQ. No other correlations reached statistical significance.

To account for differences in length of illness among clients, partial correlation coefficient analyses between insight and clinical and neuropsychological dimensions, with illness duration as the covariate, were carried out and the same results were obtained.

Table 3 Correlation matrix of all outcome variables

	Insight	GAF
GAF	0.41*	1.000
Duration of current hospitalisation	−0.19	−0.29
Age at illness onset	0.03	0.25
Full scale IQ	0.44	0.11
Performance IQ	0.47	0.10
Verbal IQ	0.34	0.13
Somatisation	0.23	−0.29
Obsessive compulsive	0.25	−0.33
Interpersonal sensitivity	0.04	−0.38*
Depression	0.33	−0.12
Anxiety	0.38*	−0.17
Hostility	0.12	−0.20
Phobic anxiety	0.29	−0.11
Paranoid ideation	0.10	−0.37
Psychoticism	0.36*	−0.03
GSI	0.23	−0.26
PSDI	−0.05	−0.22
PST	0.30	−0.06

GAF global assessment of functioning, *ITAQ* insight and treatment attitudes questionnaire, *BSI* brief symptom inventory, *GSI* global severity index, *PSDI* positive symptom distress index, *PST* positive symptom total

* Correlation is significant at the 0.05 level (2-tailed)

Table 4 Correlations between primary symptom dimensions and global indices of distress

	GSI	PSDI	PST
Somatisation	0.73**	0.53**	0.54**
Obsessive compulsive	0.86**	0.59**	0.64**
Interpersonal sensitivity	0.67**	0.41*	0.63**
Depression	0.81**	0.43*	0.69**
Anxiety	0.72**	0.49**	0.56**
Hostility	0.80**	0.55**	0.66**
Phobic anxiety	0.77**	0.52**	0.63**
Paranoid ideation	0.74**	0.42*	0.73**
Psychoticism	0.81**	0.58**	0.64**

GAF global assessment of functioning, *ITAQ* insight and treatment attitudes questionnaire, *BSI* brief symptom inventory, *GSI* global severity index, *PSDI* positive symptom distress index, *PST* positive symptom total

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Discussion

This study examined the relationship between insight and cognitive performance, different domains of psychopathology as well as global functioning in a sample of a mixed group of schizophrenic clients.

Our results expand on earlier findings of the clinical importance of insight in schizophrenia. First, in line with a number of previous studies [5, 8, 10] our analysis showed that insight is independent of many clinical and demographic variables, such as gender, age and age at illness onset.

Our results further suggest that insight, at least in part, is cross-related to the psychotic illness process itself [32] and not to cognitive performance [45, 47]. More specifically, consistent with an extant literature [7, 22, 24–26] insight was positively correlated with the overall level of functioning and severity of psychopathology as measured by the global functioning scale (GAF). In the light of other studies that have reported an inverse relationship between severity of psychopathology and level of insight [8, 21, 30, 53], such discrepancies could be explained by the inconsistency found in the operational definition of insight [36] and functional outcomes (i.e., studies may explore general level of functioning or more specific aspects, e.g., occupational and social functioning), compounded by small or heterogeneous sample characteristics (e.g., current clinical state) and clinical scales used amongst studies [18, 23].

On the other hand, we found no significant correlations between insight and full scale, performance or verbal IQ. This is consistent with a number of earlier studies showing that lack of insight is not determined by neurocognitive disturbances; [19, 39, 45, 47, 54], suggesting therefore that insight and intellectual performance are somehow independent domains of psychopathology regarding schizophrenic symptomatology [45, 47]. However, due to the lack of substantiated results focused on the relationship between insight and IQ, [6, 27, 43, 55], it would seem that the relationship between clinical and cognitive domains may be too complex to be reduced to a single direct association [22, 45, 47, 56]. Furthermore, confounding effects of length of illness over IQ and insight were not explored in all studies; given the complexity of the relationship between the two variables, additional empirical research in this area is warranted.

Furthermore, we also found a statistically significant correlation between clients' insight ratings and psychoticism as measured by the BSI. One possible inference we can draw is that better insight is mediated at least partly by attribution of symptoms to mental illness and thus better problem recognition/endorsement. It would therefore seem that the presence of insight is closely associated with endorsing rather than denying psychotic symptoms [19].

Insight also correlated positively with the anxiety dimension of the BSI suggesting therefore that anxiety may be an important clinical variable associated with insight. However, the direction of causality still remains unclear; it is very difficult to determine whether higher levels of anxiety result from increased insight or when experiencing anxiety, clients are lead to a more self-critical attitude [40] and therefore better recognition of their illness [57]; again, it is difficult to determine whether the treatment process itself (e.g., clients discussing with staff about their treatment options and prognosis) may heighten their anxiety as the level of insight in their illness improves [58]. Nevertheless, from a clinical perspective, it becomes evident that therapeutic interventions developed to enhance insight and treatment compliance need to acknowledge the risk that anxiety levels can be adversely affected as the insight increases.

Finally, clients' psychosocial functioning as measured by the GAF scale was inversely correlated to the interpersonal sensitivity (IS) dimension of the BSI scale, which centres on feelings of inadequacy, inferiority and distinct discomfort during interpersonal interactions. It would therefore seem that clients with more pronounced difficulties in their personal and social interactions exhibited worse psychosocial functioning and more severe psychopathological symptoms.

Overall, our data confirm earlier findings suggesting that insight is part of the phenomenology in schizophrenia, not being determined by neurocognitive disturbances. Furthermore, our findings suggest that better insight is closely associated with better psychotic symptoms endorsement, higher levels of anxiety as well as less severe psychopathological symptoms and difficulties in psychosocial functioning; finally, clients with more pronounced difficulties in their personal and social interactions exhibited more severe psychosocial functioning and more severe psychopathological symptoms.

Limitations

This study was performed with clients with chronic schizophrenia, making it difficult to disentangle the effects of illness chronicity and exposure to antipsychotic drugs.

Another limitation of this report is our use of a single-item instrument to measure level of insight. Several authors have commented on the complexity of the construct of insight, arguing that insight is composed of many overlapping constructs (e.g., recognition of the presence of mental illness etc.) and therefore that more comprehensive instruments are needed. While the use of a single-item instrument has its limitations, convergent validity studies have suggested that the ITAQ is highly correlated with other more comprehensive instruments suggesting therefore that they are all measuring the same phenomenon [59].

Finally, given the cross sectional nature of our study, it would be interesting to further establish whether insight improves in parallel with the resolution of the psychotic symptoms in a follow up study and this is one of our future goals.

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