



Insight controlled for cognition in deficit and nondeficit schizophrenia

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ABSTRACT

Patients with deficit schizophrenia have worse cognition and poorer social functioning compared to the nondeficit ones. Insight is another domain in which these two groups might differ, but data on insight impairment in deficit versus nondeficit schizophrenia are still scarce. We compared 29 patients with deficit schizophrenia to 44 nondeficit patients and found a tendency to poorer insight in the deficit group. However such tendency disappeared when analysis was controlled for cognition, a domain in which both groups differed significantly. This finding reinforces the pressing need for simultaneous assessment of the several dimensions or domains of schizophrenic psychopathology.

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1. Introduction

Insight impairment is a cardinal feature of schizophrenia. Insight has been considered to be better conceptualized as a continuous construct, composed of multiple dimensions, rather than a categorical one (Dantas and Banzato, 2007). Poor insight is strongly associated with worse functional outcome (Schwartz et al., 1997), but weakly correlated to other psychopathological domains (Mintz et al., 2003). Of great clinical relevance are the associations of better insight with depression and suicidality (Mintz et al., 2003; Dantas and Banzato, 2007).

Patients with deficit schizophrenia, that is, with primary and persistent negative symptoms, have been reported to have less depression and less suicidal ideation despite having poorer social functioning (Kirkpatrick et al., 2001). It has been hypothesized that poor insight in that group of patients might be one explanation for such dissociation between poor global functioning and subjective distress (Trotman et al., 2011).

Published data on insight in deficit versus nondeficit schizophrenia are still scarce. Kirkpatrick et al. (2000), in an archival report of first-episode patients with schizophrenia, found that patients with deficit syndrome had poorer insight compared to nondeficit patients. In that study, the deficit/nondeficit categorization was made with the Proxy for the Deficit Syndrome, an approach alternative to the use of the Schedule for the Deficit Syndrome (SDS) (Kirkpatrick et al., 1989), which is considered the gold-standard method for the categorization. Another limitation of the study acknowledged by the authors was that insight was categorically assessed as either present or absent.

Arango et al. (1999) investigating awareness of dyskinesia in 43 patients with schizophrenia, adopted an instrument for multidimensional assessment of insight in psychosis. Using the SDS, the authors found 6 patients with deficit syndrome in their sample. The deficit patients were significantly less aware of tardive dyskinesia than the nondeficit patients. Awareness of dyskinesia and insight into mental disorder were significantly but only moderately correlated in that study, and deficit and nondeficit patients were not compared as regarding global insight or other insight dimensions.

The study of Trotman et al. (2011) recently published on-line by Schizophrenia Research, specifically addressed the issue of insight impairment in patients with deficit features. Comparing 31 first-episode psychotic patients with deficit features (tentatively categorized with the use of the Proxy for the Deficit Syndrome) to 70 patients without them, the authors found that insight, when assessed by a self-report questionnaire, was significantly worse in the deficit group. When rated by clinical researchers, insight was poorer in deficit patients, but the difference fell short of being statistically significant. As impaired cognition has been associated both with impaired insight and deficit status, the authors suggested that future studies might further investigate the interactive effects of cognition and insight in deficit schizophrenics.

Considering the paucity of data on insight in deficit schizophrenia, we would like to contribute to the debate presenting the preliminary results of an ongoing comprehensive study on negative symptoms of schizophrenia, in which both insight and neurocognition were systematically assessed.

2. Methods

We recruited patients between ages 18 and 55 who met DSM-IV diagnostic criteria for schizophrenia and had at least 4 years of

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education, both from the outpatient clinic of a university hospital (University of Campinas, UNICAMP) and from a community based health care facility. Exclusion criteria were the following: neurological and developmental disorders, history of head injury with loss of consciousness, and medical disorders that might impair cognitive performance. Patients' symptoms severity (positive, negative and depressive symptoms) was assessed with SAPS, SANS and the Calgary Depression Scale for Schizophrenia (CDSS). The SDS was adopted in order to categorize the schizophrenic patients into deficit/nondeficit syndrome groups. Insight was assessed with the Brazilian version of the Schedule for the Assessment of Insight—Expanded Version (SAI-E) (Kemp and David, 1997), a well established instrument for insight assessment in psychosis. The SAI-E is a semi-structured interview consisting of 11 items rated by the interviewer, which covers three dimensions of insight: a) recognition of mental illness; b) ability to relabel unusual mental events (e.g. hallucinations) as pathological; and c) treatment compliance, both expressed and observed. The global score ranges from 0 to 28 (higher scores indicate better insight).

Independently and blinded for the psychopathological assessment and deficit/nondeficit categorization, patients were cognitively assessed with a comprehensive battery of neuropsychological tests comprising: the MMSE; the subscales Matrix Reasoning, Vocabulary, Digit Symbol, Picture Completion and Digit Spam of the Wechsler Adult Intelligence Scale (WAIS); Trail Making Tests (TMT) A and B; The Boston Naming Test; Rey Complex Figure Test and Verbal Fluency Tasks (VFT).

The research was approved by the Committee of Ethics in Research of the UNICAMP Medical School, Brazil. An Informed Consent Term was obtained from all the participants enrolled in the study.

Chi-square analyses, Mann–Whitney test and Fisher's exact test were used to investigate group differences between deficit and non deficit groups for categorical variables. Analyses of covariance (ANCOVA) were used to control for the effect of covariates. A principal components factor analysis was performed in order to reduce neuropsychological variables to a smaller set of data. At first ANCOVA was performed to compare the deficit and nondeficit patients regarding psychopathological variables, insight and cognitive performance using gender and years of education as covariates. Then another round of ANCOVA was conducted to compare insight between both groups using gender, years of education and also cognition as covariates.

3. Results

The original sample of 85 patients was composed predominantly of male ($n=62$, 72.9%), unmarried ($n=72$, 84.7%) and unemployed ($n=70$, 82.4%) patients. Mean age was 32.9 (SD 8.4, range: 18–54), mean education was 9.5 years (SD 3.3, range: 4–19), and mean duration of schizophrenia was 13.2 years (SD 8.4, range: 1–37). Criteria for the deficit syndrome of schizophrenia were met by 29 (34.2%) patients. A group of 12 patients (14.1%) was excluded from the analyses as they could not be unequivocally be categorized as either deficit or nondeficit schizophrenics, mainly because the possibility that their persistent negative symptoms were secondary to other factors could not be ruled out. Sociodemographic and clinical characteristics of deficit and nondeficit groups are presented in Table 1.

As expected, deficit patients presented significantly more negative symptoms and they were more frequently inactive. No significant difference was found regarding severity of positive and depressive symptoms, which happened to be low in both groups.

The factor analysis of neurocognitive tests yielded a model with a single factor accounting for 56.2% of variance, which we named "cognitive factor". Deficit patients had significantly lower factorial scores on "cognitive factor" than nondeficit patients, even controlling for years of education. Deficit patients in our sample presented lower mean SAI-E scores when compared with nondeficit patients, that difference nearly reached statistical significance, but when the

Table 1
Sociodemographic and clinical characteristics of deficit and nondeficit groups.

	Deficit ($n=29$)	Nondeficit ($n=44$)	<i>p</i>
Age, years	34.4 ± 9.3	32.2 ± 8.5	0.358 ^a
Gender, male	24 (82.8%)	28 (63.6%)	0.077 ^b
Relationship status, never married	27 (93.1%)	35 (79.6%)	0.285 ^c
Years of education	8.7 ± 4.0	10.3 ± 3.2	0.051 ^a
Working status, inactive	27 (93.1%)	31 (70.5%)	0.019 ^b
SAPS score	5.1 ± 3.8	4.2 ± 3.4	0.892 ^d
SANS score	15.8 ± 4.9	5.8 ± 4.0	< 0.001 ^d
CDSS score	2.0 ± 2.8	1.2 ± 2.5	0.069 ^d
"Cognitive factor"	- 0.41 ± 1.0	0.42 ± 0.8	0.004 ^d
SAI-E score	12.6 ± 6.6	16.0 ± 7.5	0.193 ^d / 0.562 ^e

Significance level adopted was $p < 0.05$. Significant differences in bold.

^a Mann–Whitney test.

^b Chi-squared.

^c Fisher's exact test.

^d ANCOVA (gender and years of education as covariates).

^e ANCOVA (gender, years of education and "cognitive factor" as covariates).

"cognitive factor" was added as a covariate in the ANCOVA, such tendency disappeared altogether.

4. Discussion

Besides adding data to the scarce literature on insight in deficit schizophrenia, our study has some methodological strengths that should be highlighted: the use of SDS, the golden standard instrument for the categorization into deficit/nondeficit schizophrenia, the use of a well established, multidimensional instrument for insight assessment, a comprehensive cognitive testing, and analysis controlled for years of education and cognition.

The proportion of deficit patients in our sample (34.4%), although slightly higher, might be considered congruent with current estimates of 25% to 30% prevalence of the deficit syndrome in chronic schizophrenia populations (Kirkpatrick et al., 2001). The deficit patients presented significantly more negative symptoms, as would be expected, and they were more frequently inactive and tended to have less years of education than nondeficit patients. The deficit syndrome is defined by the presence of prominent, persistent and primary negative symptoms such as curbing of interests, diminished sense of purpose and diminished social drive, which might negatively affect the patients' engagement in working. Thus, the finding that deficit patients were more inactive than the nondeficit group should be expected. CDSS scores were low throughout the whole sample. Taken together these results show that our categorization of deficit syndrome yielded a group similar to deficit groups previously described in literature (Kirkpatrick et al., 2000, 2001; Trotman et al., 2011). Furthermore, we found a difference in cognitive performance between the groups, which is also in accordance with literature (Kirkpatrick et al., 2001; Cohen et al., 2007).

The comparison between deficit and nondeficit patients regarding insight, with gender and years of education as covariates, elicited similar results to the ones just reported by Trotman et al. (2011), that is, a tendency for poorer insight assessed by the researcher in the deficit group, even though the samples differ in two key aspects: ours was comprised only of patients with schizophrenia (in contrast to 61.4% of theirs), and the categorization of deficit schizophrenia was more definite given the mean duration of the disease. Such tendency, however, did not hold when the analysis was additionally controlled for cognition, a domain in which both groups are known to differ. Therefore, our results suggest that differences in cognitive performance might account somehow for the poorer insight in deficit patients when compared to nondeficit ones. This finding reinforces the pressing need for simultaneous assessment of the several

dimensions or domains of schizophrenic psychopathology (Tandon et al., 2009). Future studies about insight could even take a step further by analyzing also the behavior of the components of insight in deficit and nondeficit schizophrenia and how they correlate with specific cognitive functions.

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Contributors

Claudio E. M. Banzato, Clarissa R. Dantas and Bruno R. Barros designed the study and wrote the protocol. Paula F. Teixeira and Li Min Li were responsible for neurocognitive assessment. Clarissa R. Dantas and Bruno R. Barros jointly performed the psychopathological assessment. Claudio E. M. Banzato and Clarissa R. Dantas undertook the statistical analysis and wrote the first draft of the manuscript. All authors contributed to and have approved the final manuscript.

Conflict of interest

The authors report no conflict of interest.

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