Psychotic symptoms, cognition and affect as predictors of psychosocial problems and functional change in first-episode psychosis

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A R T I C L E   I N F O

A B S T R A C T

Objective: To enable further understanding of how cognitive deficits and psychopathology impact psychosocial functioning in first-episode psychosis patients, we investigated how psychopathology and cognitive deficits are associated with psychosocial problems at baseline, and how these predict psychosocial functioning at 12 months follow-up. Also, we tested whether the effect of baseline psychopathology on psychosocial functioning decreases between baseline and 12 months and the effect of baseline cognition increases.
Methods: Eight neurocognitive and four social cognitive subdomains and psychopathology (positive and negative symptoms, depression and anxiety) were assessed at baseline in 153 non-affective first-episode psychosis (FEP) patients. Psychosocial functioning (work/study, relationships, self-care, disturbing behavior and general psychosocial functioning) was assessed at baseline and 12 months. Spearman correlations were examined and backward regression models were computed to test our hypotheses.
Results: At baseline, psychosocial functioning was associated strongest with positive and negative symptoms of all assessed clinical domains, followed by neurocognition and social cognition. In contrast, psychosocial functioning at 12 months was not predicted by psychotic symptoms, but rather by neurocognition, social cognition and depression. Change in social functioning in the first 12 months after baseline was predicted by positive and negative symptoms, but to a similar degree by neurocognition and social cognition.
Conclusions: Whereas psychotic symptoms show marked impact on psychosocial functioning at illness onset, cognitive deficits appear to be more accurate longitudinal predictors of psychosocial problems and functional recovery in the early course of psychosis.

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1. Introduction

Cognitive deficits occur early in the course of psychosis and generally tend to improve marginally or remain stable over time (Szöke et al., 2008). In chronic schizophrenia, cognitive deficits are strongly related to poorer functional outcome (Green, 1996; Heinrichs and Zakzanis, 1998; Green et al., 2000, 2004; Fett et al., 2011). Although this association is evident in the end-stage of the illness (McGorry et al., 2006, 2010), our understanding of how cognitive deficits contribute to functional problems in earlier stages of psychosis is still limited. The assumption that findings on cognition–outcome relations cannot be generalized across different illness stages seems evident, since first-episode psychosis patient samples incorporate the full range of psychopathological profiles, genetic- and environmental parameters, including both good and poor prognoses, whereas chronic patient samples have gone through a selective drift towards the "poor prognosis first episode patients". As chronic and first-episode samples thus vary both in illness stages as well as sample characteristics and prognoses, the study of cognition–outcome interrelations in first-episode psychosis may help to advance ideas about cognition and psychosis in general, and may also have implications for selecting effective interventions at various stages of these disorders (Bora et al., 2010; McGorry et al., 2010).

A recent review of 22 longitudinal first-episode psychosis (FEP) studies on cognition as predictor of functioning concluded that many different cognitive domains showed marked impact on psychosocial functioning over time, but also that the extensive variability and the methodological limitations of the studies precluded any firm conclusions (Allott et al., 2011). In most studies, sample size was small, only

a limited number of neurocognitive domains were included, and measures of functional outcome were quite global. Not a single study in the review investigated social cognition, although recent studies on this topic have yielded promising results (e.g. Horan et al., 2012). The review further showed that there is a much higher frequency of null findings than significant predictive relationships across every cognitive domain. However, the ratio of significant predictors appears to increase with the length of the follow-up period, indicating that long-term impact of cognitive deficits on psychosocial functioning might be more pronounced than short-term impact.

Besides the various methodological limitations, the current cognition–outcome FEP literature is also lacking explicit investigations on cognitive predictors of the degree of functional change between different points in time, rather than absolute levels at these different points (for example, predicting a GAF-change score of + 10 points or + 20%, rather than just predicting the related absolute GAF scores, i.e. a baseline score of 50 and a follow-up score of 60). Although identifying predictors of absolute level of psychosocial functioning is relevant, it is also important to investigate specific predictors of improvement and deterioration of functioning. This may be particularly relevant in when studying the early stages of these disorders.

The aim of the present study is to investigate predictors of psychosocial problems in a first-episode psychosis patient sample, including comprehensive baseline assessment of neurocognition and social cognition as well as psychotic and affective symptoms. Several domains of psychosocial functioning were included and assessed both at baseline and at 12 months follow-up. Absolute levels of psychosocial functioning as well as the degree of change in psychosocial functioning between illness onset and 12 months follow-up will be used as outcome measures.

In this prospective study, we will test the following three hypotheses: first, (1a) baseline psychotic symptoms and (1b) baseline cognitive deficits, are associated with psychosocial functioning at baseline. Second, (2a) baseline psychotic symptoms and (2b) baseline cognitive deficits predict psychosocial functioning at 12 months follow-up. Third, baseline cognitive deficits are a stronger predictor of change in psychosocial functioning in the first 12 months after baseline than baseline psychotic symptoms.

2. Method

2.1. Subjects

For the present study, a comprehensive set of cognitive, symptomatic and functional measures was collected in a large sample of consecutive first-episode psychosis patients from one urban area (The Hague, The Netherlands). In the present study a 'first-episode psychosis' (FEP) patient was defined as an individual who presents at a clinical setting with psychosis, who has never previously presented at a clinical setting with psychosis (Breitborde et al., 2009; i.e. first time 'stage 2' (McGorry et al., 2010)). During the study period (December 1, 2009 and December 31, 2011), 153 individuals were diagnosed with a non-affective first-episode psychotic disorder (DSM-IV diagnoses: 81 schizophrenia, 9 brief psychotic disorder, 5 delusional disorder, 2 shared psychotic disorder, and 56 psychotic disorder NOS) after making contact with a specialized outpatient department for first episode psychosis in The Hague, The Netherlands. Baseline measures and follow-up assessment for psychosocial functioning 12 months after baseline assessment were obtained for all patients. All baseline data presented in this study were gathered within 3 months after first contact with our department (average of 1.8 months, SD 0.6) and follow-up measures for psychosocial functioning were completed exactly 12 months after baseline functioning measures. The study was approved by the local ethics committee (reference number: NL31561.098.10). Informed written consent was obtained from all participants.

2.2. Diagnostic protocol

The diagnostic protocol used to obtain a DSM-IV diagnosis, included the following measures: clinical psychologists ($N = 2$) administered the Schedules for Clinical Assessment in Neuropsychiatry interview (SCAN) (Wing et al., 1990) ($N = 2$) and cognitive assessment ($N = 1$) (see Section 2.3). Standard psychiatric assessment and the Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1987) were administered by psychiatrists ($N = 2$) (see Section 2.4). Hetero-anamnestic data was collected from family members using the Instrument for the Retrospective Assessment of the Onset of Schizophrenia (IRAOS) (Häfner et al., 1992) by specialized psychiatric nurses ($N = 4$). Based on all obtained information, a consensus DSM-IV diagnosis was reached during a diagnostic meeting including all team members.

2.3. Cognitive assessment

Clinical psychologist performed the cognitive assessment, assessing eight neurocognitive (see Section 2.3.1) and four social cognitive (see Section 2.3.2) subdomains.

2.3.1. Neurocognition

Neurocognitive assessment included assessment of the subdomains *attention* (Continuous Performance Task, CPT 3-7 version) (Nuechterlein and Dawson, 1984), *problem solving* (Wechsler Adult Intelligence Scale, WAIS III, Block Design; Tower of London) (Shallice, 1982; Wechsler, 1997), *speed of processing* (WAIS III, Digit-Symbol Coding; Trail Making Task, Part A) (Reitan, 1958; Wechsler, 1997), *verbal fluency* (Category Fluency, Animal Naming) (Lezak et al., 2004), *verbal learning* (Rey Auditory Verbal Learning Task, RAVLT) (Rey, 1964; Kalverboer and Deelman, 1986), *visual learning* (Brief Visuospatial Memory Task Revised, BVMT-R) (Benedict, 2007), *working memory* (WAIS III, Letter–Number Sequencing) (Wechsler, 1997) and *general cognition* (WAIS III, Information and Calculations) (Wechsler, 1997).

2.3.2. Social cognition

The social cognitive measures included assessment of the subdomains *emotion perception* (Amsterdam Neuropsychological Tasks, ANT) (Sonneville, 2005), *theory of mind* (Hinting Task) (Corcoran et al., 1995), *social knowledge* (WAIS III, Picture Arrangement) (Wechsler, 1997) and *social cognitive biases* (Davos Assessment of Cognitive Biases Scale) (Bastiaens et al., 2013; van der Gaag et al., 2013).

2.4. Psychopathology

We used three separate measures to assess psychotic symptoms, anxiety and depression. The Positive and Negative Symptom Scale (PANSS) (Kay et al., 1987) was used to assess positive, negative and general symptoms. Anxiety and depression were assessed using the Beck Anxiety Inventory (BAI) (Beck et al., 1988) and Beck Depression Inventory (BDI-II) (Beck et al., 1996) respectively. For all three measures, higher scores reflect more severe symptoms.

2.5. Psychosocial functioning

The Personal and Social Performance scale (PSP) (Morosini et al., 2000) was used to assess psychosocial functioning (range 0 to 100; very poor to excellent), including the following subdomains (range 0 to 4; absent to severe): (a) socially useful activities, including work and study, (b) personal and social relationships, (c) self-care and care for personal environment, and (d) disturbing and/or aggressive behavior. Higher scores on overall personal functioning reflect better functioning, where higher scores on the four subscales reflect larger deficits in that area.