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Social cognition in patients at ultra-high risk for psychosis: What is the relation to social skills and functioning?

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ABSTRACT

Objective: Patients at ultra-high risk (UHR) for psychosis show significant impairments in functioning. It is essential to determine which factors influence functioning, as it may have implications for intervention strategies. This study examined whether social cognitive abilities and clinical symptoms are associated with functioning and social skills.

Methods: The study included 65 UHR patients and 30 healthy controls. Social cognitive function, social skills, and a broad range of functioning measures were assessed.

Results: The UHR patients demonstrated significant decrements on The Awareness of Social Inferences Task total score ($p = .046$, $d = .51$), and on the CANTAB emotion recognition task total percent correct ($p = .023$, $d = .54$) displaying particular difficulties in negative affect recognition. The patients exhibited significant impairments in social skills measured with the High Risk Social Challenge ($p < .001$, $d = 1.05$). Aspects of emotion recognition were associated with role functioning and social skill performance. The level of attributional bias was associated with overall functioning, and theory of mind ability was associated with self-reported functioning. Negative symptoms were associated with all measures of functioning ($p \leq .05$).

Conclusion: Significant impairments in social cognition and social skills were found in UHR patients. The patients' social cognitive function was associated with overall functioning and social skills. Negative symptoms appear to play an important role for functioning. Research is needed to investigate how the relations between social cognition, social skills and functioning develop from the UHR state to the stage of manifest illness. Research into how deficits in social cognition and social skills can be ameliorated in UHR patients is warranted.

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1. Introduction

Social cognition involves the cognitive processes of perceiving, interpreting, and processing social information (Green et al., 2008). A growing body of evidence has established that significant impairments in social cognition are present in patients with schizophrenia (Bora and Murray, 2014; Savla et al., 2013) and are significant determinants of functional outcome (Buck et al., 2016; Fett et al., 2011). Social cognitive impairments have also been found in patients at ultra-high risk (UHR) for psychosis (Lee et al., 2015; van Donkersgoed et al., 2015), but heterogeneous results are found regarding the domains most impaired; some studies report the largest effect sizes for deficits in attributional bias (Lee et al., 2015), while others find the largest effect sizes for theory of mind (ToM) and emotion recognition deficits (Thompson et al., 2012). Although limited in number, studies indicate that ToM deficits are associated with transition to psychosis (Kim et al., 2011; van Donkersgoed et al., 2015).

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Functioning has become an important area of research as many UHR patients exhibit pervasive impairments in functioning (Addington et al., 2011). There is an ongoing search for significant predictors of functional outcome in UHR. Studies examining the association between social cognition and functioning in UHR patients are scarce and the results inconsistent, with some studies finding positive association between ToM and functioning (Cotter et al., 2015), and affect recognition and functioning (Amminger et al., 2013), while others fail to find an association (Stanford et al., 2011). Numerous studies suggest negative symptoms to be a strong symptom predictor of social and role functioning in schizophrenia (Fulford et al., 2013; Ventura et al., 2009). Among UHR patients, negative symptoms have consistently been associated with impaired social and role functioning (Brandizzi et al., 2015; Fulford et al., 2013; Kim et al., 2011; Meyer et al., 2014) and have been found to be predictive of transition to psychosis (Demjaha et al., 2012; Valmaggia et al., 2013). A previous study has assessed the association between social cognition, clinical symptoms, and functioning in a UHR sample, and found deficits on the ToM visual jokes task to be associated with impairments in global functioning after adjusting for negative symptoms (Cotter et al., 2015). However, due to the study's rather small sample size (n = 30) these findings need to be replicated in a larger sample assessing multiple aspects of functioning as functioning is a multifaceted concept.

Social skills reflect the patients' interpersonal behavior. It can be understood as a mixture of behaviors and perceptual abilities, that includes both verbal, non-verbal, and paralinguistic communication behaviors (Liberman et al., 1986). To our knowledge there are no previous studies of social skill performance in UHR samples.

Evidence is still sparse on the relative contribution of social cognitive deficits and clinical symptoms to the functional deficits and social skills in UHR patients. If strong relationships between social cognition, symptoms and social skills and functioning are found, it could have implications for targeted treatment strategies in the UHR population.

1.1. Hypotheses

We hypothesized that UHR patients would perform significantly worse on measures of social cognition and social skills than matched healthy controls (HCs). Also, we hypothesized that the UHR patients' social cognitive deficits, and their level of negative symptoms, would significantly predict their overall functioning (i.e. composite measures of occupational functioning, social functioning, and self-care), specific measures of social functioning, and their social skills.

2. Method

Participants were recruited as part of a randomized clinical trial examining the effect of cognitive remediation in UHR patients (Glenthøj et al., 2015). This report includes baseline data on symptomatology, functioning, social skills, and social cognition. The study was carried out at the Mental Health Centre Copenhagen, Denmark. Patients were recruited from the psychiatric in-and outpatient facilities in the catchment area of Copenhagen, between April 2014 and January 2016. The study protocol was approved by the Committee on Health Research Ethics of the Capital Region Denmark (study: H-6-2013-015).

2.1. Participants

The sample consisted of 65 help-seeking patients aged 18–40 years who fulfilled one or more of the UHR criteria as assessed by the Comprehensive Assessment of At-Risk Mental State (CAARMS) (Yung et al., 2005); attenuated psychotic symptom group; brief limited intermittent psychotic symptoms group; and/ or trait and vulnerability group along with a significant drop in functioning or sustained low functioning for the past year.

Exclusion criteria were (1) past history of a psychotic episode of ≥1 week duration; (2) psychiatric symptoms that were explained by a physical illness with psychotropic effect (e.g. delirium) or acute intoxication (e.g. cannabis use); (3) a diagnosis of a serious developmental disorder (e.g., Asperger's syndrome); and (4) currently receiving methylphenidate.

A total of 30 HCs were recruited from the community by advertising on a Web page designed to recruit HC to clinical trials, or via ads at local educational institutions. They did not meet criteria for any DSM-IV disorder and did not have a first degree relative with a psychotic disorder currently or previously. The HCs were matched to patients on gender and age (± 2 years). All participants provided informed consent prior to inclusion into the study.

2.2. Assessment

Diagnoses were assessed using the Structured Clinical Interview for DSM-IV Axis I and Axis II disorders (SCID) (First et al., 1997; Ventura et al., 1998). The SCID assessors were all certified in SCID diagnostic interviewing. Other psychopathological assessments were conducted using the Brief Psychiatric Rating Scale (BPRS) (Ventura et al., 2000), and the Scale for the Assessment of Negative Symptoms (SANS) (Andreasen, 1984). The SANS total score was calculated by averaging the global scores excluding the attention global score (Arndt, 1995).

Broad, interview-based ratings served as a measure of overall functioning that consisted of the Social and Occupational Functioning Assessment Scale (Hilsenroth et al., 2000) (SOFAS), Global functioning: Social and Role Scales (Cornblatt et al., 2007), and the Personal and Social Performance Scale (PSP) (Morosini et al., 2000). These measures assess functioning in areas such as occupational functioning, social functioning, and self-care. A self-report measure of overall functioning and quality of life was obtained using the Assessment of Quality of Life (AQoL-8D)(Richardson et al., 2014). The AqoL-8D was scored according to the algorithm (weighted): http://www.aqol.com.au/index.php/ scoring-algorithms. We assessed social skill performance using the High-Risk Social Challenge task (HiSoC), a performance-based behavioral measure that has been validated in patients at genetic high-risk of developing psychosis (Gibson et al., 2010). The laboratory assessment of the patients' social skills can be seen as proximal to their interpersonal behavior in real life. Finally, participants completed the Social Responsiveness Scale, Adult version (SRS-A) (Constantino, 2014; Constantino and Todd, 2005) which is a self-report measure of social impairments validated in autism spectrum disorders, and administered to subjects with non-autistic disorders (Bölte et al., 2008; Constantino et al., 2003; Joshi et al., 2016).

The social cognitive test battery consisted of The Awareness of Social Inference Test (TASIT) (McDonald et al., 2003) that assess ToM abilities by use of video clips of everyday social interactions followed by forced-choice questions, making the participant infer what the characters in the video clips are thinking, doing, feeling, and saying. The outcome used is the overall total correct answers. TASIT has proven efficacy in detecting ToM deficits in UHR patients (Green et al., 2012a; Green et al., 2012b). The Emotion Recognition Task from the Cambridge Neuropsychological Test Automated Battery (CANTAB ERT) (Strauss et al., 2006) was used to assess the recognition of six basic facial emotional expressions; happiness, sadness, anger, disgust, fear, and surprise. The task outcome is percent correct for each emotion and a total percent correct. Finally, the participants completed the Social Cognition Screening Questionnaire (SCSQ) (Roberts et al., 2011) to assess the level of attributional bias. The SCSQ has demonstrated good construct validity (Kanie et al., 2014). The SCSQ total score was computed by summing the three capacity scales and subtracting the metacognitive overconfidence score.