



Social skill and social cognition in adolescents at genetic risk for psychosis

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ABSTRACT

Adolescents at genetic high risk (GHR) for schizophrenia have shown social skill impairments and there is some evidence to suggest they have Theory of Mind (ToM) deficits; however no research has used a standardized, performance-based behavioral measure to assess social functioning in this population nor evaluated ToM with a well-validated measure. We evaluated the psychometric properties of a new, theoretically-derived assessment of social functioning in GHR adolescents: the “High-Risk Social Challenge” task (HiSoC). The second aim was to explore whether GHR adolescents would show social skill and ToM deficits as compared to a non-psychiatric control (NPC) group. The present study evaluated social functioning with the HiSoC and ToM with the Eyes Test in 23 GHR adolescents and 31 NPCs. The HiSoC demonstrated high levels of reliability and validity. The GHR adolescents showed social skill impairments, but not ToM deficits. The results suggest that the HiSoC is a potentially useful new measure of social functioning in GHR adolescents. Furthermore, the findings add to the current body of literature that indicates that social skill impairments are related to schizophrenia vulnerability.

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1. Introduction

1.1. Social functioning in genetic high-risk adolescents

Adolescents with a first-degree relative with schizophrenia have social impairments which are related to increased vulnerability for later disease onset (Tarbox and Pogue-Geile, 2008). Relative to non-psychiatric controls (NPCs), adolescents at genetic high risk (GHR) for schizophrenia have poorer peer relationships (Glatt et al., 2006), fewer hobbies and interests (Dworkin et al., 1994) and lower social adjustment (Hans et al., 2000). These findings indicate that impaired social functioning in GHR adolescents is a marker of disease vulnerability (Stone et al., 2005).

Our current understanding of social functioning in GHR adolescents is based primarily on clinical interviews or participant self-reports (e.g., Dworkin et al., 1994; Stone et al., 2005). These measures are problematic in that responses

to the questions may be confounded by social desirability. In addition, GHR adolescents may lack insight into their own subtle social deficits (Mueser and Bellack, 1998) and thus more objective measures are needed to elucidate the role of social skill deficits as a vulnerability marker.

Indeed, objective performance-based measures have been used to examine social skill deficits in individuals with schizophrenia (for a review, see Mueser and Bellack, 1998). Performance-based measures have also been used to study social functioning retrospectively in children who later developed schizophrenia (Litter and Walker, 1993; Walker et al., 1993) and prospectively in GHR pre-adolescents and young adolescents (Schiffman et al., 2004b). Schiffman et al. (2004b) videotaped participants aged 11 to 13 years old while they were eating lunch with another study participant. The results showed that pre-adolescents and young adolescents who later developed schizophrenia were rated as less sociable than those not at risk for schizophrenia. However, Schiffman and colleagues examined a limited range of behavior and did not assess other behaviors found in the high-risk literature (e.g., social anxiety; Calkins et al., 2004). Also, the interaction was not standardized, therefore making

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it difficult to compare social behavior across participants. This suggests that a psychometrically sound means of assessing social behavior in GHR adolescents is lacking in the field.

1.2. Theory of Mind in genetic high-risk individuals

An additional way of understanding social functioning in GHR adolescents is to examine social cognition. Social cognition is of great interest in schizophrenia due to its consistent association with social functioning (Couture et al., 2006). One component of social cognition, Theory of Mind (ToM), is the ability to infer another person's mental state and is critical to effective social functioning (Corcoran, 2001; Roncone et al., 2002).

ToM impairments are well documented in individuals with schizophrenia (for reviews, see Brune, 2005; Sprong et al., 2007), but this area of research has received less attention in GHR adolescents (Sprong et al., 2007). The few studies that have been conducted using adult populations show conflicting results. Some have found no difference in ToM between GHR adults and controls (e.g., Irani et al., 2006; Kelemen et al., 2004) while others have found GHR adults are impaired relative to NPCs (e.g., Janssen et al., 2003; Marjoram et al., 2006).

In the only study that investigated ToM in GHR adolescents, Schiffman et al. (2004a) had pre-adolescents and young adolescents at GHR for schizophrenia complete the Feffer's Role-Taking Task (RTT), a measure of perspective taking. Those who later developed schizophrenia-spectrum disorders performed worse on the FTT than those who did not later develop a schizophrenia-spectrum disorder. This provides preliminary support for ToM as a vulnerability marker for schizophrenia.

1.3. The present study: aims and hypotheses

The primary purpose of the present study was to examine social skills and ToM in adolescents at GHR for schizophrenia. The High-Risk Social Challenge (HiSoC) task was developed to assess social functioning in GHR adolescents. The HiSoC is a videotaped speech challenge task similar to those implemented in the anxiety literature (e.g., Gramer and Saria, 2007). A coding scheme, derived from the GHR literature, was created to assess performance on the HiSoC. We hypothesized that GHR adolescents would be more impaired in social skill and ToM relative to non-clinical control participants.

2. Methods

2.1. Participants

Twenty-three GHR adolescents were recruited from community referrals, the University of North Carolina (UNC) Chapel Hill inpatient unit, flyers in UNC hospitals and from other high-risk studies conducted at UNC. Thirty-one non-psychiatric controls (NPCs) were recruited through flyers in the community and mass emails to the UNC community. The participants were being recruited as part of the Mapping Cortical Circuit Maturation in High Risk Adolescents study at the Conte Center at UNC.

Males and females between the ages of 9 and 18 were eligible to participate. Inclusion criteria for the GHR adolescents included having a first-degree relative with a Schizophrenia or Schizoaffective Disorder diagnosis according to DSM-IV-TR criteria using the Family Interview for Genetic Studies (FIGS; Maxwell, 1996). The affected first-degree relatives' diagnoses were confirmed with the Structured Clinical Interview for DSM-IV-TR Axis I Disorders (SCID-I; First et al., 2002). Study exclusion criteria for both the GHR and NPC groups included: Past or current DSM-IV-TR Axis I Psychotic Disorder or Bipolar Affective Disorder, as assessed with the Kiddie Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version (K-SADS-PL; Kaufman et al., 1997), past or current prodromal classification, diagnosis of a major central nervous system disorder, impaired intellectual functioning (WAIS-III/WISC-III IQ <65), current treatment with antipsychotics or a past history of more than 12 weeks lifetime cumulative treatment with an antipsychotic. The NPC group had the additional exclusion criteria of no first-degree relative with a psychotic disorder using DSM-IV-TR diagnostic criteria.

2.2. Measures

2.2.1. Social functioning measures

Social functioning was assessed with the High-Risk Social Challenge task (HiSoC). This is a test of social skills where participants are asked to perform a mock 45-second audition for a new reality show and are instructed to demonstrate why they should be chosen for the show.

The HiSoC was coded with a rating scheme derived from the GHR literature (e.g., Kendler et al., 1995; Docherty et al., 2004) and developed specifically for this task. The manual comprises 16 items rated on a five point Likert scale (higher scores indicating better social skills). See Table 1 for a listing of all the items on the HiSoC. For example, the verbal expression item assesses language and tone of the speech. Raters evaluate verbal expressiveness, such as tonal variation, inflection, and elaboration on speech content. The appearance item evaluates behavior that seems unusual and is not relevant to the speech task, such as excessively gesturing

Table 1
Factor loadings and internal consistency for the established factors (N = 54).

| Factor | Cronbach's alpha | Items | Factor loading |
|--------------|------------------|---------------------|----------------|
| Social-Inter | 0.89 | Fluency of speech | 0.96 |
| | | Guardedness | 0.78 |
| | | Social anxiety | 0.74 |
| Affect | 0.91 | Engagement | 0.90 |
| | | Facial affect | 0.88 |
| | | Nonverbal affect | 0.76 |
| | | Appropriate affect | 0.89 |
| | | Verbal expression | 0.88 |
| | | Gaze | 0.66 |
| OB & L | 0.85 | Anergia | 0.77 |
| | | Speech valence | 0.73 |
| | | Appearance | 0.66 |
| | | Odd speech | 0.89 |
| | | Tangential speech | 0.73 |
| | | Clear communication | 0.75 |

Note. Social Inter = Social-Interpersonal; OB & L = Odd Behavior and Language.

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