How to measure Social Cognition in Schizophrenia? A comparison of measurements

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BACKGROUND

Research suggests that cognitive deficits may be a rate-limiting factor that work against social improvement in schizophrenia. Deficits in social cognition, or mental operations underlying social interactions, which contain the ability to perceive the disposition and intents of others, contribute to poor social adjustment in individuals with schizophrenia. Additionally, social cognition comprises a wide range of cognitive abilities that are critical for social functioning (for example, ability to recognize social cues, deduce mental states of others, evaluate social context, and understand emotions. As a result, deficits in social cognition can challenge functional recovery, notwithstanding symptom stabilization. Although there is an increasing understanding of social cognition and functioning in schizophrenia, there is a lack of scientifically sound assessment tools to measure domains of cognitive functioning. The development of social cognitive measures is an important stage in expounding upon the factors that influence functional deficits in schizophrenia.

This research presents a psychometric investigation of the most commonly used scales in social cognition and a comparison to new measure to assess social cognition, the Dynamic Social Cognition Battery (DSCB).

OBJECTIVES

The current study examines the psychometric properties of 3 commonly used static image tests of social cognition and compares it to a dynamic image test measuring Emotion Recognition, Attributional Style and Theory of Mind.

METHODS

Sample

58 subjects with DSM-IV schizophrenia at Manhattan Psychiatric Center (in- and out-patient) were assessed on 4 social cognition measures.

Data Analysis

• A three-way Analysis of Variance (ANOVA: emotion state x display type x test) for performance varied across emotion states for accuracy rates. Cohen’s $f$ was used to detect effect sizes for mental state and an effect size for test.

• One-sample t-tests were used to indicate that for all tests, if participants were significantly more likely to select the correct word than would be expected by chance ($\%$ of the time) in each display type, averaged across the different emotion states.

• Concurrent validity (a type of construct validity) is the capacity of an instrument to agree with other constructs that coexist with the one assessed by the test. Concurrent validity of the DSCB was assessed by analyzing the agreement between the DSCB ratings with the FEIT, ER-40 and MSCEIT scores. Pearson correlations was used to analyze the associations.

• Assessment of Convergent Validity: For convergent validity, DSCB verbal and nonverbal component total scores were expected to show a moderate and significant ($p<0.05$) correlation with MSCEIT, the DSCB Emotion Identification score was expected to show a moderate and significant correlation with the FEIT, and total DSCB Emotion Discrimination score was expected to show a moderate and significant correlation with MSCEIT scores. Pearson and Spearman correlations between scores were computed.

• Assessment of Divergent Validity: Divergent validity is the degree of disagreement of an instrument with another instrument, which measures a different construct. The divergent validity of the DSCB was assessed by examining agreement of the Emotion Identification Component of the DSCB with the total FEIT and ER-40, the Emotion Discrimination Component of the DSCB with the MSCEIT by Pearson correlations and the Verbal and Non-verbal Component of the DSCB with the total MSCEIT score. For divergent validity, DSCB component total scores were expected to show a low correlation with scores of the FEIT, ER-40 and MSCEIT.

MEASURES OF SOCIAL COGNITION IN SCHIZOPHRENIA

Dynamic Social Cognition Scale (DSCB)

The DSCB (social cognition scale) is an instrument under development with the goal of measuring together some of the components of social cognition, specifically: Emotion Perception, Social Perception, Attributional Style, and Theory of Mind. The DSCB shows dynamic video clips and patients are asked to respond to various situations and video images.

Facial Emotion Identification Task (FEIT)

For the FEIT, participants choose from among 6 emotion words (happy, angry, afraid, sad, surprised, and ashamed) to describe the facial expression depicted in black-and-white photographs.

Penn Emotion Recognition 40 (ER-40)

The ER-40 presents 2D images of black and white and colored photographs, and subjects are asked to respond among 5 emotions (happy, angry, sad, fear, no emotion).

The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)

The MSCEIT is an ability-based test designed to measure the four branches of the Emotional Intelligence model of Mayer and Salovey. MSCEIT was developed from an intelligence-testing tradition formed by the emerging scientific understanding of emotions and their functions. MSCEIT is part of the MCCB MATRICS battery of tests.

RESULTS

<table>
<thead>
<tr>
<th>Categorical Variables</th>
<th>DSCB</th>
<th>FEIT</th>
<th>ER-40</th>
<th>MSCEIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medications</td>
<td>10.87%</td>
<td>76.09%</td>
<td>15.04%</td>
<td>1.43</td>
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<tr>
<td>Ethnicity</td>
<td>73.91%</td>
<td>26.09%</td>
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<tr>
<td>Positive</td>
<td>83.54%</td>
<td>26.09%</td>
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<tr>
<td>Positive</td>
<td>8.70%</td>
<td>2.17%</td>
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<td></td>
</tr>
<tr>
<td>Positive</td>
<td>36.76 (SD = 12.11)</td>
<td></td>
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</tbody>
</table>

Conclusions

Dynamic image scales such as the DSCB show a higher accuracy of identifying emotions than static image scales.

The model indicates that social cognition may be misidentified in subjects with schizophrenia as the measurement tools being used are not accurately representing the subject’s level of emotion perception.

Treatment studies should focus on social cognition tools that are more dynamic in order to assessment endpoint change. This area of treatment should also focus on which assessment tools are best for clinical trials.

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