



## Metacognition in schizophrenia: Correlates and stability of deficits in theory of mind and self-reflectivity

Paul H. Lysaker<sup>a,b,\*</sup>, Kyle L. Olesek<sup>c</sup>, Debbie M. Warman<sup>c</sup>, Joel M. Martin<sup>d</sup>, Anlize K. Salzman<sup>c</sup>, Giuseppe Nicolò<sup>e</sup>, Giampaolo Salvatore<sup>e</sup>, Giancarlo Dimaggio<sup>e</sup>

<sup>a</sup> Roudebush VA Medical Center, Indianapolis, IN, USA

<sup>b</sup> Indiana University School of Medicine, Indianapolis, IN, USA

<sup>c</sup> University of Indianapolis School of Psychological Science, Indianapolis, IN, USA

<sup>d</sup> Department of Psychology Butler University, Indianapolis, IN, USA

<sup>e</sup> Terzo Centro di Psicoterapia Cognitiva, Associazione di Psicologia Cognitiva, Rome Italy

### ARTICLE INFO

#### Article history:

Received 4 December 2009

Received in revised form 22 April 2010

Accepted 14 July 2010

#### Keywords:

Schizophrenia

Metacognition

Theory of mind

Depression

Positive symptoms

Disorganization symptoms

Affect recognition

### ABSTRACT

Research suggests that many with schizophrenia experience a range of deficits in metacognition including difficulties recognizing the emotions and intentions of others as well as reflecting upon and questioning their own thinking. Unclear, however, is the extent to which these deficits are stable over time, how closely related they are to one another and whether their associations with core aspects of the disorder such as disorganization symptoms are stable over time. To explore this issue, we administered three assessments of Theory of Mind (ToM), the Beck Cognitive Insight Scale (BCIS), and the Positive and Negative Syndrome Scale at baseline and 6 months to 36 participants with schizophrenia. Correlations revealed the ToM and BCIS scores were stable across the two test administrations and that the ToM tests were closely linked to each other but not to the BCIS. Poorer baseline performance on the ToM tests and the Self-Certainty scale of the BCIS were linked to greater cognitive symptoms at baseline and follow-up, while greater Self-Reflectivity on the BCIS was linked to greater levels of emotional distress at both baseline and 6-month follow-up. Results are consistent with assertions that deficits in metacognition are a stable feature of schizophrenia.

Published by Elsevier Ireland Ltd.

### 1. Introduction

Metacognition refers to the general capacity to think about thinking (Semerari et al., 2003). It is thought to reflect a general aptitude that involves a wide range of semi-independent faculties, which include awareness of one's own mental processes, the fallibility of one's own thought, the ability to infer emotions from others faces and prosody, and Theory of Mind (ToM) (Baron-Cohen et al., 1985) or the cognitive understanding of ideas, beliefs and intentions of other people. As such, metacognition refers to a number of discrete tasks such as forming and revising representations of one's own mental states and the mental states of others in any of a number of rapidly evolving contexts. It is through metacognitive processes that persons are able to discern their own cognitive abilities and knowledgeably apply them in appropriate situations. While metacognition may be associated with neurocognition, which refers to more general cognitive capacities (e.g. memory, attention and flexibility in abstract thought), it differs from that construct in that it refers both to implicit

and explicit understanding of, or recognition of, knowledge about one's own and other's thought processes and internal states.

Over the last 15 years, research has increasingly suggested that many with schizophrenia experience a range of different kinds of impairments in metacognitive capacity. Persons with schizophrenia, for instance, have been found to have a range of ToM difficulties including problems with forming ideas about the things other people are thinking, decoding irony in speech, and grasping the meaning of words and gestures (Franck et al., 2001; Brüne, 2005; Brüne and Brüne-Corrs, 2006). They may also experience difficulties with self-reflection, struggling to recognize themselves as the source of one's own thoughts and actions as well as evolving a coherent account of their personal narrative over time (Lysaker et al., 2005; Stratta et al., 2007; Lysaker and Lysaker, 2008; Dimaggio et al., 2009; Saavedra et al., 2009). Deficits in metacognition are of interest for persons with schizophrenia given that they may represent unique barriers to the recovery of function. Impairments in ToM and self reflectivity have been found to be a significant predictor of social and work function, for instance, independent of concurrent assessments of neurocognition (Roncone et al., 2002; Bora et al., 2006; Brüne et al., 2007; Bell et al., 2009; Lysaker et al., 2009, 2010).

One limitation of the literature to date, however, is that it has tended to involve assessments at one point in time, leaving unclear the role that

\* Corresponding author. Roudebush VA Med Center (116H), Roudebush VA Medical Center, 1481 West 10th Street, Indianapolis, IN 46202, USA.

E-mail addresses: [plysaker@iupui.edu](mailto:plysaker@iupui.edu), [Lysaker.Paul\\_H\\_PHD@Indianapolis.va.gov](mailto:Lysaker.Paul_H_PHD@Indianapolis.va.gov) (P.H. Lysaker).

these deficits play over time for persons in a stable phase of illness (Bell et al., 2010). Further, as noted by Sprong and colleagues (2007), only five studies were available which involved remitted patients, and the number of remitted patients in these studies was very small. Thus, unresolved at present is whether metacognitive deficits, for instance, resemble positive symptoms in that they appear and disappear over time? Do their associations with other outcomes vary over time? In particular, we would suggest that research is needed that examines: i) the extent to which these deficits are stable over time, ii) how closely or not closely are these deficits related to one another and iii) whether their associations with core aspects of the disorder such as negative and disorganization symptoms are stable over time.

To address these issues, the current study is among the first to examine whether scores on three separate assessments of ToM which are specific to the intentions and feeling of others, and two measures of selected aspects of self reflectivity, the self-reflectiveness and self-certainty subscales of the Beck Cognitive Insight Scale (BCIS; Beck et al., 2004), gathered at baseline would be significantly correlated with scores obtained on the same measures six months later. Previous studies supporting this possibility includes work by Shur and colleagues (2008) that suggest that level of symptom severity explained the majority of the variance in performance on ToM tasks requiring the recognition of affect and intention. In addition, Inoue and colleagues (2006) and Bora and colleagues (2009) have reported ToM deficits could be found in all phases of illness, further suggesting it may be a stable feature of illness. In contradiction to this, Pousa and colleagues (2008) have reported evidence suggesting that these deficits are state dependent and may fluctuate with the presence and absence of positive symptoms.

We secondly sought to test the predictions that different measures of ToM focused on the intentions and feelings of others would be more closely related to one another than to measures of two orthogonal aspects of self-awareness measured using the Beck Cognitive Insight Scale: Self Certainty and Self-Reflectiveness (BCIS; Beck et al., 2004). Evidence suggests that knowing the thoughts of others may involve a slightly different set of brain functions than knowing oneself, though overlapping areas serving both mechanisms have been found, in particular under conditions in which the target is perceived as similar by the subject (Heberlein et al., 2005; Mitchell et al., 2006; Saxe, 2006). Thus, it is at least theoretically possible that either the capacity for knowing oneself or knowing the other may be impaired while the other may be at least partially intact. Importantly, research and theory suggest that ToM includes a range of semi independent verbal and non-verbal functions including inferring emotions in the others and inferring intentions and beliefs and reasoning about them (Baron-Cohen, 2005; Dimaggio et al., 2009; Bell et al., 2010). Accordingly, we included a measure of the verbal-reasoning aspect of ToM, the Hinting Task (Corcoran et al., 1995), a measure of the non-verbal aspect, the Eyes Test (Baron-Cohen et al., 2001) and another test involving both verbal and non-verbal elements, the Bell Lysaker Emotion Recognition Task (BLERT, Bryson et al., 1997), which offers cues in terms of spoken content, prosody and facial expression.

Finally, this study is among the first to test the prediction that poorer performance on baseline assessment of ToM tests of awareness of the thoughts and feelings of other people would be significantly correlated with concurrent and future levels of negative and disorganization symptoms, and that greater Self reflectivity on the BCIS would be linked to depression while greater Self-Certainty would be correlated with higher disorganization and positive symptoms. Research supporting these predictions includes findings that deficits in the ability to understand the thoughts and feelings of others is more closely linked with disorganized or cognitive symptoms than other symptom domains (Bryson et al., 1997; Greig et al., 2004). This finding has been replicated by Abdel-Hamid and colleagues (2009), who also found a weaker, though significant, link between ToM and negative symptoms. At least one other group has also found links between ToM tests and negative symptoms (Shamay-Tsoory et al., 2007), while in

general links have not been consistently found between ToM and positive symptoms. Pertaining to self awareness, previous research has linked the Self-Certainty but not the Self-reflectivity subscale of the Beck Cognitive Insight Scale with higher levels of positive symptoms (Pedrelli et al., 2004). Other studies which have analyzed personal narratives in terms of self-reflectivity have found poorer self reflectivity was linked to disorganization symptoms and also to relatively lower levels of depression (Lysaker et al., 2007). Regarding a possible link between negative symptoms with self-reflectivity, findings have been inconsistent (Pedrelli et al., 2004).

In this study we have chosen to examine persons with schizophrenia spectrum disorders and included participants with both schizophrenia and schizoaffective disorder. This decision was based on previous findings suggesting that the metacognitive as well as neurocognitive performance of these groups tends to be equivalent (Evans et al., 1999; Lysaker et al., 2005).

## 2. Methods

### 2.1. Participants

Participants were 33 men and 3 women diagnosed with schizophrenia (19) or schizoaffective disorder (17) as confirmed by the Structured Clinical Interview for DSM-IV (SCID). All were in a post acute phase of illness defined by no changes in medication, hospitalization or housing within the last 30 days. Other exclusion criteria were active substance dependence and a chart diagnosis of mental retardation. All were recruited from either a local VA Medical Center ( $n = 29$ ) or Community Mental Health Center ( $n = 7$ ). The mean age was 50.39 (S.D. = 8.29) and mean educational level was 12.92 (S.D. = 1.91). The average participant had had 8.06 (S.D. = 8.70) lifetime psychiatric hospitalization the first occurring on average at age 24.58 (S.D. = 8.80). Eighteen were African American, and 18 were Caucasian. All participants received treatment during the six month period between initial and follow-up assessment which included taking antipsychotic medication.

### 2.2. Instruments

#### 2.2.1. The Hinting Test

The Hinting Test (Corcoran et al., 1995) is a paper-and-pencil test that presents the participant with a brief story and then instructs the participant to make a judgment about the intentions of one of the fictional characters on the basis of "hints" embedded within the story. There are 10 items and a score of "2" is given if the intention is guessed correctly on the first try and a score of "1" is given if a correct guess is made after an explicit hint. The test used is the one containing items as rewritten in American English by Greig and colleagues (Greig et al., 2004). As an assessment of ToM, it taps more cognitive aspects relating to the intentions of others.

#### 2.2.2. Bell-Lysaker Emotional Recognition Task (BLERT)

The BLERT (Bell, et al., 1997; Bryson et al., 1997) is a traditional measure of affect recognition. Participants are presented with videotaped segments and asked to correctly identify two positive and four negative affects presented by an actor on a video tape. Scores are available for the number of correctly identified affects, ranging from 0 to 18. Categorical stability of measurement over five months ( $Kappa = 0.93$ ) and discriminant validity among community, substance abuse, and schizophrenia samples has been demonstrated elsewhere (Bell et al., 1997).

#### 2.2.3. Reading the Mind in the Eyes Test

The Eyes Test (Baron-Cohen et al., 2001) presents participants with 36 photographs of one set of eyes surrounded by four words which could be used to describe the feeling/thought expressed by the eyes. While this measure was designed and tested on persons who did not have psychosis, it has been used successfully in studies involving participants with schizophrenia (McGlade et al., 2008; Shur et al., 2008).

#### 2.2.4. Beck Cognitive Insight Scale (BCIS)

The BCIS (Beck et al., 2004) is a 15-item questionnaire that asks individuals to what extent they agree with statements pertaining to how certain they are of the accuracy of their judgments. It includes items such as "I have jumped to conclusions too fast" and "I can trust my own judgment at all times." Two subscale scores are produced which are both conceptually relevant to metacognition: Self-Reflectiveness and Self-Certainty, with higher scores on the former being indicative of higher levels of cognitive insight while higher levels on the latter are reflective of lower levels of cognitive insight. Evidence of initial reliability and validity has been reported elsewhere (Beck et al., 2004).

#### 2.2.5. Positive and Negative Syndrome Scale (PANSS)

The PANSS (Kay et al., 1987) is a 30-item rating scale completed by clinically trained research staff at the conclusion of chart review and a semi-structured interview. For the purposes of this study, four of the five PANSS factor analytically derived components

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات