



Metacognition and social function in schizophrenia: Associations of mastery with functional skills competence

Paul H. Lysaker^{a,b,*}, Bryan P. McCormick^c, Gretchen Snethen^d, Kelly D. Buck^a, Jay A. Hamm^e, Megan Grant^e, Giuseppe Nicolò^{f,g}, Giancarlo Dimaggio^h

^a Roudebush VA Medical Center, Indianapolis, IN, United States

^b Indiana University School of Medicine, Indianapolis, IN, United States

^c Indiana University, Department of Recreation, Park & Tourism Studies, Bloomington, IN, United States

^d Temple University, Department of Rehabilitation Sciences, United States

^e University of Indianapolis, School of Psychological Science, Indianapolis, IN, United States

^f Terzo Centro di Psicoterapia Cognitiva, Italy

^g Associazione di Psicologia Cognitiva, Rome Italy

^h Clinical Psychology Specialization Program, University La Sapienza Rome, Italy

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ABSTRACT

Research has suggested that many with schizophrenia experience deficits in the ability to form complex ideas about their own mental states and those of others and to use that in the service of responding to the challenges of both everyday life and the illness itself. Preliminary evidence suggests that deficits in such metacognitive and social cognitive functions are a predictor of function independent of other aspects of schizophrenia. In this study, we explored whether the domain of metacognition that reflects the ability to form knowledge about one's own mental states and those of others and to use that knowledge to respond to psychological challenges, known as Mastery, was related to performance on a test of functional skills competence. Participants were 40 adults with schizophrenia spectrum disorders in a non-acute phase of illness. Metacognitive Mastery was assessed using the Metacognitive Assessment Scale (MAS) and skills competence was assessed using the UCSD Performance-Based Skills Assessment Battery (UPSA). Symptoms were also assessed using the Positive and Negative Syndrome Scale and executive function was assessed with the Wisconsin Card Sorting Test. Correlations revealed a significant relationship between Mastery and the UPSA comprehension/planning subscale. This relationship persisted even after controlling for symptoms and executive function in a regression analysis. Results are consistent with the possibility that the ability to use metacognitive knowledge to respond to daily life is uniquely linked with certain forms of functional competence among persons with schizophrenia, independent of the effects of illness severity.

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1. Introduction

Persons with schizophrenia have been observed to experience deficits in a range of tasks that call for thinking about one's own thoughts and those of others. They may experience difficulties understanding the intentions and emotions inherent in the speech, gestures, and actions of others. They may struggle to put their own emotions into words, to recognize that they are the source of their own actions, to question their own beliefs, or to form complex representations of themselves and others (Frith, 1992; Dimaggio and Lysaker, 2010). These difficulties are often referred to as impairments in "Social cognition," "Metacognition," "Theory of Mind," and

"Mentalizing." They describe limitations in the capacity to think about thinking and emotion and are not reducible to symptoms or other general deficits in neurocognition (Penn et al., 1997; Langdon et al., 2001; Hasson-Ohayon et al., 2009). These deficits are of growing interest given evidence that their relationship to outcome is independent of other global indicators of wellness or illness (Abdel-Hamid et al., 2009; Bell et al., 2009; Lysaker et al., 2010a; 2010b).

Of note, these difficulties include problems carrying out relatively discrete processes such as mental state attribution and mental state reasoning (Brüne, 2005; McGlade et al., 2008). At the more elemental level these kinds of deficits have been suggested to result in dysfunction because they interfere with recognizing important information occurring within social interactions, for example the meaning of a joke or casual comment (Bora et al., 2006; 2009; Brüne et al., 2007; Stratta, et al., 2007; Salvatore et al., in press). Deficits involved in thinking about thinking, however, also include difficulties with more synthetic processes including those required to construct

* Corresponding author at: Roudebush VA Med Center (116H), 1481 West 10th St, Indianapolis, IN 46202, United States. Tel.: +1 317 988 2546.

E-mail address: plysaker@iupui.edu (P.H. Lysaker).

complex ideas or representations of oneself and others and the use of that knowledge to solve difficulties that arise in daily life (Roe and Davidson, 2005; Silverstein and Bellack, 2008; Kean, 2009; Saavedra et al., 2009). Here we are referring to deficits that leave persons without a sense of the larger picture of what is happening that is needed to make sense of dilemmas, find meaning in life, and adapt to a changing environment (Dimaggio et al., 2008; 2009).

In this paper we are concerned explicitly with these more synthetic aspects of the capacity for thinking about thinking and their use to respond to challenges. For simplicity sake we will refer overall to these cognitive processes as “metacognition.” By metacognition we refer to this general set of semi-independent faculties which involve primarily reflexive qualities needed to form ideas about oneself and others (e.g. Semerari et al., 2003). We will further refer to the use of metacognitive knowledge in response to difficulties as Mastery. We underscore that deficits in Mastery may affect function not merely in that they reflect difficulties in making sense out of discrete mental states, but in that they reflect difficulties synthesizing knowledge of one's own thoughts and feelings and the knowledge of the thoughts and feelings of others in order to form adaptive ways to respond pragmatically to life challenges (Semerari et al., 2003). Thus, these deficits may theoretically be an additional impediment to function beyond deficits in discrete neurocognitive or social cognitive abilities in that they may leave persons without a larger synthesized account of what is transpiring between themselves and others which, if intact, might allow for persons to find ways to make accommodations for more discrete deficits.

To date, we have reported, in several studies, links between the capacity for metacognitive mastery and social function among adults with prolonged forms of schizophrenia. Specifically, we have found that Mastery mediates the impact of neurocognitive deficits on concurrent levels of the frequency and quality of daily social contacts (Lysaker et al., 2010b). We have also found that the links between Mastery and social function persist when assessed longitudinally (Lysaker et al., 2011), that Mastery is related to more impoverished social schemas (Lysaker et al., 2010c) and that lower levels of Mastery are related to both low self-esteem and social anxiety (Lysaker et al., in press). One limitation of this work is that it has largely relied on assessments of social functioning which are derived from interview and not observation. It is thus possible that our findings have been a reflection of persons who perform poorly on interview measures since we have also assessed Mastery on the basis of an interview.

To respond to this limitation, the current study seeks to examine whether assessments of Mastery, using the modified Metacognition Assessment Scale (MAS; Semerari et al., 2003; Lysaker et al., 2005), would be related to a comprehensive behavioral assessment of functional competency using the UCSD Performance-Based Skills Assessment Battery (UPSA; Patterson et al., 2001). The UPSA has been found to be a valid and reliable assessment of real life function (Green et al., 2011) and contains at least two subscales that we hypothesize should be related to metacognition: Comprehension/Planning and Communication. We reasoned that with lower levels of Mastery in particular, persons might be less able to imagine, plan and carry out more organized actions and as a result display poorer comprehension and planning skills. Similarly, with deficits in Mastery, we expected that communication skills might also be lower. Specifically, we made two predictions. We first predicted that greater levels of Mastery would be related to better performance on both the Comprehension/Planning and Communication UPSA subscales. We found no reason to believe that the other three UPSA subscales Finance, Transportation and Household Chores would be linked to metacognition, as none seems to require any kind of reflective quality. Second, we predicted that the links between Mastery and functional competence would persist after controlling for symptoms and executive function, variables potentially linked to Mastery in previous studies (e.g. Lysaker et al., 2005; 2010b).

2. Methods

2.1. Participants

A total of 45 adults were recruited as part of a study of the correlates of daily activity among persons with schizophrenia. Of these, one participant subsequently withdrew following initial data collection while four others failed to provide data on at least one of the study instruments leaving a total of 40 with viable data. All met the criteria for schizophrenia ($n = 19$, 48%) or schizoaffective disorder ($n = 21$, 52%). Participants were recruited from a VA medical center ($n = 32$, 80%) or a community mental health center ($n = 8$, 20%). The sample was predominantly male (90%) and reported being of either African American, non-Hispanic origin ($n = 22$, 55%) or Caucasian ($n = 18$; 45%). The mean age was 48.50 ($sd = 8.62$; range = 21–65). The mean educational level was 12.55 ($sd = 1.46$). All participants had previously participated in a study of the effects of cognitive therapy on outcome in schizophrenia.

2.2. Instruments

2.2.1. Indiana Psychiatric Illness Interview

Indiana Psychiatric Illness Interview (IPII; Lysaker, et al., 2002) is a semi-structured interview developed to assess how individuals understand their experience with mental illness. Trained research assistants conducted the interview that typically lasted between 30 and 60 min. Responses were audio-taped and later transcribed. The interview is conceptually divided into five sections. First, rapport is established and participants are asked to tell the story of their lives, beginning with their earliest memory. Second, participants are asked if they think they have a mental illness and, if so, whether or not this condition has affected different facets of their life. Third, participants are asked if and how their condition controls their life and, alternately, how they control their condition. Fourth, they are asked how their condition affects and is affected by others. Finally, participants are asked about their expectations of the future. The IPII differs from other psychiatric interviews in that only minimal content is introduced for the participant to comment on and thus results in a self-report that can be analyzed in terms of the metacognitive capacities that appear spontaneously.

2.2.2. The Metacognition Assessment Scale

The Metacognition Assessment Scale (MAS; Semerari et al., 2003) is a rating scale that assesses metacognitive abilities. It was originally designed to detect growth within psychotherapy transcripts and, in consultation with the authors, has been abbreviated and adapted for the study of IPII transcripts (Lysaker et al., 2005). The MAS differs from other more structured assessments of metacognition in that it focuses on metacognitive functions that arise spontaneously, rather than cued as in a task or referenced in a questionnaire. For the purposes of this study, we were interested in the Mastery subscale. Mastery refers to the ability to respond to and cope with psychological problems using metacognitive knowledge. Mastery scores on the MAS range from 0 to 9. Higher ratings suggest the capacity to utilize knowledge about mental states to adaptively manage conflicts and subjective distress while lower ratings suggest difficulties identifying or describing psychological problems in plausible terms or at best responding to them with avoidance. Assessments of inter-rater reliability revealed significant levels of agreement between blind raters in this study ($r = 0.91$; $p < .0001$). The other MAS subscales (i.e., self-reflectivity, awareness of the other's mind, and decentration) were not included to limit the number of analyses and risk of false positives. Evidence of validity of the Mastery subscale includes findings linking it with other assessments of social cognition and coping independent of indicators of psychopathology and cognitive function (Lysaker et al., 2010c; in press).

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