



Associations of symptoms, neurocognition, and metacognition with insight in schizophrenia spectrum disorders

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Abstract

Many persons with schizophrenia experience poor insight and, as a result, are at risk for treatment non-adherence and numerous negative outcomes. However, to date, the etiology of poor insight has not yet been fully elucidated. One recent theory concerning the roots of poor insight in schizophrenia has proposed that it may result, in part, from impairments in metacognition, or the capacity to think about thinking. The present study thus aims to examine whether metacognition is associated with insight even after controlling for the effects of psychiatric symptomatology and neurocognition. In this study, 95 adults with a schizophrenia spectrum disorder were assessed on measures of insight (i.e., awareness of symptoms, treatment needs, and illness consequences), psychiatric symptoms (i.e., positive symptoms, negative symptoms, and general psychopathology), neurocognitive functions (i.e., executive function, memory, and attention), and metacognitive capacities (i.e., self-reflectivity and theory of mind). Univariate correlations followed by stepwise multiple regressions, which controlled for symptoms and neurocognition, indicated that both self-reflectivity and theory of mind were significantly linked with awareness of symptoms; theory of mind was linked with awareness of treatment needs; and self-reflectivity was linked with awareness of illness consequences. Importantly, these findings suggest that metacognitive capacities may be related to insight independent of concurrent psychiatric symptoms and neurocognitive deficits. Moreover, awareness of different facets of the illness may require contributions from different components of metacognition. Future research should investigate how existing metacognitive skill training programs could potentially be tailored, or modified, to help persons with schizophrenia to develop and enhance insight.

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1. Introduction

Poor insight is one of the most common clinical symptoms of schizophrenia [1]. Research has shown that poor insight is associated with many negative outcomes for persons with schizophrenia [2], including lowered medication adherence [3], more frequent hospitalizations [4], higher relapse and readmission rates [5], and poorer prognosis [6]. Additionally, poor insight has been related to reductions in social functioning [7], occupational functioning [8], and quality of life [9]. Given the adverse effects of poor insight on a wide range of clinical and psychosocial outcomes, it is of paramount importance to understand the etiology of insight impairment in schizophrenia, which has important implications for the development of effective interventions to improve illness awareness, treatment adherence, and recovery outcomes.

In the literature, various etiological models of poor insight have been proposed; however, research on these models has

produced equivocal results [1]. Specifically, one etiological model has considered poor insight as a primary symptom of schizophrenia, which is closely linked with other schizophrenic symptoms such as delusions and hallucinations [10]. However, this model was discredited by the inconsistent findings across previous studies [2]. Whereas some studies reported significant associations of poor insight with positive symptoms [11] and negative symptoms [12], other studies failed to replicate these findings [13,14].

Another well-studied etiological model has considered insight impairment as a consequence of neurocognitive deficits, which are presumably secondary to the cerebral disease process in schizophrenia [15]. In support of this model, some imaging studies demonstrated linkages between poor insight and dysfunctions in the cortical areas that support cognitive functions [16]. Several neuropsychological studies also found significant associations of poor insight with impairments in executive function [17,18], memory [19], and attention [20]. Nevertheless, some other studies did not find these associations [21,22]. In fact, even the most consistent finding concerning a relationship between poor

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insight and perseverative errors in the Wisconsin Card Sorting Test has also failed to be replicated [1].

Since the predictive powers of symptoms and neurocognition on insight appear to be limited, more recently, some authors have alternatively conceptualized poor insight as impaired metacognition [23,24]. The term “metacognition” refers to a spectrum of mental activities that involve thinking about thinking [25,26]. These activities range from discrete acts, such as noticing a specific thought or feeling, to synthetic acts, wherein an array of thoughts and feelings are integrated into larger complex representations [25,26]. From a metacognitive perspective, the development of insight requires an individual to not only notice and reflect upon historical events related to one’s own illness, but also make sense of such experiences and develop a personally meaningful and consensually valid narrative of the illness [26]. In other words, to develop insight, an individual would need to construct a coherent and integrated account of his/her psychiatric challenges, which would necessitate the abilities to form, think about, and use increasingly complex representations of oneself and others within the flow of life [26].

One metacognitive capacity with particularly important relationships to insight is self-reflectivity, which refers to the ability to think about one’s own mental state [27]. It has been argued that the ability to be aware of one’s own mental state may be essential to be able to notice and label aberrant perceptual experiences as psychiatric symptoms [24]. Taking a reflective stance on one’s own mental state may also be needed to help one to become aware of having some thoughts and feelings that are subjective and fallible (e.g., paranoia) [24]. Self-reflectivity in this way allows individuals with schizophrenia to make sense of their psychological and social difficulties, ultimately enabling them to recognize and respond effectively to their psychiatric conditions [26]. On the other hand, deficits in self-reflectivity may compromise the individuals’ ability to synthesize and comprehend ideas about their selves and may even make them inappropriately attribute their own symptoms to external forces [23].

Another metacognitive capacity that may be important for the development of insight is theory of mind, which refers to the ability to think about others’ mental states [23]. The reason is that the concept of mental illness and its associated behaviors are indeed essentially defined in reference to cultural norms [23]. For instance, delusions refer to firmly-held and unshakable erroneous beliefs that are generally unaccepted by other people in the individual’s culture. In order to become aware of having a mental illness, a person may need to imagine him/herself in the “mental shoes” of another person, and then judge and reason about whether that person would perceive him/her as exhibiting abnormal behavior [28]. In this sense, insight can be perceived as a metacognitive capacity to take onboard the mental perspectives of others when reflecting upon one’s own mental health [29]. A failure to grasp the evaluations of oneself by others may lead one to construct a narrative of his/her illness that cannot be comprehended by others [23].

Research studies have thus far consistently shown that metacognition is compromised in many persons with schizophrenia [30,31]. However, research on the relationship between metacognition and insight has yielded mixed results, with some studies showing a positive association [32,33] and others reporting no association [13,34]. These contradictory results could be explained by many factors, such as the varying diagnostic groups investigated in different studies, the use of different measures of insight and/or metacognition, and the lack of control for neurocognitive status, which might affect both self-reflectivity [35] and theory of mind capacities [36] as well as clinical insight [16]. Another confounding factor could be psychiatric symptomatology, which might influence not only the degree of insight impairment [2] but also the performance on self-reflectivity [37] and theory of mind measures [36]. Finally, the complexity of the insight construct might also account for the inconsistent findings [24]. Being a multi-dimensional construct, poor insight may comprise varying levels of unawareness of different facets of the illness (e.g., symptoms, treatment needs, and illness consequences) [38]. Therefore, studying insight with a focus on its different dimensions may reveal different relationships between insight and metacognition [24].

To date, the etiology of poor insight has not yet been fully elucidated. No research has examined the metacognitive roots and nature of insight after controlling for the effects of psychiatric symptomatology and neurocognition. Therefore, the present study aims to comprehensively examine the symptomatic, neurocognitive, and metacognitive correlates of different dimensions of insight in persons having a schizophrenia spectrum disorder. Specifically, this study aims to address the following questions: (1) whether insight is related to positive symptoms and negative symptoms; (2) whether insight is related to executive function, memory, and attention; (3) whether insight is related to self-reflectivity and theory of mind; and (4) whether metacognitive capacities are associated with insight even after controlling for psychiatric symptoms and neurocognitive functions.

2. Methods

2.1. Participants

In this study, participants were recruited from the psychiatric service centers operated by five non-governmental organizations in Hong Kong. Inclusion criteria were Cantonese-speaking Chinese and a diagnosis of a DSM-IV-TR schizophrenia spectrum disorder. Diagnosis of each participant was ascertained by his/her psychiatrist based on clinical interviews and reviews of medical records. Participants who had active substance dependence, organic brain syndrome, or intellectual disability, as determined by their psychiatrist, were excluded. All participants provided written informed consent. The study was approved by the relevant clinical ethics committee.

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