

Social Cognition and Psychotic Symptoms in Adolescents & Young Adults with Schizophrenia Spectrum Disorders in comparison to Bipolar Disorder

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List of Abbreviations

5-HIAA	5-Hydroxyindoleacetic acid
5-HT	5-hydroxytryptamine (serotonin)
AC	Adenyl Cyclase
APA	American Psychiatric Association
AS	Attributional Style
AVP	Arginine Vasopressin
BD	Bipolar Disorder
BDNF	Brain-derived neurotrophic factor
BPD	Borderline personality disorder
BSD	Bipolar Spectrum Disorder
CBT	Cognitive Behavioral Therapy
CET	Cognitive Enhancement Therapy
CNS	Central Nervous System
CNTRICS	Cognitive Neuroscience Treatment Research to Improve Cognition in Schizophrenia
CSF	Cerebrospinal fluid
DA	Dopamine
DSM IV	Diagnostic and Statistical Manual of Mental Disorders
DSM IV-TR	Diagnostic and Statistical Manual of Mental Disorders Text Revision
ECT	Electroconvulsive Therapy
EP	Emotional Processing
ER	Endoplasmic Reticulum
ERK/MAPK	Extracellular signal-regulated kinase – Mitogen-activated Protein Kinase
FDA	Food and Drug Administration
GSK-3	Glycogen synthase kinase
GWAS	Genome-wide association study
HAM-D	Hamilton Depression Rating Scale
HPA	Hypothalamic–Pituitary–Adrenal
IQ	intelligence quotient
MATRICS	Measurement and Treatment Research to Improve Cognition in Schizophrenia
MDD	Major depressive disorder
MRI	Magnetic resonance imaging
NIMH	National Institute of Mental Health
NMDA	N-methyl-D-aspartate

NMDA-R	N-methyl-D-aspartate Receptor
OT	Oxytocin
PANSS	Positive and Negative Syndrome Scale
PCP	Phencyclidine
PET	Positron emission tomography
PFC	prefrontal cortex
PKC	Protein kinase C
QOL	Quality of Life
RMET	Reading the Mind in the Eyes Test
SCID	Structured Clinical Interview for DSM-IV
SCID-CV	Structured Clinical Interview for DSM-IV Clinical Version
SCIT	Social cognition and interaction training
SD	Standard Deviation
SI	Primary Somatosensory Cortex
SIGN	Scottish Intercollegiate Guidelines Network
SII	Secondary Somatosensory Cortex
SP	Social Perception
SPECT	Single-photon Emission Computed Tomography
SPSS	Statistical Package for the Social Sciences
SSD	Schizophrenia spectrum disorder
STG	Superior temporal gyrus
SZ	Schizophrenia
TASIT	The Awareness of Social Inferences Test
TMT	trail-making test
ToM	Theory of Mind
US	United States
WAIS	Wechsler Adult Intelligence Scale
WMS	Wechsler Memory Scale
YMRS	Young Mania Rating Scale

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Introduction

Cognitive function is the ability to learn, retain, and recall information. It represents a complex, multidimensional set of intellectual functions. Thus, in a broader context, cognition includes all mental abilities and processes related to knowledge including, but not limited to, attention, memory, reasoning, comprehension and language production (*Luine, 2014*).

Social cognition is a specialized cognitive domain that facilitates effective social communication and relationships. This mental operation include the capacity to hold eye gaze and attend to relevant features of faces, recognize and interpret emotions from facial expressions, identify and attribute signals of social threat ,and to accurately infer the mental states of others(*Green et al., 2010*).

It typically includes four separate domains: emotion perception, social perception and social knowledge, mentalization and attributional bias (*Green et al., 2005*).

Mentalization is the capacity to understand one's own or another's behavior in terms of underlying mental states (e.g., thoughts, feelings, beliefs, desires, and plans). The process of making meaning of internal states is crucial in both the intrapersonal and interpersonal realms. In the intrapersonal realm, mentalization provides the means to discover and express subjective experience; it leads to the development of capacities essential to self and affect regulation. In the interpersonal realm, mentalization enables communication with the self and others, and the

interpretation of others to ourselves, and thus is vital for productive social relationships (*Slade, 2005*).

A recent meta-analysis reported that social cognition has generally stronger relation to functional outcome than neuro-cognition (*Fett et al., 2011*). A few studies have found that social cognition (mainly emotion and social perception) does account for unique variance in outcome above and beyond neuro-cognition (*Horan et al., 2011*).

Bipolar disorder (BD) is a common and debilitating psychiatric disorder, which begins during childhood or adolescence in 50–66% of cases (*Leverich et al., 2007*). Rates of children and adolescents discharged from psychiatric hospitals with a diagnosis of BD in the United States increasing from 5% to 20% within the last 10–15 years, and similar patterns emerging in other nations (*Holtmann et al., 2010*). There is a 40-fold increase in office visits by youth with BD to all mental health providers over the same time period. In fact, recent evidence from a large community sample suggests that the prevalence of BD in adolescents approaches that of adults (*Merikangas et al., 2012*).

Youth with mood disorders including BD and offspring of parents with BD can have significant impairments in social functioning as well as deficits in social reciprocity, which refers to the ability to understand, and engage in social interactions with others (*Bella et al., 2011*). In addition deficits in affect recognition have been documented in children with and at risk for BD (*Brotman et al., 2008*).

Despite recent interest in youths with schizophrenia–spectrum disorders, the population is still poorly understood and under studied

(*Schiffman, 2007*). The average age of onset appears to be early adulthood, with most individuals on a trajectory toward psychosis experiencing some symptoms during adolescence (*Cornblatt et al., 2009*).

Social cognitive impairments may represent a core feature of psychotic illnesses that contribute to the onset and maintenance of symptoms (*Thompson et al., 2012*). There have been two distinct goals of social cognitive research in schizophrenia: One devoted to understanding the nature of specific clinical symptoms (e.g., relations to paranoia or thought control) and another devoted to social cognition's role in functional outcome (*Green et al., 2008*).

Social cognitive performance may also predict the expression of positive psychotic symptoms above other measures of general cognition, such as intelligence (IQ) (*Pousa et al., 2008*). It may also provide a particularly useful and separate cognitive marker associated with positive psychotic illness severity, which is above traditional symptom severity assessments (*Thompson et al., 2011*).

As a range of cognitive impairments are observed in early psychosis (*Agnew-Blais and Seidman, 2012*), and both positive and negative symptoms are associated with such impairments (*Woodward et al., 2009*), the degree to which social cognition performance may be able to additionally predict psychotic symptoms has yet to be established. There is also a pressing need to identify early markers that can be used to identify those that transition into full threshold psychotic syndromes (*Hickie et al., 2012*).

Aim of Work

1. To compare social cognitive performance in patients with schizophrenia spectrum disorders and patients with bipolar disorder.
2. To assess social cognitive performance in relation to severity of psychotic symptoms in patients with schizophrenia spectrum disorders and bipolar disorder.

Chapter One

Social Cognition

Social cognition is a multidimensional construct that incorporates a wide range of abilities related to how people think about themselves and others, and interpret social information (*Penn et al., 2008*). Social cognitive abilities can impact broadly on a person's life, including processes that influence the number and quality of interpersonal relationships, the likelihood of success in work and personal achievement, and the ability to manage finances and basic self-care activities (*Corrigan and Penn, 2001; Green et al., 2005*).

It refers to a group of mental operations underlying social interactions, including those needed to perceive, interpret, and generate responses to others' intentions, dispositions, and behaviors (*Green et al., 2005*). It has been also defined as the ability to construct representations of the relations between one self and others, and to use those representations flexibly to guide social behavior (*Adolphs, 2001*).

In other words, social cognition is a set of skills that people use to understand and effectively interact with other people. Simply put, it is people thinking about people (*Horan et al., 2008*). In fact, social cognitive skills represent evolved capacities that are highly important for social communication and interpersonal functioning (*Burns, 2006*).