



Comprehensive treatments for social cognitive deficits in schizophrenia: A critical review and effect-size analysis of controlled studies



Matthew M. Kurtz^{a,b,*}, Emily Gagen^c, Nuno B.F. Rocha^d, Sergio Machado^{e,f}, David L. Penn^{c,g}

^a Department of Psychology and Program in Neuroscience and Behavior, Wesleyan University, Middletown, CT, United States

^b Department of Psychiatry, Yale School of Medicine, New Haven, CT, United States

^c Department of Psychology, University of North Carolina – Chapel Hill, United States

^d Polytechnic Institute of Porto, School of Allied Health Technologies, Porto, Portugal

^e Laboratory of Panic and Respiration, Institute of Psychiatry, Federal University of Rio de Janeiro, Brazil

^f Physical Activity Neuroscience, Physical Activity Sciences Postgraduate Program, Salgado de Oliveira University, Niterói, Brazil

^g Australian Catholic University, Melbourne, VIC, Australia

HIGHLIGHTS

- We studied comprehensive treatments for social cognition in schizophrenia.
- There are large-sized effects of training on facial affect recognition.
- There are moderate-sized effects of training on theory-of-mind.
- Training on attributional style produced small to medium-sized effects.
- Social cognitive training studies have often not employed blind raters.

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ABSTRACT

Recent advances in psychosocial treatments for schizophrenia have targeted social cognitive deficits. A critical literature review and effect-size (ES) analysis was conducted to investigate the efficacy of comprehensive programs of social cognitive training in schizophrenia. Results revealed 16 controlled studies consisting of seven models of comprehensive treatment with only three of these treatment models investigated in more than one study. The effects of social cognitive training were reported in 11/15 studies that included facial affect recognition skills (ES = .84) and 10/13 studies that included theory-of-mind (ES = .70) as outcomes. Less than half (4/9) of studies that measured attributional style as an outcome reported effects of treatment, but effect sizes across studies were significant (ESs = .30–.52). The

effect sizes for symptoms were modest, but, with the exception of positive symptoms, significant (ESs = .32–.40). The majority of trials were randomized (13/16), selected active control conditions (11/16) and included at least 30 participants (12/16). Concerns for this area of research include the absence of blinded outcome raters in more than 50% of trials and low rates of utilization of procedures for maintaining treatment fidelity. These findings provide preliminary support for the broader use of comprehensive social cognitive training procedures as a psychosocial intervention for schizophrenia.

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* Corresponding author at: Department of Psychology, Judd Hall, Wesleyan University, Middletown, CT 06459, United States.
 E-mail address: mkurtz@wesleyan.edu (M.M. Kurtz).

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Functional impairment is one of the hallmarks of schizophrenia, required for DSM-5 diagnosis and has implications for an individual's likelihood of relapse, course of illness, and overall quality of life, both subjective and objective (e.g., Edmondson, Pahwa, Lee, Hoe, & Brekke, 2012; Robertson et al., 2014). Social cognition has been identified as one of the major disorder features that underlie these impairments (Couture, Penn, & Roberts, 2006), and includes the ability of individuals to understand themselves and others in the wider context of social interactions, especially others' thoughts, feelings, and intentions (Adolphs, 2009; Fiske & Taylor, 1991). NIMH's consensus statement, generated by a convention of leading social cognitive researchers, recognized theory of mind, emotion perception/processing, attributional style, social perception, and social knowledge as representing the major domains of social cognition (Green et al., 2008). Penn, Sanna, and Roberts (2008) similarly identified theory of mind, emotion perception, and attributional style as being particularly salient for individuals with schizophrenia, who consistently demonstrate impaired social cognitive abilities in each of these areas (e.g., Mancuso, Horan, Kern, & Green, 2011; Pinkham, Penn, Green, & Harvey, in press; Savla, Vella, Armstrong, Penn, & Twamley, 2013).

These deficits have engendered increased experimental investigation over the past 15 years for several reasons. First, research has indicated that these deficits are separable from those of neurocognition (Nuechterlein et al., 2004). Second, these deficits have strong and independent relationships to functional outcomes (Fett, Viechtbauer, Penn, van Os, & Krabbendam, 2011). Third, emerging research suggests that these deficits may be more proximal to some dimensions of functional outcomes than deficits in neurocognition. For example, in a literature review and presentation of their own data, Schmidt, Mueller, and Roder (2011) demonstrated that social cognition served in many cases as a robust mediator of the relationship between neurocognition and functional outcome. Thus, social cognition has been identified as a vitally important area of research in schizophrenia; it is a means of exploring both the interpersonal difficulties that individuals with this illness experience, as well as the consequences of these difficulties, such as poorer vocational outcomes, a lack of community participation and independence, and limitations in the formation and maintenance of close emotional relationships (Couture et al., 2006). In total, these findings bolster rationales for devising treatments that target social cognitive deficits with a goal of generalized improvements in social functioning.

Many evidence-based psychosocial interventions for schizophrenia may influence social cognition, but do not typically directly target social cognition. For example, social skills training helps individuals to acquire and practice specific behavioral skills in social interactions, but does not require individuals to recognize, monitor, and practice skills in implementing underutilized social cognitive processes. CBT for psychosis (CBTp) targets the maladaptive thoughts and behaviors that individuals with schizophrenia often possess. Cognitive

remediation aims to address impairment in information processing skills as a means of indirectly improving social functioning and other aspects of functional outcome. There has also been little support for the impact of existing pharmacological interventions for symptoms on social cognitive deficits (Harvey, Patterson, Potter, Zhong, & Brecher, 2006).

In recent years, there has been growth in the development and preliminary assessment of psychosocial treatment aimed directly at social cognitive deficits in schizophrenia. Initial "proof-of-concept" studies for the malleability of social cognitive processes have been positive. In addition to these targeted programs, a few treatment packages have included social cognitive training exercises as one element of much broader training programs that target a variety of dimensions of the illness; the two most well-represented examples of this type of approach in the research literature are Integrated Psychological Therapy (IPT; Brenner et al., 1994) and Cognitive Enhancement Therapy (CET; Hogarty et al., 2004). Though the efficacy of IPT for improving neurocognition, psychosocial functioning, and symptoms has been well-established (Roder, Mueller, Mueser, & Brenner, 2006), and some recent studies have revealed effects of IPT on social cognitive outcomes (Roder, Mueller, & Schmidt, 2011), the complexity of the intervention precludes linkage of specific training modules to specific outcomes. CET (Hogarty et al., 2004) is another multi-element treatment package that includes extensive social cognitive training along with cognitive remediation. Results from randomized controlled trials have shown that improvements in social cognition, as measured by clinician ratings on the Social Cognition Profile, were evident after 24 months of treatment, and a follow-up report indicated that these improvements persisted at 12 months after the cessation of treatment (Hogarty, Greenwald, & Eack, 2006). It remains difficult to directly attribute this improvement to the social cognitive training, since it was just one component of a much larger treatment package targeting a number of disparate outcomes.

In recent years there has been substantial growth in the development, implementation and assessment of novel, integrated and comprehensive programs of social cognitive training. These programs extend beyond brief interventions for a single aspect of social cognition, devote all elements of an extended training program to enhancement of multiple domains of social cognition, and typically include practice for generalization of acquired skills to everyday life. Importantly, these programs provide information on the efficacy of social cognitive training for social cognitive processes and social functioning in the absence of the administration of additional, complementary evidence-based psychosocial interventions such as cognitive remediation or social skills training, which could be burdensome for resource-limited mental health clinics and for clients.

Several narrative reviews of social cognitive training in schizophrenia have been conducted (Choi, Kim, Lee, & Green, 2009; Fiszdon &

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