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Affective empathy in schizophrenia: a meta-analysis

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ABSTRACT

Background: Affective empathy, or the emotional response one has to the experiences or emotional states of others, contributes to relationship-maintaining behaviors and is key in fostering social connections, yet no work has synthesized the body of literature for people with schizophrenia. The aim of the present meta-analysis was to determine the extent to which those diagnosed with schizophrenia experience deficits in affective empathy.
Methods: A literature search was conducted of studies examining empathy. Data were analyzed using a random effects meta-analytic model with Hedges' *g* standardized mean difference effect size.
Results: Individuals with schizophrenia exhibited significant, medium deficits in affective empathy ($k = 37$). Measurement type moderated the affective empathy deficit such that performance-based measures showed larger schizophrenia group deficits than self-report measures.
Conclusion: Consistent, significant deficits in affective empathy were found comparing people with schizophrenia to healthy controls, especially when using performance-based assessments. The medium effect suggests an important role for empathy in the realm of social cognitive research, and points to the need for further investigation of measurement techniques and associations with functional outcomes.

1. Introduction

Cognitive deficits are a core feature of schizophrenia and have received extensive interest from the research community (Green et al., 2004; Hyman and Fenton, 2003). Social cognition, or the mental operations that enable social interactions like perceiving, interpreting, and generating responses to the thoughts, emotions, and behaviors of others (Green et al., 2008), has received particular emphasis (Green and Leitman, 2008), with one meta-analysis indicating social cognitive abilities are more closely related to functional outcomes for those with schizophrenia than neurocognition (Fett et al., 2011). Many consider the social deficits seen in schizophrenia to be a core feature of the illness, contributing fundamentally to the nature of psychosis (Gallese, 2003) and long-term outcome (Stevens et al., 2009). People with schizophrenia exhibit worse performance than healthy controls in multiple social cognitive domains, including social perception, emotion processing, emotion perception, and theory of mind (Savla et al., 2013). Further, deficits in social cognition are associated with negative functional outcomes (Fett et al., 2011) and increased symptoms (Ventura et al., 2011) in schizophrenia.

One social cognitive domain broadly recognized as impaired in schizophrenia is empathy, with references to empathic deficits dating all the way back to Bleuler (1911) and Kraepelin (1919). Since then, many in the field have explored the structure of empathy, its purpose, and the neural mechanisms through which it operates (De Vignemont and Singer, 2006; Decety and Jackson, 2004; Gallese, 2003; Preston and De Waal, 2002). Historically, the definition of the empathy construct has been contested among prominent researchers (De Vignemont and Singer, 2006; Decety and Jackson, 2004), but practically, many studies investigate cognitive and affective aspects of empathy. Some argue for the inclusion of a third domain, although the focus of that domain has been debated, with some suggesting emotion perception in oneself and others (Derntl and Regenbogen, 2014) while others suggest a self-regulatory mechanism with an emphasis on knowledge of the origins of self- and other-feelings (Decety and Jackson, 2004, 2006). But, research on empathy in the general population and especially studies of people with schizophrenia disorders (i.e., schizophrenia, schizoaffective disorders, or other psychotic disorders) have typically measured the empathy construct in two general domains: cognitive and affective empathy.

Cognitive empathy, also referred to as mentalizing in some literatures (e.g., see Green et al., 2015), is defined as one's ability to perceive others' internal states, i.e., thoughts, intentions, and feelings (Hoffman, 2000). Although cognitive empathy is commonly used synonymously with the term "theory of mind" (Rogers et al., 2007), there is a need for greater clarity in terminology. Numerous assessment tools for theory

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of mind neglect the ability to perceive others' emotions, which is central to cognitive aspects of empathy (though there are some notable exceptions, such as the Reading the Mind in the Eyes Test; Baron-Cohen et al., 2001). Although discerning the thoughts, beliefs, and intentions of others is important to cognitive empathy, emotional perspective-taking is a fundamental aspect of the cognitive empathy construct. Thus, we conceptualize the literature on theory of mind as central to our knowledge of cognitive empathy, but, though it informs one aspect of cognitive empathy, it does not provide a complete understanding of the construct.

Several systematic reviews and meta-analyses have been conducted to synthesize the literature on various aspects of cognitive empathy (Biedermann et al., 2012; Brüne, 2005; Harrington et al., 2005; Sprong et al., 2007), confirming impairments on performance-based tasks of theory of mind in people with schizophrenia. This finding extends to meta-analyses including tasks to assess emotional perspective-taking (Bora et al., 2009; Savla et al., 2013), and newer literature with more recently developed performance-based tasks assessing emotional perspective-taking provides additional support for deficits in cognitive empathy in people with schizophrenia (Derntl et al., 2012a; Derntl et al., 2012b; Smith et al., 2014). Literature further indicates impairments in self-reported cognitive empathy (e.g., see Corbera et al., 2013; Fischer-Shofty et al., 2013; Michaels et al., 2014; Shamay-Tsoory et al., 2007; Singh et al., 2015; Sparks et al., 2010). Some interventions have been designed to foster cognitive empathy in people diagnosed with schizophrenia, such as Metacognitive Reflection and Insight Therapy (Lysaker et al., 2007; Lysaker et al., 2010; Van Donkersgoed et al., 2014) and training to enhance understanding of thoughts, behavioral motivations and emotions in video tasks that are often used to assess aspects of cognitive empathy (Kayser et al., 2006).

The other component of empathy has been the subject of less debate than its counterpart, though has still provoked some discussion among scholars. Affective empathy, often referred to as emotional empathy (Mehrabian and Epstein, 1972) or experience sharing (Green et al., 2015), refers to the emotional reaction one has in response to the experiences or emotional states of others (Davis, 1980; Decety and Jackson, 2004; Hoffman, 2000). Some definitions emphasize that this emotional reaction must reflect the emotional state of the person for whom empathy is felt (i.e., emotional-matching; De Vignemont and Singer, 2006; Decety and Jackson, 2004; Derntl and Regenbogen, 2014) while others put more emphasis on the general valence or appropriateness of the emotional reaction, rather than matching a specific affective state (Davis, 1980; Mehrabian and Epstein, 1972; Salovey and Mayer, 1989; Stotland, 1969). Salovey and Mayer (1989), who incorporated empathy as a key characteristic in their model of emotional intelligence, theorized that those high in both cognitive and affective empathy appear warm and genuine to others, facilitating growth of a large, supportive social network. Affective empathy in particular is thought to contribute to altruistic behavior (Eisenberg and Miller, 1987; Hoffman, 1981, 2000). Further, some literature supports a link between aspects of empathy and social functioning in people with schizophrenia (Michaels et al., 2014; Shamay-Tsoory et al., 2007; Smith et al., 2014; Smith et al., 2012), suggesting the importance of empathy for social interactions extends to this population.

Numerous studies in recent years have been conducted that compare people diagnosed with schizophrenia disorders to healthy controls on affective empathy, yet, unlike for aspects of cognitive empathy, no meta-analysis has been published on this topic. Other systematic reviews have examined the abilities of people with schizophrenia to experience emotions, indicating they are able to experience emotions in the same way as healthy controls, but results could not inform whether emotions are felt in an empathic context (Cohen and Minor, 2010; Kring and Moran, 2008). Of note, one meta-analysis was published (Achim et al., 2011) including only reports using the Interpersonal Reactivity Index (IRI), a commonly used self-report measure of empathy, but this study did not claim to be a comprehensive meta-analysis of affective empathy studies and included only six articles informing empathy deficits. Several studies published since that meta-analysis indicate that people with schizophrenia display reduced affective empathy (Abramowitz et al., 2014; Benedetti et al., 2009), though others do not detect this difference (Achim et al., 2011; Lehmann et al., 2014). Further, some newer performance-based measures have shown stronger effects than are typically shown with self-report scales (Derntl et al., 2012b; Lee et al., 2010). This pattern of results indicates the relationship between population (i.e., healthy control vs. schizophrenia) and affective empathy may be complex and vary with measurement.

Historically, the majority of research on affective empathy has employed self-report measurement techniques, with the IRI used most commonly. But, there are numerous criticisms of this measure. For example, the Empathic Concern subscale, which most closely reflects affective empathy, may conflate the construct with sympathy, and focuses primarily on reactions to others, with less emphasis on emotional-matching (Eisenberg and Strayer, 1987; Jolliffe and Farrington, 2004; Michaels et al., 2014). Further, self-report and performance-based empathy measures, though designed to measure the same construct, may tap different empathic mechanisms. Self-report measures assess respondents' perceived empathic tendencies or abilities, while performance-based measures are geared toward actual empathic skills. Indeed, research has shown low correlations between traditional self-report measures and newer performance-based paradigms (Derntl et al., 2012b; Smith et al., 2014), and people with schizophrenia rate themselves more highly on empathy than family members or other raters, indicating self-perception may be higher than actual performance of empathy in daily interactions (Bora et al., 2008; Lysaker et al., 2013). Thus, we may expect differences in deficits reflected on each type of empathy assessment.

While deficits in cognitive empathy have been reviewed in the literature, less is known about deficits in affective empathy. The aim of the present meta-analysis was to determine whether people with schizophrenia disorders significantly differ from healthy controls on measures of affective empathy, and, if so, to explore moderators of this relationship. We hypothesized that those with schizophrenia disorders would have reduced affective empathy as compared to controls. We also explored measurement type as a potential moderator.

2. Method

In order to maintain a high level of meta-analytic quality, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) checklist and literature flow chart were used as methodological standards and reporting guidelines (Moher et al., 2009). See Table 1 in the supplementary online material for short descriptions of each checklist item, along with locations within this report where items are addressed.

2.1. Literature search

Electronic databases PsycINFO, PsycARTICLES, Web of Science Core Collection, Pubmed, and EMBASE were searched, covering studies made available up to July 28th, 2015. All searches used the exploded terms "empath*" and "schizo.*" When possible, an English language filter was applied. Reference sections of key conceptual articles and recent meta-analyses in related areas (Bora et al., 2009; Derntl and Regenbogen, 2014; Fett et al., 2011; Savla et al., 2013) were searched. If a record indicated empathy data had been collected but was not reported in an otherwise eligible study, authors were contacted and additional information requested.

2.2. Study selection: inclusion & exclusion criteria

In order to be included in the meta-analysis, studies needed to compare participants with a schizophrenia disorder to healthy controls on affective empathy; studies examining only cognitive empathy were

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