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Social functioning impairments in schizotypy when social cognition and neurocognition are not impaired

Maral Aghvinian*, Mark J. Sergi

Department of Psychology, California State University, Northridge, 18111 Nordhoff St., Northridge, CA 91330, United States

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ABSTRACT

The present study examined the social, cognitive, and emotional functioning of persons with schizotypy. Over 2000 undergraduate students were screened for schizotypy with the Schizotypal Personality Questionnaire – Brief over two consecutive semesters. Ninety-two persons with high schizotypy and 22 persons with low schizotypy completed measures of social functioning (Social Adjustment Scale, Social Functioning Scale, MOS Social Support Survey), working memory (Paced Auditory Serial Addition Test, Digit Span, Letter-Number Sequencing, Corsi Block Tapping Test) and empathy (Interpersonal Reactivity Index, Empathy Quotient). Persons with high schizotypy, when compared to their counterparts with low schizotypy, displayed deficits on many indices of social functioning even though differences in working memory and empathy were not observed. The social functioning deficits of persons with high schizotypy included impairments in friendship relations, family relations, interpersonal engagement, and recreational activities. These findings indicate that persons with high schizotypy experience broad deficits in social functioning even when their cognitive and emotional skills are unaffected.

1. Introduction

Some persons with schizophrenia experience hallucinations, other persons with schizophrenia experience delusions; but all persons with schizophrenia experience severe social dysfunction (American Psychiatric Association, 2013). Thus, we may consider that social dysfunction is a core feature of schizophrenia, and not a byproduct of psychiatric symptoms and neurocognitive impairments.

Schizotypy is conceptualized as a non-clinical manifestation of the same underlying biological factors that give rise to schizophrenia and other schizophrenia-spectrum disorders (Claridge, 1994; Claridge and Beech, 1995). Investigators interested in identifying the core features of schizophrenia value studies of persons with schizotypy (psychometric schizotypes or persons diagnosed with schizotypal personality disorder) as performance impairments in these persons cannot be explained by confounds often present in research with schizophrenia patients such as antipsychotic medication usage, social isolation, and recurrent hospitalization.

Persons with schizophrenia experience severe deficits in social functioning and these deficits appear to be present prior to and predictive of psychosis onset (Dragt et al., 2011; Velthorst et al., 2016). Persons with high schizotypy display deficits in social functioning similar to but less severe than the severe social dysfunction of persons with schizophrenia (Cohen et al., 2015). The presence of both positive and negative schizotypal traits have been linked to fewer self-reported social outings or activities, as well as struggles with work, recreation, and academics (Cohen et al., 2015). Persons with high schizotypy display deficits in both the frequency and intensity of their social interactions (Cohen et al., 2015). The social support and positive emotional feedback that is associated with high quality friendships and family relationships may be especially critical for persons with schizotypy who need friends and family to help them monitor and cope with their psychosis-like perceptual experiences, suspicious thoughts and social apprehension (Kwapil, 1998). Such disturbances in social functioning relate to high rates of social anhedonia, depression, and suicide attempts in persons with schizophrenia and persons with schizotypy (Mulholland and Cooper, 2000).

Social cognition, the ability to construct mental representations about others, oneself, and relations between others and oneself (Adolphs, 2001), is impaired in persons with schizophrenia (Green, 2005; Pinkham, 2014; Green et al., 2015; Green, 2016). Persons with schizophrenia, relative to healthy persons, display impairments in social cognitive domains such as emotion perception including facial affect recognition (Edwards et al., 2002; Weiss et al., 2006), social perception (Sergi and Green, 2003; Toomey et al., 2002), relationship perception (Sergi et al., 2009), theory of mind (Greig et al., 2004;

* Corresponding author.
E-mail address: maghvinian@gmail.com (M. Aghvinian).

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Roncone et al., 2002), and emotional intelligence (Kee et al., 2009). Correlational and structural equation modeling analyses suggest that social cognition mediates relations between neurocognition and social functioning in schizophrenia (Addington et al., 2006; Brekke et al., 2005; Sergi et al., 2006; Vauth et al., 2004). Some studies of persons with high schizotypy suggest that they are impaired in social cognition (Pickup, 2006; Meyer and Shean, 2006; Henry et al., 2008), while other studies suggest that persons high and low in schizotypy do not differ in social cognition (Jahshan and Sergi, 2007; McCleery et al., 2012). As the methods and measures used to assess social cognition in schizotypy are most often the same as those employed to assess social cognition in schizophrenia, it appears that the mixed findings of social cognition deficits in schizotypy reflect lesser deficits in social cognition in schizotypy. Moreover, the lesser social cognition deficits in schizotypy are consistent with the less severe symptoms and social dysfunction of schizotypy compared to those of schizophrenia.

Empathy, a widely studied aspect of social cognition, refers to the ability to perceive emotions and to respond with the proper affective responsiveness (Davis, 1983). Empathy involves a cognitive component and an affective component. The cognitive component concerns the individual's cognitive understanding of the mental state of another individual, while the emotional component focuses on the individual's "heart-felt" emotional response to the mental state of another individual (Henry et al., 2008). Socially acceptable interactions rely on the presence of both cognitive and affective empathy, which in turn results in successful social functioning. Persons with high schizotypy display reduced empathy and increased negative affect compared to healthy controls (Henry et al., 2008; Kiang and Kutas, 2006). Individuals with schizotypal traits are both slower and less accurate at identifying the facial expressions of others (Dickey et al., 2011). Suggestive of a relationship between empathy and social functioning in schizotypy, Henry et al. (2008) found an association between these two constructs in individuals with high schizotypy.

Persons with schizophrenia experience deficits in many domains of neurocognition (Bowie and Harvey, 2006; Lesh et al., 2011; Fioravanti et al., 2012). Persons with high schizotypy evidence neurocognitive impairments, but the frequency and severity of these impairments are less than those experienced by persons with schizophrenia (Ettinger et al., 2015). Working memory is an aspect of neurocognition conceptualized as immediate memory in which information is actively held and manipulated (Baddeley and Hitch, 1974). Working memory is considered essential to a person's ability to understand and complete complex cognitive tasks, as well as being necessary for learning and reasoning (Baddeley, 1992). Studies of persons with schizophrenia indicate that their deficits in visual working memory relate to negative symptoms such as anhedonia and avolition as well as positive symptoms such as auditory hallucinations (Gooding and Tallent, 2002; Bruder et al., 2011). Studies of working memory in schizotypy suggest significant deficits in verbal working memory in individuals with high schizotypy (Cannon et al., 1994). Contrary to this, a study conducted by Lenzenweger and Gold (2000) found that noteworthy deficits in verbal memory were not present in a group of schizotypal individuals. These mixed results are likely due to the use of a range of different working memory tasks, in addition to the lack of control for the influence of other schizotypy dimensions (Schmidt-Hansen and Honey, 2009).

Toward identifying social dysfunction as a core feature of schizophrenia, the present study compares the social functioning of persons with high schizotypy and persons with low schizotypy. If persons with high schizotypy experience significant social dysfunction even though their neurocognition and social cognition are near normal – and they have not been impacted by antipsychotic medication usage, social alienation, and recurrent hospitalization – then it is reasonable to suggest that social dysfunction is a core feature of schizophrenia. Given the severity of the social dysfunction experienced by persons with schizophrenia, it was hypothesized that persons with high schizotypy would display impaired social functioning when compared to their low schizotypy counterparts. The current study also compares the empathy skills and working memory skills of persons with high schizotypy and persons with low schizotypy. As past research strongly supports impairments in social cognition and neurocognition in schizophrenia and, to a lesser extent, supports impairments in social cognition and neurocognition in schizotypy, it was hypothesized that persons with high schizotypy would be impaired in their empathy skills and working memory skills compared to persons with low schizotypy.

Table 1
Demographic data (N = 114).

	Low schizotypy (n = 22)	High schizotypy (n = 92)
Gender (% female)	13 (59.1%)	72 (78.3%)
Mean age: years (S.D.)	20.73 (3.44)	19.96 (2.40)
Ethnicity: frequency (%)		
Caucasian	4 (18.2%)	13 (14.1%)
African-American	1 (4.5%)	7 (7.6%)
Hispanic	14 (63.6%)	48 (52.2%)
Asian American	2 (9.1%)	17 (18.5%)
Multiethnic	1 (4.5%)	7 (7.6%)

2. Method

2.1. Participants

Over 2000 undergraduates enrolled in lower division psychology courses at the California State University Northridge were screened for schizotypy using the Schizotypal Personality Questionnaire - Brief Version (SPQ−B; Raine and Benishay, 1995) for two consecutive semesters. Ninety-two participants with high schizotypy (scores from 15 to 22) and 22 participants with low schizotypy (scores from 0 to 3) participated in the study. All participants had to be at least 18 years old.

The gender, age, and ethnicity of the two groups are detailed in Table 1. The study was approved by the Institutional Review Board at the California State University Northridge.

2.2. Measures

2.2.1. Schizotypy

The Schizotypal Personality Questionnaire - Brief Version (SPQ−B) is a commonly used measure of schizotypy that consists of 22 true/false items that are used to assess the cognitive-perceptual, interpersonal, and disorganized aspects of schizotypy (Raine and Benishay, 1995). The KR-20 internal consistency reliability coefficient for the SPQ-Brief is 0.83; and correlations between the three subscales range between 0.63 and 0.74 (Compton et al., 2007).

2.2.2. Social functioning

The Social Adjustment Scale – Self Report (SAS-SR; Weissman and Bothwell, 1976) is a 54 item self-report scale with questions measuring instrumental and expressive role performance over the past two weeks in 6 major areas of functioning. As most undergraduates are not involved in all the major roles assessed by this scale (e.g., marital and parental roles), only three areas of functioning were assessed. The "Student" section assesses academic functioning with six questions about issues such as class attendance and scholastic performance. The "Social and Leisure" section assesses friendship relationships with nine questions about issues such as frequency of social contacts and satisfaction with social life. The "Family" section assesses family relationships with eight questions about issues such as contacts and satisfaction with one's family of origin. Each item is scored on a five-point scale with higher scores indicating poorer functioning. The SAS-SR has good internal consistency with Cronbach's α ranging from 0.70 to 0.94 (Mundt et al., 2002). This measure was selected because it targets many of the domains relevant to the lives of adolescent university students,