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Comorbidity of schizotypy and psychopathy: Skin conductance to affective pictures



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ABSTRACT

Prior research indicates a relationship between psychopathy and schizophrenia, elucidating a specific trajectory toward violence. Recent research has suggested that this relationship exists at the nonclinical trait level of schizotypy; however, this finding has not been examined objectively. To explore this relationship using both subjective and objective measures, 54 undergraduates (50% male; mean age 20.41) who endorsed a wide range of schizotypy on the Schizotypal Personality Questionnaire (SPQ) completed a laboratory-based protocol. Participants viewed 15 pictures (five neutral, five threatening, and five of others in distress) from the International Affective Pictures System while electrodermal activity was recorded. As expected, all participants exhibited increased skin conductance levels (SCL) to threat and distress pictures compared to neutral pictures; however, no difference in SCL was found between threat and distress pictures. A unique relationship between psychopathy and schizotypy was found (i.e., schizotypy was related to higher Self-Centered Impulsivity and lower Fearless Dominance); however, schizotypy was related to increased SCL in response to emotional and neutral pictures. Although results do not support autonomic hyporesponsiveness often found in clinical psychopathy, a positive relationship was found between schizotypy and self-reported physical aggression. Findings highlight the need to examine other trajectories of violence within the schizophrenia spectrum disorders.

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1. Introduction

There has been a general reluctance within scientific literature to critically examine the relationship between schizophrenia and violence, likely due to fear of perpetuating the associated stigma (Torrey, 2011). Despite this psychological zeitgeist, extant research has substantiated higher rates of violence among individuals with schizophrenia when compared to most other psychiatric disorders (Krakowski et al., 1986; Hodgins et al., 1996; Joyal et al., 2007), particularly when comorbid with substance abuse (Swanson et al., 1990; Erkiran et al., 2006; Dumais et al., 2011). The question is no longer “if” some individuals with schizophrenia are violent, but “why?”.

Volavka and Citrome (2008) examined this question and discussed three etiological subtypes of violent patients with schizophrenia; violence related to positive psychotic symptoms (e.g., hallucinations and delusions), impulsiveness, or comorbid psychopathy (e.g., characteristics of superficial charm, insincerity, lack of emotional reactions, and remorselessness; Cleckley, 1941). Bo et al. (2011) similarly identified two trajectories; violence

corresponding to the emergence of positive symptoms and violence related to personality (e.g., psychopathic traits). To date, the majority of the research has focused on the role of positive psychotic symptoms (McGregor et al., 2012), despite additional research supporting an increased presence of psychopathy in violent patients with schizophrenia spectrum disorders (Raine, 1992; Nolan et al., 1999; Warren et al., 2003; Fullam and Dolan, 2008).

This line of research has been further limited by a focus on violent criminals and the categorical classification of schizophrenia. A growing body of research has supported a fully dimensional model of schizophrenia, which suggests a continuum beginning with normality that then proceeds towards schizotypy, then moves towards schizotypal personality disorder (SPD), and finally toward the more severe disorder of schizophrenia (Claridge and Beech, 1995; Cochrane et al., 2010). Schizotypy defines a personality construct genetically related to schizophrenia which includes traits such as suspiciousness, magical thinking, perceptual distortions, constricted affect, and odd or eccentric behavior and speech (Raine, 1991). Due to the familial aggregation of schizophrenia spectrum disorders, schizotypy and SPD have served as valuable analog samples in the schizophrenia literature, as these samples control for confounds that exist when examining individuals with schizophrenia (e.g., chronic neuroleptic use and/or severe active

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symptomatology). Relatedly, examining an analog of psychopathy in a non-forensic sample avoids several confounds usually found with traditional forensic psychopathy (e.g., history of incarceration, lower socioeconomic status).

Recent data from our laboratory have provided preliminary evidence for a relationship between self-reported schizotypy and factors related to psychopathy in young adults (Ragsdale and Bedwell, 2013). Specifically, the Schizotypal Personality Questionnaire (SPQ; Raine, 1991) total score was positively related to the Self-Centered Impulsivity factor of psychopathy (PPI-SCI), but negatively related to the Fearless Dominance factor of psychopathy (PPI-FD), as measured by the Psychopathic Personality Inventory-Revised (PPI-R; Lilienfeld and Widows, 2005). Relatedly, an earlier study found that the Cognitive-Perceptual factor of schizotypy was related to antisocial personality disorder and impulsivity (Dinn et al., 2002). Furthermore, certain schizotypy conceptualizations consider aspects of antisocial behavior and impulsivity as part of the construct (e.g., Oxford-Liverpool Inventory of Feelings and Experiences; O-LIFE; Mason et al., 1995), suggesting that antisocial impulsivity may be a core feature of schizotypy. Although the preliminary finding indicates a specific pattern of psychopathy factors related to schizotypy, examination of an established objective correlate of psychopathy across individuals with various levels of schizotypy is needed to help clarify and inform this comorbidity in the schizophrenia spectrum disorders.

One such correlate of psychopathy, skin conductance (SC), is a measure of autonomic nervous system activation that has the advantage of being less subject to bias and measure-related error (Lorber, 2004). SC measures sweat gland activity resulting from activation of the sympathetic nervous system, which can be attributed to psychological arousal in the presence of a stimulus (Cacioppo et al., 2007; Boucsein et al., 2012). Psychopathy literature offers a long history of employing SC measures, resulting in successful differentiation of psychopaths and nonpsychopaths (e.g., Hare, 1965, 1968, 1978; Hare and Craigen, 1974; Ogloff and Wong, 1990; Patrick et al., 1994; Blair et al., 1997; Flor et al., 2002; Verona et al., 2004; Benning et al., 2005). A meta-analysis found that psychopaths evidence lower resting SC ($d=0.30$), lower task SC ($d=0.25$), and lower SC reactivity to stimuli (i.e., change from prestimulus levels; $d=0.31$) compared to nonpsychopaths (Lorber, 2004). Research also finds that anxiety moderates this relationship, as higher levels of anxiety appear to at least partially normalize the SC response in psychopaths (House and Milligan, 1976; Aniskiewicz, 1979).

SC research with schizophrenia spectrum samples has been relatively under-examined and primarily focused on the diagnostic category of schizophrenia. Much of the research on SC in individuals with schizophrenia finds both hyporesponsivity (often called “non-responders”) and hyperresponsivity (Sass, 2007). Of those focused on SC response to emotional stimuli, the majority report that individuals with schizophrenia do not differ from controls (Schlenker et al., 1995; Hempel et al., 2005, 2007; Park and Kim, 2011), with one study reporting greater SC to both emotional and neutral video clips (Kring and Neale, 1996). Unfortunately, studies examining SC in the less severe presentation of schizotypy have been limited to the SC orienting response (SCOR) to unexpected non-emotional stimuli (for review, see Raine et al., 1995), which is conceptually different than the SC response typically examined in psychopathy research. Researchers examining the SCOR in populations of antisocial individuals with schizophrenia spectrum disorders have found reduced orienting responses (Raine et al., 1999; Schug et al., 2007); however, SCOR investigations do not directly assess emotional responsiveness or empathy.

By exploring how the traits and factors of psychopathy and schizotypy naturally correlate in a nonpsychiatric and nonforensic sample, we can better understand which specific relationships

may be driving the comorbidity observed in the more severe outcomes of schizophrenia and psychopathy, and directly address whether the relationship with psychopathy extends to the non-clinical level of schizotypy. If individuals high in self-reported schizotypy do indeed show hypo-responsive SC reactivity to emotional stimuli similar to individuals with psychopathy, it would more strongly implicate comorbid psychopathy in a subtype of this subclinical population, and may help elucidate underlying mechanisms related to the increased violence found in some individuals with schizophrenia. As reduced SC reactivity is one objective marker of psychopathy, the presence of this marker in individuals with schizotypy would provide more convincing evidence for the comorbidity rather than relying solely on self-reported psychopathy traits. If there is evidence for this comorbidity, it would suggest that the violent behavior in at least a subset of individuals with schizophrenia may be secondary to psychopathy traits (e.g., lack of empathy and remorse) rather than directly stemming from positive symptoms (e.g., command hallucinations).

Due to the mixed nature of responding in schizophrenia, we did not hypothesize a relationship between schizotypy and mean SCL to emotional pictures. Instead, we hypothesized that the relationship between schizotypy and mean SCL to distress pictures would be moderated (separately) by both the PPI-SCI factor and anxiety, in that the negative relationship would be stronger in those with higher PPI-SCI and lower anxiety. Our hypothesis was specific to distress pictures, as psychopaths have been found to exhibit reduced responding to distress, but not threatening or neutral, stimuli (Blair et al., 1997). We further hypothesized that individuals higher in schizotypy would report higher levels of trait aggression and increased negative affective valence, arousal, and dominance to the negatively-valenced pictures, as prior research suggests increased self-reported negative affect to aversive images in individuals higher in schizotypy (Najolia et al., 2011).

2. Method

2.1. Subjects

Participants were recruited from an online schizotypy screening questionnaire administered through a university-based study participation system to recruit students enrolled in classes in the university's Department of Psychology. All participants ($N=1877$) completed an online consent form, basic demographic questions, the Schizotypal Personality Questionnaire (see Section 2.2.1), and two validity scales (see Sections 2.2.5 and 2.2.6). Participants who met inclusion and exclusion criteria were contacted via email and invited to participate in the lab-based study. This resulted in a sample size of 56 participants who completed the in-person testing; however, due to equipment failure, SC data of two participants failed to record. This was verified through visual inspection of video recordings and these participants were not included in analyses. The final sample included in the analyses consisted of 54 participants (50% male), with a mean age of 20.41 ($S.D.=4.83$; range=17–48). The sample's race was reported as 66.7% Caucasian, 14.8% Mixed/Other, 9.3% Hispanic, 5.6% African American, and 3.7% Asian.

2.2. Measures

2.2.1. Schizotypal personality questionnaire (SPQ)

The SPQ is a 74-item self-report measure of traits found in schizotypal personality disorder (Raine, 1991), consistent with DSM-IV diagnostic criteria (American Psychiatric Association, 2000). The SPQ provides an overall total score and nine subscales that load onto a three-factor model. Subscales in the Cognitive-Perceptual factor include ideas of reference, odd beliefs or magical thinking, unusual perceptual experiences and suspiciousness; subscales in the interpersonal factor include social anxiety, no close friends, constricted affect, and suspiciousness; and subscales in the Disorganized factor include odd or eccentric behavior and odd speech. The SPQ has demonstrated sound reliability and validity (e.g., Raine, 1991; Calkins et al., 2004; Mechri et al., 2010; Yasuda et al., 2001), with Cronbach's α ranging from 0.90 to 0.91 for the SPQ total score, and 0.63 to 0.81 for the nine subscales (Raine, 1991).

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