Schizotypal traits are associated with poorer identification of emotions from dynamic stimuli

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ARTICLE INFO

ABSTRACT

Recent research suggests that the emotion recognition difficulties seen in schizophrenia may also be present to a lesser degree in non-clinical individuals who report attenuated expressions of schizophrenia-like symptoms (schizotypy). However, evidence in non-clinical samples primarily comes from studies employing static facial emotion tasks, and it is not clear whether poorer emotion recognition in schizotypy persists when people have access to a broader range of emotional cues more representative of typical face-to-face social interactions. A community sample of 151 adults completed measures of schizotypal traits, IQ, and a task that assessed emotion recognition using dynamic video-based stimuli. Global schizotypy and positive schizotypal traits were each associated with poorer emotion recognition. Negative schizotypy was not associated with emotion recognition overall, but was associated with errors in recognising positive emotions. It appears that poorer emotion recognition in schizotypy is not limited to single-channel stimuli, but can be seen even when multiple emotional cues are available. Thus, individuals with high levels of schizotypal traits, and positive features in particular, may have greater difficulty when it comes to 'reading' the emotions of others in everyday social interactions.

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1. Introduction

Emotion recognition (i.e., the ability to identify the emotions of others) is a key component of social cognition that is vitally important for successful social interactions (Moskowitz, 2005). It is well established that emotion recognition (ER) is impaired in psychotic disorders such as schizophrenia (Hoekert et al., 2007; Kohler et al., 2010), yet these same deficits may be present to varying degrees all along the schizophrenia spectrum. Following a continuum view of psychosis (Meehl, 1962; Claridge, 1994), schizophrenia and other psychotic disorders are at the high extreme end, while schizotypal personality disorder can be seen as a clinical, yet sub-psychotic, midpoint, and finally sub-clinical expressions of psychotic-like traits in psychologically healthy individuals represent the mild non-psychotic end of the spectrum. According to diathesis–stress models of psychosis, these mild psychotic-like traits (schizotypy) represent a latent liability to developing a schizophrenia-spectrum illness (Meehl, 1990; Green et al., 2008). Schizotypy provides an attractive way to look at psychosis-proneness free of confounds common to psychotic disorders (e.g., medication, hospitalisation, social isolation). Schizotypal traits can be conceptualised in similar terms to the three symptom clusters in schizophrenia, with positive schizotypal traits reflecting cognitive–perceptual disturbances (e.g., paranoia, mild hallucinatory experiences), negative traits relating to interpersonal difficulties (e.g., social anxiety, blunted affect), and disorganised traits including unusual behaviours and thoughts (Raine et al., 1994).

There is evidence that non-clinical individuals with high levels of schizotypal traits perform poorly across some of the same domains found to be impaired in schizophrenia, such as neurocognitive ability (Tallent and Gooding, 1999; Matheson and Langdon, 2008) and social functioning (Henry et al., 2008). There is also growing evidence that schizotypy is related to poorer ER. To date, the majority of research examining ER in schizotypy has involved tasks requiring judgements of emotions from static pictures of faces. Some studies have shown evidence for a global schizotypy deficit in ER (Williams et al., 2007; Aguirre et al., 2008; Brown and Cohen, 2010; Germine and Hooker, 2011), while roughly the same number of studies did not (Poreh et al., 1994; Shean et al., 2007; Alfimova et al., 2009; Surguladze et al., 2012; Abbott and Green, 2013). Emotion recognition errors have also been associated with positive (van't Wout et al., 2004; Alfimova et al., 2009) and negative (Williams et al., 2007; Surguladze et al., 2012; Abbott and Green, 2013) schizotypal traits, though these relationships are also inconsistent (Toomey and Schuldberg, 1995; Shean et al., 2007; Brown and Cohen, 2010). In contrast, no studies have shown a relationship between ER and disorganised schizotypal traits (Shean et al., 2007; Williams et al., 2007; Alfimova et al., 2009; Brown and Cohen, 2010; Surguladze et al., 2012; Abbott and Green, 2013). Furthermore, findings relating to schizotypal traits and recognition of emotions in faces have been generally mirrored in a small number of studies using stimuli such as emotional prosody and static postures to assess ER (Shean et al., 2007; Castro and Pearson, 2011).

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While there has been interest in what types of schizotypal traits are associated with ER deficits, there has been less exploration of the theoretical underpinnings of the association. In the schizophrenia literature there is some support for ER deficits being related to a generalised deficit (Johnston et al., 2001), with higher levels of overall symptoms resulting in poorer performance on ER (Kohler et al., 2010). Frith (1987) put forward an argument that in schizophrenia the two major symptom types of positive and negative are the result of impairments in the perception and initiation of action that will lead to different types of behavioural deficits. Following his model in ER, positive symptoms may give rise to errors of commission whereby emotions are misattributed due to suspiciousness or other perceptual aberrations. Negative symptoms in contrast may lead to difficulty in initiating actions and therefore would result in errors of omission. One recent study examining the expression of positive and negative schizotypal traits in daily life may add support to this explanation of how they may differentially affect ER in non-clinical individuals. Kwapil et al. (2012) used a structured diary technique with 412 participants assigned either positive or negative dimension scores based upon factor loadings from a larger sample of 6137 undergraduates. They found that positive schizotypy was associated with suspiciousness, cognitive disturbance, and errors in thinking. Negative features were associated with a reduction in social interest and affective responding. It therefore might be expected that positive and negative schizotypal traits are both associated with more errors in ER tasks in a similar way to that observed in schizophrenia.

One criticism of past ER studies is that the single-channel stimuli (e.g., static images) typically used are unrepresentative of the majority of day-to-day social interactions people experience. As an alternative, ER tasks employing video (with sound) allow judgements of emotion to be based simultaneously on dynamic visual and auditory cues, and are argued to provide a more ecologically valid assessment of ER ability (McDonald et al., 2004). Despite the potential advantages of employing such methods, to our knowledge only one study has examined the relationship between schizotypy and ER using dynamic, video-based stimuli (Jahshan and Sergi, 2007). In contrast to a number of studies using single-channel emotional stimuli, Jahshan and Sergi found no association between ER and schizotypy. Potentially, this may indicate that the ER attenuations seen in schizotypy are present when only a single channel of emotion is available and not when participants can draw upon the whole spectrum of cues (e.g., voice, facial expression, and body language) available in most face-to-face social interactions. However, associations with specific schizotypal features were not examined in this study; thus more research is warranted to clarify these relationships.

The present study was conducted in order to examine the relationships between schizotypy and its sub-components and performance on an ER task using dynamic stimuli, in a sample drawn from the general community. In light of past findings and suggested theoretical underpinnings, it was hypothesised that higher scores on global schizotypy, as well as the positive and negative schizotypal factors, would be associated with poorer ER.

2. Methods

2.1. Participants

Participants were a community sample of 151 adults who responded to flyers placed in local public spaces, including libraries, shopping centres, and universities. Each participant received remuneration of $AU10 for their involvement in the study. None of the participants reported having been previously diagnosed with a psychological disorder. Participants ranged in age from 18 to 55 years, with a mean age of 27.1 (S.D.=7.8). Slightly more than half (59.6%) of the participants were female. This study was approved by the university human research ethics committee, and all participants signed a written voluntary informed consent form.

2.2. Measures

2.2.1. Psychometric schizotypy

Schizotypal traits were assessed with the Schizotypal Personality Questionnaire (SPQ; Raine, 1991). The SPQ is a 74-item self-report measure in which participants indicate their level of agreement as to whether each statement or question applies to them (e.g., "I prefer to keep to myself", "Do you sometimes feel that people are talking about you?"). For the present study each item was scored on a 5-point Likert scale ranging from 0 (Strongly Disagree) to 4 (Strongly Agree) (Wuthrich and Bates, 2005). The 74 SPQ items produce nine subscales, which collapse into three factors and a total scale score. Subscale scores were summed to produce factor scores as follow: positive factor (Ideas of reference, Odd beliefs and magical thinking, Unusual perceptual experiences, and Paranoia), negative factor (Excessive social anxiety, No close friends, Constricted affect, Paranoia), and disorganisation factor (Odd and eccentric behaviour, Odd speech) (Raine et al., 1994). The SPQ has excellent psychometric properties (Raine, 1991), and the three-factor structure has proved robust across a variety of populations (Reynolds et al., 2000; Rossi and Daneluzzo, 2002; Fossati et al., 2003). Findings from longitudinal research suggest that individuals who score highly on psychometric schizotypy scales have above-average likelihood of developing psychotic disorders (e.g., Chapman et al., 1994; Kwapil, 1998; Tandon et al., 2012). In addition, cross-sectional studies have found higher SPQ scores in schizophrenia patients compared to relatives of patients, who themselves tend to score higher than healthy controls, suggesting that this measure is sensitive to biological vulnerability to schizophrenia (Vollema et al., 2002; Appels et al., 2004; Calkins et al., 2004).

2.2.2. Emotion recognition

The Awareness of Social Inferences Test (TASIT; McDonald et al., 2002) was used to measure ER. The TASIT consists of three subtests: Part 1 (Emotion Evaluation Test [EET]); and Parts 2 and 3 (Social Inference), and comes in two parallel forms (A and B). Only the EET from Form B was used in the present study. The TASIT-EET consists of 28 short (15–60 s each) video vignettes depicting people engaging in everyday social interactions. Seven of the scenes show two people talking to one another, and the other 21 contain a solitary person talking to an unseen and unheard person. Before each of the scenes containing two actors, participants were told to pay particular attention to one of them (the target actor). After each scene, participants were shown an A4 card with the following choices: happy, surprised, neutral, sad, angry, anxious, and revolted; and asked to indicate which emotion was being displayed by the target actor in that scene. Across the 28 scenes each of the seven emotions was represented four times each, in a randomised order. All target actors were shown from at least the waist up and, since the TASIT utilises video with sound, participants were able to draw on the actors' facial, postural, and vocal cues to determine what emotion was being presented. Additionally, in the TASIT-EET participants are able to see emotions develop and build up over a short period, as opposed to simply viewing pictures of a posed facial expression or posture. A TASIT-EET overall score was calculated as the total number of correctly identified emotions, and separate scores were computed for positive (happy, surprised) and negative (sad, angry, anxious, revolted) emotions. The TASIT-EET has been shown to be a valid and reliable measure of ER (McDonald et al., 2003, 2006; McDonald and Flanagan, 2004); for example, demonstrating test-retest reliability of $r=0.74$, with the positive ($r=0.63$) and negative ($r=0.69$) emotion scores both correlating highly with performance on a separate facial emotion identification task (S. McDonald, personal communication, January 24, 2013).

2.2.3. IQ

The National Adult Reading Test (NART; Nelson and Willison, 1991) was used in the present study to provide an estimate of participants' IQ. In the NART participants are presented with a sheet containing 50 English words that do not follow typical phonemic rules (e.g., simile, gist), and asked to read each word aloud as best they could. Due to the irregular pronunciation of the words, they are likely to be pronounced correctly only if the participant is familiar with them. The number of pronunciation errors made on the NART was recorded for each participant and then converted into full-scale IQ estimates according to the test authors' conversion tables (Nelson and Willison, 1991). The NART has demonstrated excellent reliability and validity as a brief measure of IQ (Morrison et al., 2000; Mathias et al., 2007).

2.3. Procedure

Participants were tested individually in a university laboratory. After giving consent, each participant completed a brief demographic questionnaire and the SPQ. All questionnaires were computerised. Following completion of the questionnaires, participants were administered the NART, followed by the TASIT-EET.