



Social cognition and paranoia in forensic inpatients with schizophrenia: A cross-sectional study



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ABSTRACT

Background: People diagnosed with schizophrenia have difficulties in emotion recognition and theory of mind, and these may contribute to paranoia. The aim of this study was to determine whether this relationship is evident in patients residing in a secure forensic setting.

Method: Twenty-seven male participants with a diagnosis of schizophrenia and a history of offending behaviour were assessed using The Awareness of Social Inference Test (TASIT), The Ambiguous Intentions Hostility Questionnaire (AIHQ) and The Green et al. Paranoid Thought Scales (G-PTS). Individuals were recruited from two medium secure and one high secure forensic hospital in Scotland.

Results: Correlation, logistic and multiple regression analyses did not find that emotion recognition and theory of mind were associated with indices of paranoid thinking.

Conclusion: Social cognition did not appear to be related to indices of paranoia in this forensic sample. Although participants reported low levels of paranoia overall, the results are consistent with recent conclusions that theory of mind impairments are not specifically linked to paranoia in people diagnosed with schizophrenia.

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1. Introduction

People with a diagnosis of schizophrenia are thought to have impairments in various domains of social cognition (Sprong et al., 2007), including their ability to accurately perceive and recognise emotions ('emotion recognition') and draw inferences about the thoughts, feelings and intentions of others – so-called 'Theory of Mind' skills (Frith, 1992; Zalla et al., 2006; Craig et al., 2004; Herold et al., 2002). Meta-analyses have found that the average scores of people with schizophrenia on tests of emotion recognition and ToM ability are between one half and one standard deviation below that of non-clinical participants (Kohler et al., 2009; Sprong et al., 2007). Such impairments are thought to have a negative effect on interpersonal and social interactions, and may have wide ranging consequences during the acute and recovery stages of schizophrenia (Couture et al., 2006).

Patients with schizophrenia who have engaged in violent offending present forensic mental healthcare services with particular challenges in relation to rehabilitation and recovery. In this population, impairments in social cognition may represent an unmet need which could be implicated in aggressive behaviour, future risk management, interpersonal relationships with staff and peers, and increased paranoia

and persecutory delusions (Murphy, 2007; Salvatore et al., 2012; Waldheter et al., 2005). Indeed, persecutory delusions are one of the most frequently observed positive symptoms of schizophrenia. Although some authors have considered how they might be associated with an increased risk of committing a violent offence (e.g., Bentall and Taylor, 2006), a recent meta-analysis found that the empirical evidence remains surprisingly sparse and equivocal (Witt et al., 2013).

Of course paranoia is not confined to mental illness and is also present in the general population to varying degrees (Freeman, 2007). It can be thought of as dimensional in nature, ranging from frequently occurring yet easily dismissed thoughts to firmly held crystallized persecutory delusions (Couture et al., 2006; Savla et al., 2012; Freeman and Garety, 2014). As with other appraisals, paranoid appraisals represent an individual's attempt to make sense of their experiences, a process that is influenced by pre-existing beliefs, developmental and life experiences, as well as counterproductive behavioural responses (Morrison, 2001), which may include avoidance, hypervigilance and, in some cases, acts of hostility and aggression. Although making judgements about the hostile intentions of others can be an adaptive strategy for threat avoidance (Salvatore et al., 2012), it has also been linked to increased rates of aggression (Combs et al., 2009; Coid et al., 2016).

Although related, paranoia and aggression in schizophrenia may involve different patterns of strengths and impairments in social cognition. For example, whereas Harrington et al. (2005) found evidence of

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a specific relationship between ToM difficulties and symptoms of paranoia, Abu-Akel and Abushua'leh (2004) found that *better* ToM skills, albeit in the context of poorer empathy, were associated with greater hostility and violence in schizophrenia. Another study found reduced ToM impairments in patients with schizophrenia who had committed offences, in comparison to those who had not, although both groups displayed impairments when compared to a non-clinical population (Majorek et al., 2009). Indeed, whether ToM is actually associated with paranoia remains unclear. For instance, Greig et al. (2004) reported that greater ToM difficulties were related to symptoms of thought disorder and disorganisation, but not paranoia or persecutory delusions specifically. A recent review concluded that although ToM difficulties are consistently found in people with schizophrenia, the association with negative and disorganisation symptoms is stronger than that with persecutory delusions (Garety and Freeman, 2013).

The precise relationship between paranoia and emotion recognition in people with schizophrenia also remains unclear. Although a recent meta-analysis found that emotion recognition impairments are moderately associated with symptoms such as hallucinations and delusions (Ventura et al., 2013), other studies have reported either a negative relationship with paranoia (e.g., Williams et al., 2007), a positive relationship (e.g., Chan et al., 2008), and or no relationship at all (e.g., Pinkham et al., 2016). Pinkham et al. (2016) concluded that while paranoia is not associated with an impaired capacity to recognise emotions per se, it is associated with an increased bias to infer hostility or anger in others. Although Frommann et al. (2013) found that violent patients with psychosis were less likely than non-violent patients to accurately recognise either neutral or fearful facial expressions, whether these impairments also contribute to paranoia in this forensic group of patients has not been investigated. Given both social cognition and paranoia are linked to poorer outcomes and acts of aggression (Couture et al., 2006; Waldheter et al., 2005), this is a surprising omission. These patients have a number of characteristics, such as increased substance misuse, aggression, anger and symptoms of personality disorder (Ogloff et al., 2015), that make it unclear whether findings obtained from a non-forensic population can be easily applied to them.

The aim of the current study was to address this gap, and determine whether reduced social cognitive functioning is associated with increased paranoia in people with psychosis who have a history of violent offending and are receiving inpatient care for schizophrenia in a secure forensic setting. We set out to test the specific hypotheses that emotion recognition and theory of mind skills account for a significant portion of variance in indices of paranoia in this group, as assessed by self-reported paranoid thoughts and/or a hostile or blaming attributional bias.

2. Methods

2.1. Ethical approval

This study was given a favourable opinion by NHS Scotland's South East Scotland Research Ethics Committee.

2.2. Design

A within-group cross-sectional design was used to examine whether there was a relationship between social cognition and indices of paranoia. Self-report and observer-rated measures were used.

2.3. Participants

Participants were recruited from one high, and two medium secure forensic hospitals in Scotland which provide multi-disciplinary care for mentally ill offenders. In addition to psychotropic medications all patients are also offered a range of interventions to help them manage their mental health and desist from offending guided by the Scottish Governments Forensic Matrix which provides information on evidence

based interventions and a range of treatment protocols (Forensic Mental Health Services Managed Care Network, 2011).

Participants were able to take part if they were male, detained under the Mental Health Act (Care and Treatment) (Scotland) Act 2003 in a secure setting, had a diagnosis of schizophrenia or schizoaffective disorder, aged 18–64 and able to provide informed consent. Participants were excluded if they had a history of traumatic brain injury resulting in loss of consciousness and requiring inpatient hospital care, a diagnosis of Autistic Spectrum Disorder, Schizoid Personality Disorder or Learning Disability.

2.4. Sample size

Calculations carried out using G*Power 3.1.6 (Faul et al., 2007) suggested that for multiple regression with three predictor variables it was necessary to recruit 33 participants to detect a medium effect size ($\rho = 0.3$) with statistical power of 0.8 and an alpha level of 0.05.

2.5. Procedure

At each research site Responsible Medical Officers were asked to identify patients who met the inclusion and exclusion criteria and had capacity to consent. A member of the patient's usual care team approached the patient to give them a participant information sheet. If the individual met the criteria and wished to proceed then informed consent was taken by the researcher. Participants then completed the measures in one or two sessions totalling one to 2 h in duration. As low levels of literacy are common in this population, measures which required a written response were read to the participants if necessary. All measures were administered in the same or similar order.

2.6. Measures

The following measures were administered:

2.6.1. The awareness of social inference test

The Awareness of Social Inference Test (TASIT) (McDonald et al., 2006) is an ecologically valid tool which measures emotion recognition and theory of mind through the use of video vignettes of everyday social interactions.

- Part 1: The Emotion Evaluation Test assesses emotion recognition and is comprised of 28 vignettes portraying seven emotions; happy, sad, surprised, angry, revolted, fear or neutral. Participants choose the emotions they feel best represent that of the actor in the vignette.
- Part 2 (TASIT 2): The Social Inference Test - Minimal measures understanding of social inference using sincere, sarcastic and paradoxical sarcasm exchanges in 15 vignettes. No additional cues or information are provided to the viewer to help in their interpretation.
- Part 3 (TASIT 3): The Social Inference Test - Enriched comprises 16 vignettes to measure a participant's ability to use contextual cues to distinguish a lie from sarcasm. The viewer is provided with additional information which reveals the actors true intentions by means of a visual cue or prologue.

Following parts 2 & 3 participants answer four questions about what the person was doing to the other person; what they were trying to say, what they were thinking and what they were feeling with a 'yes', 'no' or 'don't know' response. Reliability estimates for the TASIT range from 0.62–0.83 for alternate forms and 0.74–0.88 for test re-test (McDonald et al., 2006). Construct validity has been demonstrated by high correlations ($p = 0.37$ – 0.70) between all parts of the TASIT and the Ekman and Freisen series of faces (Ekman and Friesen, 1976). The TASIT has been used in samples with schizotypy (Jahshan and Sergi, 2007) and schizophrenia (Kern et al., 2009 and Kosmidis et al., 2008).

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