

Subtypes of social perception deficits in schizophrenia

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Abstract

Persons with schizophrenia exhibit consistent deficits in emotion perception (recognizing the emotional expressions of others), but it is currently unclear if their performance represents a specific deficit in identifying emotions only or is a more generalized deficit across different perception tasks. To address this question, it is important to compare emotion perception with face and general visual perception to assess the type of deficit present. The equivocal nature of previous research may suggest the presence of subtypes with different levels and patterns of performance on social perception measures. In this study, we administered measures of emotion, face, and general perception to a sample of 100 persons with schizophrenia. These scores were then subjected to a cluster analysis to determine if different subtypes were present. Two distinct subtypes were identified, and both subtypes scored lower than normal controls across all three measures of perception, suggesting the presence of a generalized performance deficit. One subtype was characterized by mild to moderate impairment and the other showed more severe impairment. The cluster solution was stable, and the subtypes also differed on other variables not used in the cluster analysis (external validation). More specifically, persons in the mild to moderately impaired subtype reported fewer positive symptoms, and this subtype contained more persons with paranoid schizophrenia as compared to the more severely impaired subtype. The implications of the results for the study of social cognition in schizophrenia are discussed.

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1. Introduction

Facial affect or emotion perception can be defined as the ability to decode, recognize, and identify emotional expressions (Edwards et al., 2002). Previous research has shown that persons with schizophrenia consistently perform lower than normal controls and persons with other psychiatric disorders on tasks of facial affect perception (see Edwards et al., 2002; Mandal et al.,

1998; Penn et al., 2006 for reviews). It is important to increase our understanding of emotion perception deficits due to their link with impaired social functioning in schizophrenia (as reviewed in Couture et al., 2006; Penn et al., 2001). Specifically, deficits in emotion perception and other social cognitive processes (set of inter-related cognitive processes related to social stimuli) have been linked to poorer adaptive functioning on the treatment ward and in the community (Hooker and Park, 2002; Ihnen et al., 1998; Kee et al., 1998; Mueser et al., 1996; Penn et al., 1996). Researchers have been increasingly interested in the role of social

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cognition in schizophrenia, and there is some evidence that social cognition directly predicts (Brune, 2005; Roncone et al., 2004) or mediates social functioning (Addington et al., 2006; Sergi et al., 2006). Finally, social cognition also appears to be a stronger predictor of functioning than non-social cognition (Penn et al., 1996; Pinkham and Penn, 2006).

In addition to deficits on emotion perception tasks, it is possible that persons with schizophrenia may also show deficits on other types of perception tasks such as general face perception. Thus, an unanswered question is whether these deficits are “specific” to emotion perception or involve other areas of perception. Several studies have supported the presence of a “generalized” deficit in schizophrenia, as impairments were found across emotion and face perception tasks (Addington and Addington, 1998; Kerr and Neale, 1993; Salem et al., 1996). In contrast, other researchers have argued for the presence of a specific deficit in emotion perception only (Edwards et al., 2002; Mandal et al., 1998; Novic et al., 1984; Penn et al., 1997, 2006).

Representing a combination of the two conclusions, Penn et al. (2000) found that a specific deficit was present in persons from acute care settings and a generalized deficit was present in persons from chronic or long-term care settings. In terms of clinical variables, researchers have emphasized the role of paranoia on social perception with some studies finding that persons with paranoid schizophrenia have improved social and emotion perception abilities which may be due to improve cognitive functioning or better pre-morbid social functioning (Davis and Gibson, 2000; Kline et al., 1992; Lewis and Garver, 1995). In contrast, more recent, symptom based research (using participants with different levels of paranoia) has found impairment in emotion perception abilities (see Combs et al., 2006; Peer et al., 2004; Williams et al., 2004). It is believed that as paranoia increases, a number of cognitive and perceptual biases come on-line such as problems in visual attention, perceptions of hostility for ambiguous social situations, and a tendency to make decisions with little evidence (e.g., jumping to conclusions bias; see Penn et al., 2006). Finally, there is evidence that other variables such as gender, length of illness, and medication type are also related to social perception abilities (Herbener et al., 2005; Kohler et al., 2000; Mueser et al., 1996; Scholten et al., 2005).

The interpretation of previous studies is further complicated by the fact that the measures used to assess emotion and face perception may have differed in their psychometric properties. Thus, it is possible that persons with schizophrenia performed lower because the tasks

were more difficult (as discussed in Penn et al., 1997). One method to examine the generalized versus specific deficit model is to employ the differential deficit design with tasks that have comparable (or at least reported) psychometric properties such as internal consistency and difficulty level (Chapman and Chapman, 1978; Kerr and Neale, 1993; Penn et al., 2000). Finally, since emotion and face perception are social perception tasks, it has been suggested that to test the generalized deficit model, a general visual perception task that does not involve social stimuli be included (Penn et al., 2000).

Given that some researchers have found a generalized deficit and others a specific deficit, it appears that considerable heterogeneity exists in the area of social and emotion perception. Thus, it is possible that subtypes with different levels and patterns of performance may exist, but little research has been conducted to identify these subtypes in social cognitive research. One method that may be useful in identifying subtypes is cluster analysis. Cluster analysis derives subtypes based on similarities in performance across different measures and serves to reduce sample heterogeneity that can sometimes obscure research findings. Also, cluster analysis allows researchers to examine a number of variables at the same time, which is important since previous research has generally focused on single constructs or relationships (paranoia, diagnosis, symptom severity). The notion of different subtypes in schizophrenia research is not new, and several studies have found support for a number of distinct subtypes with differing levels of cognitive impairment (Goldstein and Shemansky, 1995; Goldstein et al., 1998a,b). However, these previous studies have examined cognitive performance on measures of memory, language, and executive functioning, not social cognition.

The purpose of this study is two fold. First, based on previous research, we will explore relationships between social perception and other theoretically important variables such as demographics (gender, length of illness, medication type, etc.), symptoms (thought disorder, paranoia, etc.), diagnosis (paranoid vs. non-paranoid schizophrenia), and cognition (WRAT-III). Second, we will use cluster analysis to determine if subtypes with different levels and patterns of performance are present across measures of emotion, face, and general perception. Subtype performance will be compared to normative scores to provide evidence as to the presence of a generalized or specific deficit (i.e., is the performance on these measures lower than normals and if so, what scores are lower?). Although this study is primarily exploratory in nature, we predict that a subtype with a generalized deficit across all three

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