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Neuroticism and visual memory impairments as predictors of the severity of delusions in schizophrenia

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Abstract

This study examined whether levels of emotional distress and impairments in visual memory were uniquely associated with severity of delusions in schizophrenia. Severity of delusions was assessed using select items from the positive component of the Positive and Negative Syndrome Scale among 44 persons with schizophrenia or schizoaffective disorder in a post-acute phase of illness. Emotional distress was assessed using the neuroticism subscale of the NEO Five Factor Inventory, and visual memory was assessed using the Rey Complex Figure Test. Controlling for executive function, visual attention, and verbal memory, a multiple regression analysis revealed that visual memory and neuroticism were each significantly related to severity of delusions, with the two combined accounting for one quarter of the variance. These same variables were unrelated to negative and excitement symptoms. Severity of delusions is linked to both higher levels of neuroticism and greater impairment in visual memory.
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1. Introduction

Researchers and theoreticians have suggested that the severity of delusions might be the product of a tumultuous or unstable emotional state and neurocognitive impairments. Bleuler (1911/1950), more than a century ago, argued that negative emotional states or 'complexes' directed the content of delusions. Consistent with this, the severity of emotional distress and positive symptoms has been found to covary significantly over time (Barnes et al., 1989; Norman and Malla, 1994; Lysaker et al., 1995), and some research has linked low self-esteem to paranoid beliefs (Blackwood et al., 2001). Additionally, neuroticism, a genetically influenced personality dimension that reflects chronic vulnerability to emotional turmoil (Eysenck and Eysenck, 1985; Jang et al., 1996; McCrae and Costa, 1997), has been identified as a possible risk factor for schizophrenia (Berenbaum and Fujita, 1994; van Os and Jones, 2001) and linked to more severe levels of positive symptoms (Lysaker et al., 1999).

Regarding neurocognitive compromise and delu-

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sions, a disruption in the ability to filter sensory experience has been hypothesized to disturb figure-ground discrimination, leading to systematic misinterpretations of daily experience (Braff, 1993). Others have suggested that dysregulation within the cognitive systems that distinguish 'the sensory consequences of our own actions from sensory changes occurring because of something happening independently' results in the delusional sense that one's own volition is coming from elsewhere (Frith et al., 1998). Integrating both the neurocognitive and affective points of view, Young and Leafhead (1996) have suggested that the strength of various bizarre beliefs could arise from attempts to make sense of a world colored by both distress and abnormal neurocognitive processes that render one's daily surroundings strange and unfamiliar.

Empirical examinations of neurocognition and delusions in schizophrenia, hampered by differing foci and assessment methods, however, have produced inconsistent results. For instance, severity of paranoid delusions has been linked to impairments in visual spatial attention (Guillem et al., 2001). The presence of Schneidarian symptoms has been associated with poorer performance on a visual memory test that called for design reproduction from memory without visual feedback about accuracy (Mlakar et al., 1994). Persons with schizophrenia who have experienced delusions of external forces controlling their thoughts showed significant impairments in correcting their own errors on a sensorimotor task when visual feedback about responses was withheld (Frith and Done, 1989). While positive symptoms assessed as the combination of hallucinations and delusions have been linked to better executive function (Basso et al., 1998), positive symptoms assessed as including elevated mood have been linked to poorer executive function (Zakzanis, 1998). Additionally, positive symptoms conceptualized as including thought disorder have been linked to poorer verbal memory (Berman et al., 1997). Other studies have failed to find any association between neurocognition and positive symptoms (Voruganti et al., 1997). Of note, these studies have been further limited by the inclusion of participants in differing phases of illness, with some hospitalized in acute states that may involve unusually high levels of positive symptoms relative to their own baselines.

In the current study, we sought to test a hypothesis generated by modifying the observations of Young and Leafhead (1996). Specifically, we wondered if the severity of delusions in a post-acute phase of schizophrenia was uniquely related to level of impairment in visual memory and emotional distress or instability. We hypothesized that visual memory impairments coupled with neuroticism contribute to the prominence of delusions in persons with schizophrenia, since feelings of distress along with perceptual unfamiliarity might produce more radical and idiosyncratic interpretations of the world. We chose the construct of neuroticism because it has been shown to represent a stable trait (Kentros et al., 1997) that may exert a continuous influence on cognition and behavior in contrast to emotional turmoil, which may represent a more passing state.

2. Methods

2.1. Participants

Participants were 42 males and 2 females with diagnoses of schizophrenia ($n=29$) or schizoaffective disorder ($n=15$) confirmed by the Structured Clinical Interview for DSM-IV (Spitzer et al., 1994) and a mean age of 44 (S.D. = 9.2). Participants had a mean educational level of 12.4 years (S.D. = 1.62) and a mean of 10.46 (S.D. = 9.54) lifetime hospitalizations, with the first hospitalization occurring on average at the age of 24.6 (S.D. = 10.86). Participants were 31 Caucasians, 12 African–Americans and 1 Latino. All participants were receiving outpatient treatment, and none had been hospitalized or experienced changes in psychiatric medication or housing during the 30 days before assessment.

2.2. Instruments

2.2.1. Positive and Negative Syndrome Scale (*PANSS*)

The PANSS is a 30-item rating scale completed by clinically trained research staff at the conclusion of a chart review and semi-structured interview.

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