Psychopathology, social adjustment and personality correlates of schizotypy clusters in a large nonclinical sample

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ABSTRACT

Introduction: Correlational methods, unlike cluster analyses, cannot take into account the possibility that individuals score highly on more than one symptom dimension simultaneously. This may account for some of the inconsistency found in the literature of correlates of schizotypy dimensions. This study explored the clustering of positive and negative schizotypy dimensions in nonclinical subjects and whether schizotypy clusters have meaningful patterns of adjustment in terms of psychopathology, social functioning, and personality.
Methods: Positive and negative schizotypy dimensional scores were derived from the Chapman Psychosis-Proneness Scales for 6137 college students and submitted to cluster analysis. Of these, 780 completed the NEO-PI-R and Social Adjustment Scale-self report version, and a further 430 were interviewed for schizophrenia-spectrum, mood, and substance use psychopathology.
Results: Four clusters were obtained: low (nonschizotypic), high positive, high negative, and mixed (high positive and negative) schizotypy. The positive schizotypy cluster presented high rates of psychotic-like experiences, schizotypal and paranoid symptoms, had affective and substance abuse pathology, and was open to experience and extraverted. The negative schizotypy cluster had high rates of negative and schizoid symptoms, impaired social adjustment, high conscientiousness and low agreeableness. The mixed cluster was the most deviant on almost all aspects.
Conclusions: Our cluster solution is consistent with the limited cluster analytic studies reported in schizotypy and schizophrenia, indicating that meaningful profiles of schizotypy features can be detected in nonclinical populations. The clusters identified displayed a distinct and meaningful pattern of correlates in different domains, thus providing construct validity to the schizotypy types defined.

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1. Introduction

Factor analytic studies of the symptoms of schizophrenia (Peralta et al., 1992) and schizotypy (Stefanis et al., 2004) support a common underlying structure with at least three dimensions: positive, negative, and disorganized. Alterna-tively, cluster analysis (Everitt, 1993) can be used to examine whether individuals fall into distinct groups that reflect the dimensions identified by factor analytic studies (Suhr and Spitznagel, 2001a). It can also clarify inconsistencies found in correlational studies that attempt to resolve the heterogene-ity of schizophrenia and schizotypy by relating specific symptom dimensions with psychopathology and impair-ment. Correlational methods do not take into account the possibility that schizotypes are elevated on more than one dimension simultaneously (Walker and Lewine, 1988). Therefore, a study with a predominance of subjects with a

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pure profile of positive symptoms may find an association between the positive dimension and a given measure; however, this relation may turn out to be weak or nonexistent in another study in which subjects have a mixed profile of high positive *and* negative schizotypy (Suhr and Spitznagel, 2001a). Therefore, cluster analytic studies provide a good complement to factor analytic approaches.

The few cluster analytic studies conducted in schizophrenia indicate that not all patients fit into groups defined by the relatively orthogonal dimensions yielded by factor analytic studies. The consistent picture across schizophrenia studies is that clusters of high positive, high negative, and mixed (high positive and negative) symptoms emerge (Dollfus et al., 1996; Lykouras et al., 2001; Mohr et al., 2004; Morrison et al., 1990; Williams, 1996), with other clusters depending on the number and nature of dimensions included in the analyses. Similarly, schizotypy studies typically find positive, negative, mixed, and low schizotypy clusters (Aguilera et al., 2008; Barrantes-Vidal et al., 2003; Goulding, 2004, 2005; Loughland and Williams, 1997; Suhr and Spitznagel, 2001a,b; Williams, 1994). The nature of the "mixed cluster" depended on the particular dimensions included in the studies. Suhr and Spitznagel (2001a) used the Schizotypal Personality Questionnaire (SPQ; Raine, 1991), which includes positive, negative and disorganized dimensions, and identified a mixed cluster high on all three dimensions; whereas Barrantes-Vidal et al. (2003) used the Chapman Psychosis-Proneness scales and found a mixed cluster consisting of positive and negative schizotypy.

A number of studies have examined the correlates of schizotypy dimensions. Dinn et al. (2002) reported differential patterns of correlations of positive and negative schizotypy clusters. Lewandowski et al. (2006) reported that positive, but not negative, schizotypy was related to symptoms of depression and anxiety. Recently, Kwapil et al. (2008) found that both dimensions were related to schizotypal and paranoid personality disorder symptoms, whereas positive schizotypy was uniquely related to psychotic-like experiences, substance abuse, mood disorders, and history of mental health treatment, and negative schizotypy was specifically associated with negative and schizoid symptoms. Both dimensions were associated with poorer overall and social functioning.

However, only two studies have examined behavioral correlates of schizotypy clusters. Suhr and Spitznagel (2001b) reported that participants high on their mixed schizotypy cluster were rated poorer on a behavior rating scale than participants in the positive, negative and low schizotypy clusters. However, as the authors pointed out, the wide range of unusual behaviors were not subdivided into meaningful subscales, rendering it difficult to interpret the findings. Barrantes-Vidal et al. (2003) found that adolescents in the high positive and negative schizotypy cluster received poorer ratings on the Achenbach (1991) Teacher Report Form than in the other clusters.

The goal of the present study was to examine the cluster structure of positive and negative schizotypy in a large nonclinically ascertained sample of young adults. We hypothesized that most participants would fall in a low schizotypy cluster, and that the large sample size would allow for the characterization of three distinctive schizotypy clusters: high positive schizotypy, high negative schizotypy,

and high positive and negative schizotypy (mixed) clusters. The second aim was to examine the validity of the schizotypy clusters by examining ratings of psychopathology, personality, and impairment. Based on the findings from correlational studies (as no schizotypy cluster study has addressed this issue), we expected that the positive cluster would be associated with schizotypal, paranoid and psychotic-like symptoms, social distress, and mood disorders, as well as high neuroticism and openness to experience. The negative schizotypy cluster was expected to be characterized by schizotypal, schizoid, paranoid, and negative symptoms, social impairment, and low extraversion and openness. Consistent with previous cluster studies, it was expected that the hypothesized mixed schizotypy cluster would exhibit the highest level of symptoms and impairment.

2. Methods

2.1. Subjects

Usable Chapman Psychosis-Proneness questionnaires were completed by 6137 undergraduates enrolled at the University of North Carolina at Greensboro (UNCG) between 1998 and 2005 (this sample and correlational results with these measures were described in Kwapil et al., 2008). The mean age was 19.4 (SD = 3.7). Consistent with university demographics, the sample was 76% female and 24% male.

An unselected subset of 780 participants completed questionnaire measures of personality and social functioning. The subsample was comparable to the original sample with 75% female and 25% male and a mean age of 19.3 (SD = 3.4). A subset of 430 participants underwent structured diagnostic interviews. Likewise, this subsample was comparable to the original sample with 74% female and 26% male and a mean age of 19.2 (SD = 1.4). Participants were recruited for interviews based upon their scores on the Chapman Psychosis-Proneness scales as part of several studies conducted at UNCG. Both subsamples were comparable to the original sample in terms of age and sex. A total of 184 participants were included in both subsamples.

2.2. Materials and procedures

Participants were administered the Magical Ideation (Eckbald and Chapman, 1983), Perceptual Aberration (Chapman et al., 1978), Physical Anhedonia (Chapman et al., 1976), and Revised Social Anhedonia (Eckblad, et al., 1982) Scales. The items were intermixed with a 13-item measure of infrequent responding (Chapman and Chapman, 1983) included to screen out invalid protocols. Participants who endorsed more than two infrequency items were dropped from further study. Participants completed the NEO-PI-R (Costa and McCrae, 1992) and the Social Adjustment Scale (SAS; Weissman, 1999). The NEO-PI-R is a widely used self-report measure of the Five-Factor Model of personality. This model assumes that adaptive and pathological aspects of personality can be accounted for by variation in five basic dimensions: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (each of which are assessed by the questionnaire). The SAS assesses functioning in a variety of social contexts. It provides a total score and three subscale scores applicable to college students that assess social