



The paradox of schizotypy: Resemblance to prolonged severe mental illness in subjective but not objective quality of life



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ABSTRACT

An interesting paradox has emerged regarding the schizophrenia-spectrum. Put simply, college students with schizotypy (defined as the personality organization reflecting a vulnerability to schizophrenia-spectrum pathology) report experiencing pathology with respect to some key functional domains on a level that is equal to or more severe than older, outpatients with a prolonged psychiatric disorders. Notably, this self-reported pathology is not supported by objective/behavioral performance data, suggesting that the primary deficit is psychological in nature (e.g., metacognition). We evaluated whether this subjective–objective dysjunction extends to quality of life (QOL). Eighty-three college students with schizotypy were compared to 50 outpatients with severe mental illness (SMI) as well as to 82 undergraduate and 34 community control groups in subjective and objective QOL via a modified version of Lehman's Quality of Life Interview, which covers a range of QOL domains. The schizotypy and SMI group were equally impoverished in all measures of subjective QOL compared to the college and community control groups. In contrast, the schizotypy group was relatively normal in most measures of objective quality of life compared to the SMI group. The subjective–objective dysjunction appears to extend to QOL, and these differences do not appear to reflect a more global negativistic reporting bias.

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1. Introduction

The notion that severity of schizophrenia traits reflects a continuous phenomenon in the general population is well-regarded, and has been a tenant of empirical attempts to understand how the disorder manifests at genotypic (Docherty and Sponheim, 2008), endophenotypic (Lenzenweger et al., 2007) and phenotypic (Cohen and Davis, 2009) levels as well as how schizophrenia liability may contribute to adaptive abilities, such as creativity (Burch et al., 2006) and enhanced academic success (Nettle, 2006). Despite debate as to whether elements of schizophrenia vulnerability are categorical in nature (Meehl, 1962; van Os et al., 2000), there is general agreement that subclinical schizophrenia-like traits are present in a substantial minority of the population, often referred to as “schizotypy” – the personality organization reflecting a vulnerability for schizophrenia (Lenzenweger, 2006). Various methods of identifying individuals with schizotypy exist, though the use of self-report questionnaires is the most common method. It is important to note that many, perhaps most, of these self-report-based schizotypy studies are

conducted on college student samples often at relatively selective institutions (at least, in regards to their “research intensive” status and importance among the tens of thousands of colleges and institutions that exist in the world). In this regard, these samples are probably some of the most high-functioning individuals in the schizophrenia-spectrum in terms of cognitive, motivational, financial and social resources.

An interesting paradox regarding these individuals has been revealed in the literature recently (e.g., Auster et al., 2014; Chun et al., 2013; Cohen et al., 2012a). The paradox in question concerns how individuals with self-reported schizotypy, particularly those recruited from relatively demanding universities (and are thus presumably demonstrating academic, social and cognitive functioning that is not demonstrably impaired), resemble psychiatric outpatients in key self-reported variables. Studies to date suggest this resemblance occurs in three domains. First, college students with schizotypy report experiencing high levels of subjective cognitive complaints (i.e., on the order of two standard deviations) regarding attention, memory, language and other basic neurocognitive abilities relative to college controls (e.g., Chun et al., 2013). This subjective deficit is in striking contrast to their actual performance in these cognitive domains which is generally in the average range. Although there are many accounts in the literature of neurocognitive deficits being associated with college

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schizotypy (e.g., Gooding et al., 1999), a recent meta-analysis suggested that objective clinical neuropsychological performance is grossly normal across a range of abilities (e.g. memory, attention and language) examined in the literature in college persons with self-reported schizotypy (Chun et al., 2013). Of note, very few group differences in neurocognitive functioning examined in this study demonstrated even a small effect size. In this regard, there appears to be a pronounced dysjunction between subjective and objective domains of cognitive functioning. Secondly, college schizotypal subjects have reported experiencing in-the-moment anhedonia (i.e., reduced experience of pleasant emotion) during a laboratory emotion-induction task at a level that was more severe than patients with schizophrenia and/or mood disorders (Cohen et al., 2012a). Conversely, college students with schizotypy have not shown psychophysiological deficits (Gooding et al., 2002) or implicit affective responses (Cohen and Hong, 2011) to emotional stimuli relative to college control groups, and there are accounts of increased psychophysiological activity in some studies (e.g., Karcher and Shean, 2012; but note psychophysiological abnormalities more generally, Ragsdale et al., 2013; O'Driscoll et al., 1998). Thus, there appears to be discrepancy between subjective and objective emotion functioning in college schizotypy. Thirdly, a dysjunction has been reported in olfactory functions (Auster et al., 2014). In this study, college individuals with schizotypy reported lower levels of subjective pleasure when rating a range of olfaction stimuli compared to both patients with schizophrenia and college controls. However, when asked to identify/recognize the olfactory stimuli, college schizotypal individuals performed significantly better than patients with schizophrenia and comparable to non-psychiatric controls. In sum, across cognitive, emotional and olfactory domains, it appears that college schizotypy is associated with subjective deficits equal to or worse than those seen in outpatients with schizophrenia. However, objective performance deficits do not approximate these subjective deficits. This is paradoxical in the sense that college schizotypal individuals, at least as a group, are presumably more healthy and functional in every conceivable dimension compared to outpatients with severe mental illness (SMI).

While it is unclear, at present, what this dysjunction between subjective and objective report in schizotypy means, it raises questions about whether some higher-order cognitive ability (e.g., metacognition, insight, attributions, and autobiographical memory) is disturbed in some manner. Understanding this issue could hold important implications for our understanding of the schizophrenia spectrum. For example, deficits in higher-order cognitive abilities or in the systems that regulate them may reflect an important marker for understanding schizophrenia processes and for identifying vulnerable individuals. Clarifying the dysjunction between objective and subjective report in schizotypy may also shed light on how schizophrenia-risk manifests in the general population, and may help explain some of the adaptive features of schizotypy that have been found in the literature, such as enhanced creativity (Miller and Tal, 2007), academic success (Nettle, 2006) and even improved mating abilities (Nettle and Clegg, 2006). Regardless, it is important to further investigate the scope of this dysjunction. The present study sought to determine whether these seemingly paradoxical findings extend to quality of life (QOL). We assessed subjective and objective quality of life using a validated instrument in schizotypal college students and outpatients with SMI and college and community control groups. Both subjective and objective QOL were assessed using self-report, which allows us to examine whether schizotypy is associated with a more general bias towards pathological responding (in which case, they should show SMI-like scores on both scales), or whether their pathological responding, if present, is limited to subjective domains. We predicted that the schizotypy group would be

significantly impoverished in subjective but not objective QOL compared to the college and community control groups (at medium-large and negligible-small effect size levels respectively), but would be similar to the SMI group (at negligible-small effect size levels).

2. Method

2.1. Subjects

Subjects were recruited from a large public university, a community mental health outpatient clinic, and from the community at large. This study was approved by the responsible Institutional Review Board and consent was obtained for all subjects.

2.1.1. Patient group

The patient groups included 50 adults with Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV; American Psychiatric Association (APA, 1994)) diagnosed with schizophrenia ($n=28$) or unipolar or bipolar ($n=22$) affective disorders. Note that there was substantial blurring between these diagnostic categories in that a significant portion of individuals diagnosed with schizophrenia also had a history of depression and mania (19% and 22%, respectively), and that a significant portion of patients diagnosed with affective disorders had a history of psychosis (33%). Hence, patients were collapsed into an SMI group. All patients were clinically stable at the time of testing (i.e., Global Assessment of Functioning rating [GAF (APA, 1994)] above 30) and were receiving pharmacotherapy under the supervision of a multi-disciplinary team. All patients were prescribed psychotropic medications at the time of testing, and there was considerable variability in type, dosage, and medium (e.g., depot versus oral) across patients. Diagnoses were made based on information obtained from the patients' medical records and from a structured clinical interview (SCID; First et al., 1996). Exclusion criteria included: (a) documented evidence of mental retardation from the medical records, (b) current or historical DSM-IV diagnosis of alcohol or drug abuse suggestive of severe physiological symptoms (e.g., delirium tremens, repeated loss of consciousness), and (c) history of significant head trauma (requiring overnight hospitalization). There were no statistically significant differences in any dependent measures between the diagnostic groups (all p 's > 0.10).

2.1.2. Schizotypy and college control groups

Subjects from the schizotypal and nonpatient control groups were undergraduate freshmen and sophomores who were approached by email to participate in an online survey ($N=10,258$). Embedded within this survey were a consent form, basic demographic questions, the Schizotypal Personality Questionnaire – Brief Revised (Cohen et al., 2010; Raine and Benishay, 1995), the Brief Symptom Inventory (Derogatis and Melisaratos, 1983) and infrequency items (Chapman and Chapman, 1983). The final screening sample included 2300 complete responses. Ten subjects were excluded for invalid profiles, defined as an infrequency score > 3. Based on evidence that schizotypy is a construct with a population incidence approaching ten percent (Lenzenweger, 2006), we adopted a conservative strategy where the top five percent of scorers (computed from the ethnicity and gender determined means) on the positive/disorganized ($n=51$), and/or negative ($n=32$) subscales were invited to participate in the laboratory phase of the study (see Cohen and Hong (2011) and Cohen et al. (2012b) for elaboration on this methodology). Positive (i.e., ideas or reference, suspiciousness, magical thinking and unusual perceptions), disorganization (i.e., odd speech, eccentric behavior) and negative (i.e., constricted affect, no close friends) subscales were employed. Individuals scoring high on the negative scale were only considered eligible if they (a) also showed elevation on the positive or disorganization scales, or (b) had a depression scale score from the Brief Symptom Inventory below their gender and ethnicity determined mean. This was done to address concerns that depressive symptoms can give “false positives” on negative schizotypy scales. Control subjects were identified and included based on scores below the ethnicity and gender-determined means for each of the positive, negative, and disorganization SPQ factors ($n=485$), of which 82 were selected and agreed to participate. Table 1 contains descriptive statistics for the groups.

2.1.3. Community control group

Individuals were recruited from the community for the community control group ($n=34$). Exclusion criteria were similar to that of the patient group, and also included history of schizophrenia or affective disorder based on information obtained from a SCID interview. Subjects were compensated \$40 for their participation.

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