Personality and Individual Differences 49 (2010) 419–424

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Primary and secondary negative schizotypal traits in a large non-clinical sample

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ARTICLE INFO

Article history:
Received 10 June 2009
Received in revised form 24 March 2010
Accepted 13 April 2010
Available online 5 May 2010

Keywords:
Schizotypy
Negative
Schizophrenia
Deficit
Apathy
Anhedonia
Social
Anxiety
Depression
Functioning

ABSTRACT

The negative symptoms of schizophrenia reflect behavioral and affective deficits and are etiologically heterogeneous, reflecting either "primary" (i.e., apathy) or "secondary" sources (e.g., depression, anxiety, medication side effects). This distinction is critical for understanding treatment response, illness course and a host of neurocognitive, neurobiological and functioning variables in schizophrenia. Negative schizotypy, defined in terms of subclinical negative traits, occurs in a sizeable portion of the adult population and is associated with increased risk for developing schizophrenia-spectrum disorders as well as a host of neurocognitive and functional anomalies. It is, as yet, unclear whether primary and secondary sources characterize negative schizotypy in a similar manner as schizophrenia. The present study contrasted putative "primary" (i.e., apathy) and "secondary" (i.e., depression and anxiety) causes in their relationships to negative schizotypy and quality of life in a sample of 1356 non-clinical adults. Our data suggests that negative schizotypy reflects two distinct "mechanisms", one involving a putatively primary source (i.e., social anhedonia) and the other reflecting a putatively secondary one (i.e., depression). These primary and secondary mechanisms were separately important for understanding quality of life impoverishments. Implications of a "two-process" model of negative schizotypy are discussed.

1. Introduction

Negative symptoms, defined in terms of expressive and experiential deficits, reflect integral features of schizophrenia-spectrum pathology in that they are associated with poor prognosis and a range of neurocognitive, pathophysiological, and functional maladies (Blanchard & Cohen, 2006). Subclinical "negative symptoms" that occur in non-clinical populations are also important for understanding the disorder as they often predate onset of psychosis by years (Walker, Grimes, Davis, & Smith, 1993) and are predictive of future schizophrenia-spectrum pathology (Gooding, Tallent, & Matts, 2005; Kwapil, 1998). Accordingly, these negative traits are thought to reflect a latent vulnerability marker of the genetic liability to schizophrenia-spectrum disorders – also known as "schizotypy" (e.g., Docherty & Sponheim, 2008; Meehl, 1962 but see Meehl, 1990). In patients with schizophrenia, negative symptoms reflect behaviors and subjective states that are etiologically heterogeneous – a fact that has greatly complicated our understanding of them (Carpenter, Heinrichs, & Wagman, 1988). The present project examined the degree to which heterogeneity is also a feature of psychometrically-identified negative schizotypy.

Carpenter et al. (1988) outline two general classes of negative symptoms in schizophrenia patients: those that are "primary" (i.e. "core" or "deficit" symptoms) and those related to depression, anxiety, medication side effects, chronic social isolation and other "secondary" causes (Carpenter et al., 1988; Kirkpatrick, Buchanan, Ross, & Carpenter, 2001). Secondary negative symptoms, which may present similarly to primary ones during cross-sectional assessment, are generally thought to be more transient, or exogenous in nature. Conversely, core negative symptoms are meant to capture Kraepelin's dementia praecox construct (Carpenter et al., 1988) reflecting a "weakening of those emotional activities which permanently form the mainspring of volition" and characterized by "extinction of affection for relatives and friends, of satisfaction in their work and vocation... [that is] the first and most striking symptom of the onset of the disease." (Kraepelin, 1971). In this regard, the weakening of emotional activities, or "apathy" (Cohen, Minor, & Najolia, in press) as it has been referred to, is postulated to be a critical and enduring feature of the disorder (Kirkpatrick et al., 2001). To date, well over a hundred peer-reviewed studies support the importance of primary negative symptoms in schizophrenia (e.g., Kirkpatrick et al., 2001).

There is good reason to suspect that both primary and secondary causes contribute to negative schizotypy in a similar manner as in schizophrenia. Although it is unlikely that negative schizotypy reflects side effects from antipsychotic medications or chronic institutionalization, symptoms of clinical distress such as

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doi:10.1016/j.paid.2010.04.010

depression and anxiety are common in schizotypy (Cohen, Leung, Saperstein, & Blanchard, 2006; Lenzenweger & Loranger, 1989) and could conceivably manifest in negative schizotypal traits (e.g., "interacting with others is too anxiety provoking", "I am too depressed to smile"). Conversely, schizotypal negative traits might also resemble primary/"core" negative symptoms in that they reflect apathy, particularly in social situations. Social anhedonia – defined as a diminished capacity to experience pleasant emotions in social interactions, has long been thought central to negative schizotypy (Meehl, 1962 but see Meehl, 1990). In support of the distinction between primary and clinical distress-related symptoms within schizotypy, several recent studies report that anxiety/depression and social anhedonia reflect separable constructs in healthy adults (Brown, Silvia, Myin-Germeys, Lewandowski, & Kwapil, 2008; Chmielewski & Watson, 2008; Lewandowski et al., 2006). However, their respective contributions to the broader construct of negative schizotypy have yet to be elucidated. In this paper, we postulate that the structure of negative schizotypal traits is similar to that seen in schizophrenia more generally, – defined in terms of separate "primary" and "secondary" pathways.

The "apathy" postulated to reflect primary negative symptoms warrants elaboration as its nature has yet to be fully elucidated. A notable ambiguity concerns the degree to which apathy extends to both pleasant attitudinal domains (e.g., "I don't receive pleasure from interacting with others") and unpleasant ones (e.g., "It doesn't bother me to interact with others during conflicts or arguments") as is explicitly stated in the deficit syndrome definition (Kirkpatrick et al., 2001).[1] Studies employing symptom and trait affectivity instruments to explore this issue generally find decreased pleasant and increased unpleasant experiences (Horan, Blanchard, Clark, & Green, 2008) in both schizophrenia and schizotypy *as a group*. However, the question of whether a subgroup of patients shows a unilateral declination in emotional experience is more complicated. There is evidence suggesting that deficit patients show higher levels of self-reported social anhedonia (Horan & Blanchard, 2003) and lower levels of suspiciousness, social anxiety and other unpleasant social-based emotions (Kirkpatrick et al., 2001). As yet, the degree to which negative schizotypy reflects diminished emotional range in both pleasant and unpleasant domains remains unclear – a secondary issue examined in the present study.

Finally, it is important to understand negative schizotypy within the context of "real world" functioning and quality of life. Negative symptoms, compared to other symptoms of the disorder, are integral for understanding both schizophrenia and schizotypy because they are linked to impaired social functioning and impoverished quality of life (Malla et al., 2004). Interestingly, examinations of deficit symptoms (Horan & Blanchard, 2003) and clinical distress (Reine, LanÃ§on, Tucci, Sapin, & Auquier, 2003) in patients with schizophrenia have revealed that they are both associated with poorer functioning and impoverished quality of life. Insofar as deficit symptoms and clinical distress are mutually exclusive, this raises questions about whether their effects on "real world" variables reflect distinct pathways. We are aware of no studies to separately evaluate the potential differential contributions of primary versus secondary negative schizotypal traits to quality of life – another knowledge gap addressed in the present study.

The present study examined affective, symptom, and functional variables in a sample of 1356 young adults recruited from a college setting. Examination of a non-clinical sample allows for understanding latent schizophrenia vulnerabilities in a population whose insight is, by and large, not demonstrably impaired. Moreover, as noted above, the potential confounds of some secondary causes of negative symptoms, such as environmental deprivation and medication side effects, are reduced allowing for a clearer view of clinical distress symptoms. College samples are commonly used for schizotypy research, and it is worth noting that nearly a quarter of college students with psychometrically-identified schizotypy recruited as part of a ten-year longitudinal study met criteria for a schizophrenia-spectrum disorder by study's end (Kwapil, 1998). Thus, schizotypy, as measured in a college sample, is by no means benign. Our first aim was to examine potential primary (i.e., apathy) and secondary causes (i.e., clinical distress) of negative schizotypal traits. Second, we determined the relative contributions that primary and secondary negative schizotypal traits make to quality of life. Through both of these analyses, we sought to disentangle the relative importance of pleasant versus unpleasant apathy as components of primary negative schizotypal traits.

2. Methods

2.1. Participants

Potential participants were undergraduate students ($n = 8591$) who were contacted via email to participate in an on-line survey and offered a chance to win monetary compensation as part of a lottery (10 prizes of $25us). Embedded within this survey were a consent form, basic demographic questions, and measures of schizotypal symptomatology, clinical symptomatology, apathy, and quality of life. The response rate was ~17% ($n = 1507$). Of these responses, 9% ($n = 138$) of the questionnaires was discarded because of incomplete responses ($n = 141$) or questionable validity ($n = 10$; detailed below). The final dataset included 1356 participants. Demographic and descriptive variables are included in Table 1. This study was approved by the appropriate Human Subject Review Board and all subjects offered informed consent prior to completing the surveys.

2.2. Measures

2.2.1. Schizotypal symptoms

Schizotypal symptoms were assessed using the brief Schizotypal Personality Questionnaire (Raine & Benishay, 1995), a

Table 1
Means and standard deviations for the demographic and descriptive statistics ($n = 1356$).

Demographic variables	Data	Possible range
Age	19.18 ± 2.03	18–51
% Female	65%	–
Ethnicity		–
% Caucasian	81.7%	
% African American	8.4%	
% Asian-American	3.1%	
% Hispanic	3.2%	
% Other	3.6%	
Negative schizotypal traits	6.18 ± 3.57	0–16
Potential secondary sources		
Depression	10.71 ± 4.82	6–30
Anxiety	9.78 ± 4.09	6–30
Potential primary sources		
Pleasant apathy	11.26 ± 4.27	1–31
Unpleasant apathy	21.59 ± 3.29	1–31
Quality of life		
Objective quality of life	47.93 ± 5.04	1–65
Subjective quality of life	25.46 ± 5.80	1–42

[1] Our use of the term apathy here is meant to include both pleasant and unpleasant domains. We conceptualize pleasant social apathy as being identical to social anhedonia, and for purposes of this article, will use the terms interchangeably. We do note that social anhedonia is not synonymous with negative schizotypy, rather, that it is one potential indicator of negative schizotypy. This is important to note as we evaluate the social anhedonia literature which often employs social anhedonia as a proxy for negative schizotypy.