Psychiatry Research 215 (2014) 323–328

Contents lists available at ScienceDirect

Psychiatry Research

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

Assessing depression in youth at clinical high risk for psychosis: A comparison of three measures

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ARTICLE INFO

Article history:
Received 10 May 2013
Received in revised form
21 August 2013
Accepted 2 December 2013
Available online 10 December 2013

Keywords:
Prodrome
At-risk
Schizophrenia
Depressive symptoms
Reliability
Validity
Psychometric

ABSTRACT

Depressive symptoms are prevalent among individuals at clinical high-risk (CHR) for psychosis. Prior studies have used the Beck Depression Inventory (BDI), Hamilton Depression Rating Scale (HDRS), and the "dysphoric mood" item of the Scale of Prodromal Symptoms (SOPS) to assess depressive symptoms in CHR samples. We compared the psychometric properties of these instruments in a CHR cohort, to support the selection of appropriate depressive symptoms measures in future studies and in clinical settings. Internal consistency was assessed using Cronbach's alpha. Construct validity was assessed through correlations with SOPS items that were expected or not expected to be related to depressive symptoms. Criterion validity was assessed by comparing scores between patients with and without a major depressive disorder diagnosis. We hypothesized based on the schizophrenia literature that the BDI would have superior internal consistency and discriminant validity compared to the HDRS, and that all three measures would show convergent validity and criterion validity. The BDI demonstrated superior internal consistency and construct validity in this at-risk sample. The BDI and HDRS differentiated patients with major depressive disorder, but SOPS dysphoria did not. This has implications for the choice of depression measures in future CHR studies and for the interpretation of past findings.

1. Introduction

Depressive symptoms are common in people with schizophrenia (reviewed in Lako et al., 2012) and those at increased clinical risk for psychosis (Addington and Tran, 2009; Amminger et al., 2006, 2010; Cannon et al., 2008; Corcoran et al., 2011, 2012; DeVylder et al., 2012, 2013; Lee et al., 2011; Marshall et al., 2012; Mason et al., 2004; McGlashan et al., 2006; McGorry et al., 2002; Miller et al., 2003a; Niendam et al., 2009; Perivoliotis et al., 2009; Phillips et al., 2007; Pruessner et al., 2013; Rietdijk et al., 2013; Ruhrmann et al., 2010; Schlosser et al., 2012; Thompson et al., 2007; Thompson et al., 2009; Woods et al., 2003; Yung et al., 2003, 2004). In structured interviews used for ascertainment of clinical risk states for schizophrenia (Miller et al., 2003b), depressive symptoms are considered to be general "prodromal" symptoms (along with stress sensitivity, motor abnormalities, and sleep disturbance), distinct from positive, negative, and disorganized symptoms (Hawkins et al., 2004). At the same time, depressive symptoms have been associated with greater negative, disorganized and general (but not positive) prodromal symptoms (Corcoran et al., 2011).

There is evidence of a potential role of depressive symptoms in progression of the psychosis prodrome when retrospectively assessed following psychosis onset (e.g., Häfner et al., 2008; Myles-Worsley et al., 2007), and in improvement of psychotic-like symptoms in tandem with depressive symptoms in help-seeking youth (Yung et al., 2007). Depression is additionally associated with poor global and social function in CHR samples, independent of negative symptoms (Fulford et al., 2013). In meta-analysis, diagnosis of major depressive disorder (as opposed to depressive symptoms) occurs in approximately 41% of CHR patients and is associated with suicidality, disorganized behavior, and negative symptoms, but not with risk of transition to threshold psychotic disorder (Fusar-Poli et al., in press). These findings highlight the importance of the accurate assessment of depressive symptomatology among clinical high risk (CHR) youth, with implications for identification of individuals at greatest risk.

Measures used to assess depressive symptoms in CHR cohorts have primarily included the Hamilton Depression Rating Scale (HDRS; Hamilton, 1960), the Beck Depression Inventory (BDI; Beck

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http://dx.doi.org/10.1016/j.psychres.2013.12.002

et al., 1961), the Scale of Prodromal Symptoms (SOPS; Miller et al., 2003b), and the Calgary Depression Scale for Schizophrenia (CDSS; Addington et al., 1992). Some studies have also used the Montgomery–Asberg Depression Rating Scale (MADRS; Montgomery and Asberg, 1979), and the Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987). The psychometric properties of these measures vary, and the degree to which they may differentially assess depressive symptomatology among CHR patients in particular remains unclear. Prior psychometric studies in people with schizophrenia may be informative in predicting the properties of the same measures in CHR samples, with the caveat that the majority of CHR patients will not transition to threshold psychotic disorder and may instead have other mental health conditions complicated by attenuated psychotic symptoms.

The HDRS (Hamilton, 1960) is a clinician-rated measure that assesses behavioral and somatic aspects of depressive symptoms (Hamilton, 1960). In people with schizophrenia, the HDRS's internal consistency is adequate (α=0.77), although lower among outpatients (α=0.66) (Addington et al., 1992), and construct validity is questionable in that it is highly correlated with the negative symptoms subscale of the PANSS (Collins et al., 1996). The BDI (Beck et al., 1961) is a self-report measure of subjective depression severity (Beck et al., 1961). Direct comparison of the HDRS and BDI indicates that the BDI's internal consistency is especially high in schizophrenia (α=0.92), substantially better than that of the 17-item HDRS (α=0.77), althought both are adequate (Addington et al., 1992). The HDRS and BDI may also vary in underlying factor structure and therefore may be indexing different aspects of depression, with the BDI emphasizing functional impairment and subjective distress whereas the HDRS more broadly includes anxiety and somatic factors (Brown et al., 1995), although factor differences may also reflect method variance (Steer et al., 1987). Method variance may also contribute to the differences in reliability between the measures, as self-report assessment may produce superior internal consistency in the BDI relative to the clinician-administered HDRS (Donaldson and Grant-Valone 2002).

The SOPS dysphoric mood item (Miller et al., 2003b) is a single-item clinician-rated measure of depression, anxiety, and irritability derived from semi-structured interview (Structured Interview for Prodromal Syndromes; Miller et al., 2003b) included as part of the "general symptoms" subscale. While not purely a measure of depression, it may be a simple and useful proxy measure of depressive symptoms in this population as it is already assessed as part of the SOPS and would not require additional instruments; the purpose of its inclusion in this study is to test its validity in this capacity. In a factor analysis of the SOPS, the dysphoric mood item carries the strongest loading on a factor that also includes the remaining general symptoms, as well as disorganized and negative symptoms (Hawkins et al., 2004).

Herein, we examined the reliability, convergent and discriminant validity, and criterion validity, of three commonly used depression measures, including the HDRS, BDI, and dysphoric mood item of the SOPS. The CDSS was not utilized with the current cohort and therefore not available for analysis. Accurate measurement of depressive symptoms is of research importance in elucidating the role of depression in progression of the at-risk state, and of potential clinical importance given that depression is a highly prevalent and impairing feature of the CHR syndrome. Results may also be valuable in interpreting disparities in past research findings, which may reflect methodological variance. It is particularly important to understand the construct validity of depressive symptom measures in this population given potential confounding by negative symptoms. This is the first study to our knowledge to provide psychometric data on multiple measures of depressive symptoms among CHR individuals. The BDI was expected to show greater internal consistency than the HDRS, as is observed in schizophrenia (Addington et al., 1992). All three measures were expected to show convergent construct validity, defined as significant associations with depression-related SIPS/SOPS items. The BDI, however, was expected to show better discriminant construct validity given previous associations of the SOPS dysphoric mood item and the HDRS with disorganized and negative symptoms in CHR youths (Corcoran et al., 2011; Hawkins et al., 2004). Finally, all three depression measures were expected to show criterion validity, operationalized as their ability to distinguish between participants with and without a diagnosis of major depressive disorder.

2. Method

2.1. Participants

This study was conducted at the Center of Prevention and Evaluation, the psychosis-risk clinical research program at the New York State Psychiatric Institute at Columbia University Medical Center. Participants were 50 help-seeking youths ascertained as at clinical high-risk for psychosis, generally referred from schools and clinicians, or self-referred from the program website (www.copeclinic.org). Sample size was similar to previous psychometric studies of depressive symptom measures in schizophrenia patients (e.g., n=37 with HRSD, CDSS, and PANSS, Collins et al., 1996). All participants provided written informed consent, or if under the age of 18, written assent with provision of written informed consent by a parent. This study was approved by the Institutional Review Board at the New York State Psychiatric Institute at Columbia University Medical Center.

2.2. Inclusion/exclusion criteria

Participants were between the ages of 12 and 30 years and English-speaking. Participants met criteria for one of three prodromal syndromes, as assessed with the Structured Interview for Prodromal Syndromes (SIPS; Miller et al., 2003b): (1) attenuated positive symptoms syndrome (positive symptoms in the prodromal range or 3–5, beginning within the past year and occurring at least once per week for last month); (2) genetic risk and deterioration syndrome (having a first-degree relative with any psychotic disorder or having schizotypal personality disorder, with a 30% drop in function over the past year); or (3) brief intermittent psychotic symptoms syndrome (sporadically experiencing symptoms of threshold severity at least several minutes per day and at least one per month beginning in the past three months). Attenuated positive symptoms could not have occurred solely in the context of substance use or withdrawal, or be better accounted for by another disorder. Although some participants were prescribed anti-psychotic medications in an effort to prevent progression to threshold psychotic disorder, none had met criteria for a psychotic disorder at the time of reported assessments. Participants must have been assessed for depression using the HDRS (Hamilton, 1960), the BDI (Beck et al., 1961), and the SOPS (Miller et al., 2003b). Exclusion criteria included risk of harm to self or others, history of threshold psychosis based on SIPS/SOPS presence of psychosis criterion, history of major medical or neurological disorder, and mental retardation (i.e., IQ < 70).

2.3. Measures

Demographic characteristics were reported by the patients. Ethnicity was classified into four categories (non-Latino white, non-Latino black, Latino, and Asian/Pacific Islander). Clinical symptoms were rated using the Structured Interview for Prodromal Syndromes/Scale of Prodromal Symptoms (SIPS/SOPS; Miller et al., 2003b) by trained clinicians. All final SIPS/SOPS ratings were determined by consensus of clinical interviewers and the program director (C. Corcoran). Inter-rater reliability has been demonstrated to be adequate to excellent for individual SOPS items (Miller et al., 2003b). The SOPS consists of subscales measuring positive, negative, and disorganized symptoms, as well as a general symptom subscale that includes three items specifically related to depressive symptoms: dysphoric mood, sleep disturbance, and impaired tolerance to normal stress (the fourth item is motor abnormalities). Lifetime major depressive disorder (MDD) and other DSM-IV diagnoses were determined using the Structured Clinical Interview for DSM-IV Diagnoses (SCID; Spitzer et al., 1992) or the Diagnostic Interview for Genetic Studies (DIGS; Nurnberger et al., 1994) for patients aged 16 years and older, and using the Kiddie Schedule for Affective Disorders and Schizophrenia – Present and Lifetime Version for patients ages 12–15 years (K-SADS-PL; Kaufman et al., 1997). All interviews were conducted by masters level or above clinical research interviewers, and diagnoses were established by M.D. or Ph.D. level clinicians in consensus with experts on each of the assessment measures. Diagnostic interviews and measures of depressive symptoms were carried out during the same assessment period but by separate interviewers.