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The psychometric validity of the Center for Epidemiological Studies – Depression Scale (CES-D) in first episode schizophrenia spectrum

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ABSTRACT

Depressive pathology is common in first-episode schizophrenia spectrum disorders (FES), and is frequently assessed using the Center for Epidemiological Studies – Depression Scale (CES-D), an instrument designed for use in community samples. Despite its widespread use, no prior study has examined the psychometric validity of the CES-D in assessing depressive pathology in FES. The aim of this study was to examine the psychometric validity of the CES-D in FES. This study involved secondary analysis of baseline data from a single blind, randomized controlled trial of vocational intervention for individuals with FES (N=91; age range: 15–25 years). Measures used were: CES-D, Brief Psychiatric Rating Scale (BPRS), Scale for the Assessment of Negative Symptoms (SANS), and Structured Clinical Interview for DSM-IV-TR (SCID-I/P). The CES-D strongly correlated with the depression subscale of the BPRS, and with the presence of full-threshold depressive disorder on the SCID-I/P. There was minimal overlap between the CES-D and SANS, with weak correlations emerging for avolition and anhedonia, and not for affective flattening, alogia, and attention. The CES-D cut-off of ≥23 produced high sensitivity and specificity values for determining full-threshold comorbid depressive disorder. Such findings indicate that the CES-D is effective for assessing and measuring depressive pathology in FES.

1. Introduction

Depressive pathology is common in those with first-episode schizophrenia spectrum disorders (FES) (e.g., schizophrenia, schizophreniform disorder), contributing to the already large burden of these serious illnesses (Peralta and Cuesta, 2009; Rossler et al., 2005). 'Depressive pathology' is an all-encompassing term including symptom severity (i.e., scores on screening instruments ranging from low to high severity), caseness (i.e., cut-off scores on screening instruments signifying a need for clinical management of depressive symptomatology), and fulfillment of full-threshold diagnostic criteria for depressive disorder. Up to 80% of individuals with FES have been reported to experience such pathology (Upthegrove et al., 2010). Such statistics are particularly noteworthy in comparison to the significantly lower 4.5–9.5% of individuals in the general population who experience depressive pathology during a 12-month period (Riolo et al., 2005; Slade et al., 2009). Despite the higher rates of depressive pathology in FES, depressive pathology is often over looked due to the emphasis on treating first instances of positive and negative symptoms of psychosis (Cotton et al., 2012).

Depressive pathology in FES usually appears during the prodrome (Koreen et al., 1993) or first psychotic episode (Upthegrove et al., 2010), and often stabilizes upon the resolution of positive psychotic symptoms (Birchwood et al., 2000; Upthegrove et al., 2010). Thus, depressive pathology may be an intrinsic feature of FES (Birchwood et al., 2000). It may also emerge without concomitant psychotic symptoms several months after an acute psychotic episode (termed post-psychotic depression), which is believed to result from a psychological reaction to the devastating life event of having experienced FES (Upthegrove et al., 2010). Depressive pathology in FES is associated with serious adverse consequences, including increased risk for poorer quality of life (Cotton et al., 2010), future psychotic relapse (Subotnik et al., 1997), self-harm (Upthegrove et al., 2010), and suicide (Nordentoft et al., 2002). Given the high rates of depressive pathology in FES, and its associated adverse consequences, adequate screening and monitoring of depressive pathology is critical to the management and treatment of FES. Furthermore, early detection of depressive pathology is critical, as maximal levels of disability are reached within five years of psychosis onset and, for many individuals, depressive pathology is a core part of this disability (Birchwood et al., 1998).

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Adequate screening and monitoring of depressive pathology is difficult in FES, as depressive pathology can be clinically indistinguishable from negative symptoms of psychosis (Chiappelli et al., 2014a; Heiden et al., 2016; Majadas et al., 2012). The Calgary Depression Scale for Schizophrenia (CDSS; Addington et al., 1990) is the only depression instrument (interviewer- or clinician-rated) specifically designed to distinguish between depressive and negative symptomatology in schizophrenia. However, the Center for Epidemiological Studies – Depression Scale (CES-D; Radloff, 1977), a self-report depression instrument designed for use in community samples, continues to be used to assess depressive pathology in FES (e.g., Jackson et al., 2008; Kettle et al., 2008; Killackey et al., 2008; Schrank et al., 2014). Despite its widespread use in FES, no study has examined the psychometric validity of the CES-D in a FES cohort (Herniman et al., 2017); the very few existing studies have only been conducted in chronic schizophrenia (Craig et al., 1985; Rahim et al., 2014; Weissman et al., 1977). It is therefore unclear whether the CES-D has utility for assessing and measuring depressive pathology in FES.

Thus, the aim of this study was to assess the psychometric validity of the CES-D in a young FES cohort. Specifically, we were interested in the concurrent and divergent validity of the CES-D in accurately assessing depressive pathology and selectively discriminating it from negative symptoms of psychosis, respectively. We were also interested in its predictive validity for determining cases and non-cases of full-threshold comorbid depressive disorder (i.e., caseness for depressive disorder) in FES.

2. Methods

2.1. Participants

This study involved secondary analysis of baseline data from a single blind, randomised controlled trial of vocational intervention for young people (aged 15–25 years) with first-episode psychosis (see Killackey et al., 2013 for full description of trial). Participants were clients of the Early Psychosis Prevention and Intervention Center (EPPIC), a program of Orygen Youth Health (OYH), Melbourne, Australia. Inclusion criteria for the parent study were: fulfillment of criteria for a psychotic disorder (Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition–Text Revision [DSM-IV-TR]) (American Psychiatric Association, 2000); a minimum of six months remaining as a client of EPPIC; and an expressed interest for vocational recovery (e.g., return to school or work). Exclusion criteria included: intellectual disability and/or florid psychosis preventing the ability to give informed consent, and insufficient English proficiency to enable completion of assessments.

For this study, extra exclusion criteria were applied. Participants with an affective psychotic disorder (i.e., schizoaffective disorder, and depression or mania with psychotic features) were excluded to ensure that depressive pathology was not confounded by illness characteristics, as recommended by Cotton et al. (2012). Diagnoses such as schizoaffective disorder also have different symptom trajectories than FES (Cotton et al., 2013; Jager et al., 2011), further supporting the exclusion of those with an affective psychotic disorder. Furthermore, excluding participants with an affective psychotic disorder allows direct comparison between this study and previous studies examining CES-D performance in chronic schizophrenia.

2.1.1. Demographics

Demographic information was collected on age, gender, current medication, and marital, education and employment status.

2.1.2. Depressive pathology

Depressive symptomatology and caseness for depressive disorder was assessed using the CES-D (Radloff, 1977). The CES-D is a 20-item self-report questionnaire including four items worded in a positive direction to account for response bias. On the basis of "how often have you felt this way during the past week", the CES-D requires participants to respond to items such as "I felt depressed" and "I talked less than usual" on a 4-point Likert response scale ranging from 0 to 3: 0=rarely on none of the time (less than one day); 1=some or little of the time (1 – 2 days); 2=occasionally or a moderate amount of the time (3 – 4 days); and 3=most or all of the time (5 – 7 days). CES-D total scores range from 0 to 60, with higher scores indicating more severe symptomatology.

As a comparison, depressive symptomatology was also assessed using the validated depression subscale of the Brief Psychiatric Rating Scale (BPRS-D) (Hedlund and Vieweg, 1980; Overall and Gorham, 1962). This subscale included the following items: 'depressive mood', 'guilt feelings', and 'anxiety'. These items are rated by an interviewer on a 7-point Likert response scale, ranging from 0 (not present) to 7 (extremely severe).

The Structured Clinical Interview for Diagnostic Statistical Manual of Mental Disorders, Fourth Edition, Revised (SCID-I/P) (First et al., 2001), was used to determine the presence of current comorbid depressive disorder. Past depressive disorder was not included in the current study.

2.1.3. Negative symptoms

The Scale for the Assessment of Negative Symptoms (SANS) (Andreasen and Grove, 1986) is a clinician-rated scale that was used to measure negative symptom severity. The composite and subscale scores, including affective flattening and blunting, alogia, avolition, anhedonia, and attention, were used in the analysis. Items within each subscale are rated on a 6-point Likert response scale, ranging from 0 (none) to 5 (severe). SANS composite score can range from 0 to 100, with a higher score indicating more severe symptomatology.

2.2. Procedure

All participants provided written informed consent, including parent/guardian consent for those less than 18 years of age, and were free to withdraw from the study at any time. The study protocol was approved by The Melbourne Health Human Research Ethics Committee (HREC 2007.648).

2.3. Statistical analyses

Statistical analyses were conducted using IBM® SPSS® Statistics Version 21. Data screening was undertaken to determine accuracy of data entry and for assumption testing. Descriptive statistics and frequency counts were obtained to ascertain the demographic and clinical characteristics of the current FES cohort. Cronbach's alpha (α) and item-total correlations (item-total r) were calculated to determine the reliability of the CES-D.

2.3.1. Concurrent validity

Concurrent validity refers to the extent that symptom dimensions are related to one another (Lako et al., 2012). In this instance, an instrument designed to measure depressive pathology should be highly related with other, validated depression instruments such as the BPRS-D. Pearson Product Moment correlations (r) were used to determine the extent of relatedness between the CES-D and the BPRS-D. Point-biserial correlations (r_{pb}) were used to determine the extent of relatedness between the CES-D and the presence of comorbid depressive disorder (yes/no) as determined on the SCID-I/P. To interpret the strength of the associations, Cohen's criteria were used: 0.10 small; 0.30 moderate; and 0.50 large (Cohen, 1988).

2.3.2. Divergent validity

Divergent validity refers to the extent that different symptom dimensions are unrelated to one another (Lako et al., 2012). In this