Psychiatry Research 210 (2013) 1191–1197

Contents lists available at ScienceDirect

Psychiatry Research

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

Scale for the Assessment of Negative Symptoms structure in first episode psychosis

John Lyne [a,b,*], Laoise Renwick [a,b], Tim Grant [c], Anthony Kinsella [a], Patricia McCarthy [d], Kevin Malone [e], Niall Turner [a], Eadbhard O'Callaghan [a,f,g,1], Mary Clarke [a,f,g]

[a] Dublin and East Treatment and Early Care Team (DETECT) Services, Blackrock, Co. Dublin, Ireland
[b] College of Life Sciences, University College Dublin, Belfield, Dublin 4, Ireland
[c] Centre for Support and Training in Analysis and Research (CSTAR), University College Dublin, Belfield, Dublin 4, Ireland
[d] The School of Psychotherapy, St. Vincent's University Hospital/School of Medicine and Medical Science, University College Dublin, Belfield, Dublin 4, Ireland
[e] Department of Psychiatry, Psychotherapy and Mental Health Research, St. Vincent's University Hospital/School of Medicine and Medical Science, University College Dublin, Elm Park, Dublin 4, Ireland
[f] School of Medicine and Medical Science, University College Dublin, Belfield, Dublin 4, Ireland
[g] St. John of God Community Services Ltd., Blackrock, Co. Dublin, Ireland

ARTICLE INFO

Article history:
Received 15 February 2013
Received in revised form
6 September 2013
Accepted 10 September 2013

Keywords:
First episode psychosis
Diagnosis
Expressivity
Experiential

ABSTRACT

Previous studies in schizophrenia samples suggest negative symptoms can be categorized as expressivity or experiential. This study examines the structure of the Scale for the Assessment of Negative Symptoms (SANS) at two separate interviews in a first episode psychosis (FEP) sample. SANS structure was determined with principal components analysis in a schizophrenia spectrum (SSD, $N=191$) and non-schizophrenia spectrum (NSSD, $N=246$) sample at first presentation. Confirmatory factor analysis (CFA) was conducted in the entire FEP sample ($N=197$) at a follow-up assessment. A three factor model solution was extracted in both SSD and NSSD at first presentation. The three components, consisting of expressivity, experiential and alogia/inattention components, explained 26.1%, 16.6% and 13.6% of the variance respectively in SSD. In NSSD the same three components explained 24.2%, 17.9% and 13.1% of the variance respectively. CFA at follow-up showed similar model fit for both the original SANS five factor and for a three factor model solution. The results indicate that either a three or five factor SANS model solution may be appropriate in a psychosis sample inclusive of both SSD and NSSD. The findings also provide initial support for expressivity and experiential domain research in NSSD.

1. Introduction

Negative symptoms have long been considered a core feature of schizophrenia (Bleuler, 1950), and are widely regarded as a predictor of poor outcome (McGlashan and Fenton, 1992; Milev et al., 2005). Factor analyses have repeatedly demonstrated that negative symptomatology forms a distinct domain within the schizophrenia syndrome (Crow, 1985; Salokangas, 1997). The structure of commonly used symptom rating scales, which were initially developed using samples of individuals with schizophrenia, reflect this negative symptom domain by incorporating a negative symptom scale separate from positive symptoms (Kay et al., 1987; Andreasen, 1989). Further investigation within the negative symptom domain of these scales has suggested that negative symptom structure comprises more than one factor (Mueser et al., 1994).

While negative symptoms are traditionally described in schizophrenia spectrum conditions only (American Psychiatric Association, 2000a), several studies have indicated that negative symptoms are not restricted to this diagnostic category (Herbener and Harrow, 2001; Pogue-Geile and Harrow, 1984). Negative symptom investigation in non-schizophrenia spectrum populations has been suggested as a potential avenue of research for some time and merits further evaluation (Andreasen et al., 1995). We have previously reported prevalence of first presentation negative symptoms across the diagnostic spectrum of psychosis in a smaller sample ($N=330$) of the current study population, finding that negative symptoms were most prevalent in, but not restricted to schizophrenia (Lyne et al., 2012).

There has been debate in relation to whether negative symptoms represent a separate symptom domain in schizophrenia or whether they may represent a distinct subtype of schizophrenia.

* Corresponding author at: Dublin and East Treatment and Early Care Team (DETECT) Services, Blackrock, Co. Dublin, Ireland. Tel.: +353 1 2791700; fax: +353 1 2791799.
E-mail address: johnlyne@mail.com (J. Lyne).
[1] Deceased.

0165-1781/$ - see front matter © 2013 Elsevier Ireland Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.psychres.2013.09.008

By conducting taxometric statistical procedures Blanchard and colleagues found that negative symptoms should not only be considered an absolute dimension with varying degrees of severity, but that a latent class model may also be a feature of negative symptoms (Blanchard et al., 2005). The categorical negative symptom approach has been supported by certain illness characteristics being associated with individuals suffering with a negative symptom subtype (Andreasen et al., 1990), in particular for those with deficit or primary enduring negative symptoms (Kirkpatrick and Galderisi, 2008). It has been argued that a negative syndrome could represent a separate disease entity within the syndrome of schizophrenia (Kirkpatrick et al., 2001). The importance of researching negative symptoms using both a categorical approach (Galderisi and Maj, 2009) as well as a negative symptom domain approach has also been highlighted (Galderisi et al., 2013).

The Scale for the Assessment of Negative Symptoms (SANS) was initially divided into the five subscales of affective flattening, alogia, avolition-apathy, anhedonia-asociality and attention (Andreasen, 1984a). Although recent study has provided support for this SANS structure (Rabany et al., 2011), previous literature has reported a three domain concept consisting of expressivity (affective flattening and alogia), experiential (avolition-apathy and anhedonia-asociality), and alogia/inattention domains (Sayers et al., 1996;Keefe et al., 1992). However the relevance of the alogia/inattention items to negative symptoms has been questioned, and it has been suggested that a two domain structure may be most appropriate (Blanchard and Cohen, 2006). This two domain structure has been supported by research using two recently devised negative symptom scales (Horan et al., 2011; Strauss et al., 2012), and it is increasingly recognized that this is an appropriate division of negative symptoms meriting in-depth appraisal (Messinger et al., 2011).

Several first episode psychosis (FEP) studies have found a distinct negative symptom factor when conducting factor analyses (Serretti and Olgiati, 2004; Toomey et al., 1998), although FEP studies have not been entirely consistent (Kitamura et al., 1995; McGorry et al., 1998). Within the negative symptom factor, SANS structure may be similar in both a FEP sample and a schizophrenia spectrum sample (Malla et al., 2002), however to our knowledge no previous study has published SANS confirmatory factor analysis (CFA) in a psychosis sample inclusive of diagnoses other than schizophrenia (Keefe et al., 1992; Peralta and Cuesta, 1995; Sayers et al., 1996; Levine and Leucht, in press). Furthermore there has been a paucity of studies reporting SANS structure in a psychosis population excluding schizophrenia diagnosis. Negative symptom structure in FEP is important given the increasing number of study samples inclusive of individuals with diagnoses other than schizophrenia. These FEP studies often include negative symptom rating scales, such as the SANS, which were developed within schizophrenia only populations (Hegelstad et al., 2012; Henry et al., 2010). An awareness of SANS structure is also important to inform future negative symptom research strategies in non-schizophrenia spectrum psychoses.

1.1. Objectives

The first objective of this study was to ascertain SANS item structure in a non-schizophrenia spectrum psychosis diagnoses (NSSD) sample, and to compare with a schizophrenia spectrum diagnoses (SSD) sample. A second objective was to ascertain SANS structure in a FEP sample, and to use CFA to compare model fit for different SANS structures in the same FEP sample at a second follow-up assessment.

2. Methods

2.1. Study setting

This study was conducted between 2005 and 2011 in the Dublin and East Treatment and Early Care Team (DETECT), Ireland's pilot early intervention in psychosis service. DETECT is based in a region comprising three geographically defined catchment areas serving a population of 390,000, and also includes a private in-patient psychiatric facility located within the catchment area. The study was carried out in accordance with the latest version of the Declaration of Helsinki. Local ethics committee approval was obtained prior to undertaking the research, and informed consent was obtained from all participants after fully explaining the nature of the study. Study procedures have been described in a previous publication (Lyne et al., in press).

2.2. Subjects

All individuals (inpatient and outpatient) aged 16–65 years presenting with suspected FEP within the defined catchment area were eligible for inclusion. FEP was defined as a first presentation with psychosis to a psychiatric service in individuals who had not been treated with antipsychotic medication for longer than 30 days. Schizophrenia, schizophreniform disorder and schizoaffective disorder were included in a SSD group on the basis that these diagnoses have negative symptoms as part of their definition in recognized diagnostic criteria (American Psychiatric Association, 2000a; WHO, 1992). The NSSD group included all other psychotic diagnoses (Table 1). Individuals with psychotic disorder due to a general medical condition were excluded from the study.

In the entire sample of 437 FEP participants, 191 satisfied SCID criteria for SSD and 246 for NSSD. There are two views in relation to general recommendations of minimum sample size in factor analysis and validity studies. One view holds that the subject-to-variable ratio is important, while the other is that the absolute number of cases is important. A minimum subject to variable ratio of five cases per item studied has been suggested for factor analysis by several authors (Gorsuch, 1983; Bryant and Yarnold, 1995; Arrindell and van der Ende, 1985), while a sample size of at least 100 cases is needed (Sapnas and Zeller, 2002), and several authors recommend a minimum of 200 cases (MacCallum et al., 1999;Arrindell and van der Ende, 1985). Given the latter suggestion, we aimed for a subject to variable ratio of ten which would require a sample size of approximately 190 (19 item SANS x 10) for each diagnostic group. The sample size in each diagnostic group for our study is comparable with sample sizes in several previous SANS factor analyses (Kelley et al., 1999; Rabany et al., 2011; Toomey et al., 1998). Follow up SANS assessments were also conducted in a portion ($N=197$) of the entire FEP sample with a mean time to follow-up assessment of 16.3 months (S.D. 5.3) and a median of 14 months (range 10–35 months; 92% of individuals were seen within 24 months of first presentation). This sample is referred to as the follow-up sample throughout the paper.

2.3. Clinical assessments

The SANS was used for negative symptom assessment. The original SANS structure consists of nineteen items which are further divided into five subscales including affective flattening, alogia, avolition-apathy, anhedonia-asociality and attention. The SANS is recognized as a high quality tool for negative symptom assessment (Kirkpatrick et al., 2006), with good validity and reliability (Andreasen, 1982, 1990). Inappropriate affect was not included as the revised SANS version excludes this item (Peralta and Cuesta, 1995).

Structured Clinical Interview for DSM IV (SCID) ascertained diagnosis for all FEP presentations (First et al., 1995). Scale for the Assessment of Positive Symptoms (SAPS, positive symptoms), Calgary Depression Scale for Schizophrenia (CDSS, depressive symptoms), Premorbid Adjustment Scale (PAS, premorbid adjustment) and Beiser Scale (duration of prodrome and duration of untreated psychosis) were also measured as part of a larger FEP research protocol, and were used to describe the study sample (Andreasen, 1984b; Addington et al., 1993; Cannon-Spoor et al., 1982; Beiser et al., 1993).

Given the large sample size seventeen clinical assessors collected data throughout the project, each of whom received comprehensive standardised training prior to commencement as data collectors, to improve the consistency of data collection procedures between raters. Training included supervision of at least five live interviews for each scale, and using videos for at least a further three interviews. Thirteen of the assessors were post-membership psychiatry registrars, while the four others were senior multidisciplinary team members. Intraclass correlation coefficients (ICC) between raters was determined using two way mixed model with absolute agreement. ICC can be interpreted as excellent (>0.8), good (0.7–0.8), fair (0.5–0.7) and poor (<0.5) (American Psychiatric Association, 2000b). ICC between raters ranged between 0.67–0.99 for SANS, and had a median of 0.86. SCID diagnosis agreement was at least 0.82 for all assessors, and all kappa values were 1.00 for distinguishing SSD from NSSD indicating excellent agreement