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Reliability and validity of the self-report version of the apathy evaluation scale in first-episode Psychosis: Concordance with the clinical version at baseline and 12 months follow-up

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ABSTRACT

Negative symptoms have traditionally been assessed based on clinicians' observations. The subjective experience of negative symptoms in people with psychosis may bring new insight. The Apathy Evaluation Scale (AES) is commonly used to study apathy in psychosis and has corresponding self-rated (AES-S) and clinician-rated (AES-C) versions. The aim of the present study was to determine the validity and reliability of the AES-S by investigating its concordance with the AES-C. Eighty-four first-episode (FEP) patients completed the shortened 12-item AES-S and AES-C at baseline (T1) and 12 months (T2). Concordance was studied by degree of correlation, comparison of mean scores, and change and difference between diagnostic groups. The Positive and Negative Symptom Scale (PANSS) was used to study convergent and discriminative properties. High concordance was found between AES-S and AES-C at both T1 and T2 regarding mean values, change from T1 to T2, and the proportion with high levels of apathy. Both versions indicated high levels of apathy in FEP, while associations with PANSS negative symptoms were weaker for AES-S than AES-C. Controlling for depression did not significantly alter results. We concluded that self-rated apathy in FEP patients is in concordance with clinician ratings, but in need of further study.

1. Introduction

Understanding negative symptoms is a major challenge in schizophrenia research and treatment (Kirkpatrick et al., 2006; Montgomery and van Zwieten-Boot, 2007; Marder and Galderisi, 2017). Methodological improvements of assessments may help research, and one possible solution could be to include self-reports. However, nearly all studies of negative symptoms have relied on assessments made by observers; relatively few have evaluated the subjective experience of people with psychosis (Selten et al., 1993; Park et al., 2012; Llerena et al., 2013; Engel and Lincoln, 2016; Dollfus et al., 2016). The contents of the negative syndrome in psychotic disorders consist of the five subdomains of apathy/avolition, anhedonia, asociality, alogia and affective flattening (Kaiser et al., 2017), which cluster into the two separate factors of 1) amotivation/apathy and 2) expressive deficit (Marder and Galderisi, 2017). Apathy and anhedonia are internal experiences and, therefore, more accessible and suitable for self-reporting than observation-based expressive deficits (Andreasen, 1990; Marder and Galderisi, 2017).

Apathy is common in psychotic disorders and has been found to be a strong contributor to a poor outcome from the first episode throughout the course of the illness (Kiang et al., 2001; Roth et al., 2004; Faerden et al., 2010; Evensen et al., 2012; Fervaha et al., 2015). Marin et al. defines apathy as a "lack of motivation and goal directed behavior" (Marin, 1991). This definition is the conceptual basis for the Apathy Evaluation Scale (AES) (Marin et al., 1991), which, in addition to psychosis, has been used to study apathy across a number of different disorders, including Parkinson's disease, multiple sclerosis, Alzheimer's, and stroke (Andersson et al., 1999; Lueken et al., 2007; Sagen,U. et al., 2010b; Santangelo et al., 2014; Raimo et al., 2014). The AES is found to have sound psychometric qualities (Weiser and Garibaldi, 2015; Radakovic et al., 2015) and exists in two otherwise identical versions, a

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clinician-rated AES-C and a self-report AES-S (Marin et al., 1991). The existence of two modes of reporting can provide insight into the subjective experience of apathy in people with psychosis and their relationship to external observations.

Self-reports can be developed through direct involvement with the target group (Rose et al., 2011; Evans et al., 2012; Dollfus et al., 2016) or by adjusting an established observer-based scale (Park et al., 2012). Only minor adjustments were made when a self-report version of the Clinical Assessment Interview for Negative Symptoms (CAINS) (Blanchard et al., 2011), the CAINS-SR, was used (Park et al., 2012; Llerena et al., 2013; Engel and Lincoln, 2016). However, of the two subscales making up the CAINS, only the subscale Motivation and Pleasure (i.e., apathy/anhedonia) was found to have a satisfactory concurrent validity with the clinician-rated measure of the same domain and not the expression subscale (Park et al., 2012). The AES-S is also developed as an adaptation of the existing clinician-rated scale (Marin et al., 1991). To our knowledge, the AES-S has only been used in one former study of persons with psychosis (Evensen et al., 2012), yet how the self- report relates to the clinicians' assessments remains to be investigated. Since self-reports are easier to use for screening purposes, it is of interest to see if the AES-S can be used to screen for high levels of apathy.

The AES-C has shown good psychometric properties in people with psychosis, both in first-episode patients (Faerden et al., 2008) and in patients with longer durations of illness (Kiang et al., 2001). As expected, the AES-C shows strong associations with measures of negative symptoms made by traditional rating scales (Kiang et al., 2001; Faerden et al., 2010; Foussias et al., 2011; Konstantakopoulos et al., 2011). We have previously reported that 50% of first-episode psychosis (FEP) patients have high levels of apathy at the start of treatment as measured by the AES-C, with even higher levels of apathy in patients diagnosed within the narrow schizophrenia spectrum (Faerden et al., 2010). Levels of apathy in both groups of patients were more strongly associated with concurrent poor functioning (Faerden et al., 2010) and also better predicted future poor functioning in a 1-year follow-up of the same study sample (Faerden et al., 2013).

Negative symptoms are traditionally divided into primary and secondary symptoms, where the primary are thought to be related to neurobiological underpinnings, and the secondary are influenced by other sources of negative symptom-like features, such as depression, positive symptoms, and medication side effects (Kirschner et al., 2017). Apathy and depression have overlapping clinical features, including reduced initiative and lack of energy, which makes differentiation a challenge (Marin et al., 1993). The original definition states that the apathetic features should not be "due to emotional distress" to avoid a potential overlap with depression (Marin et al., 1991). However, because depression is a common feature in FEP (Romm et al., 2010), this criterion is often not applicable. Three of the four recently published studies of self-reports of negative symptoms found a significant association between negative symptoms and depression (Park et al., 2012; Engel and Lincoln, 2016; Dollfus et al., 2016), with the only exception a study by Llerena et al. (2013). Therefore, it is important to explore how both depression and other contributors to secondary negative symptoms, such as positive symptoms, may influence self-reports of apathy in FEP (Kirschner et al., 2017). Finally, patients' self-reports can differ from the evaluation of others because of a lack of insight into the illness and its consequences, and the effect of insight should thus be accounted for.

The aim of this study was to assess the concordance of the psychometric, convergent, and discriminative properties of the AES-S in FEP patients by comparing the AES-S and the AES-C. This was accomplished by investigating the following at both baseline and at 1-year follow-up: 1) Does the AES-S have the same psychometric properties as the AES-C? 2) Is there concordance in mean apathy scores, changes over time, and differences between diagnostic groups? 3) What are the convergent and discriminative properties in relation to the different PANSS symptom factors, and to what extent do depression, positive symptoms, and lack of insight influence the association to PANSS negative symptoms? 4) Can the AES-S be used to screen for high levels of apathy that is in concordance with the AES-C?

2. Methods

2.1. Participants

The present study included 84 FEP patients who completed both the AES-S and the AES-C at baseline and at 1-year follow-up. All participants are part of the ongoing Thematically Organized Psychosis (TOP) study in Oslo, Norway, consecutively recruited from specialized inpatient and outpatient psychiatric health services serving three out of six catchment areas in Oslo. Inclusion took place between July 2004 and June 2006, and participants met the following criteria: age between 18 and 65 years, a first episode of psychosis, and a DSM-IV diagnosis of schizophrenia, schizophreniform disorder, or schizoaffective disorder (constituting Group 1: Schizophrenia spectrum disorders); affective disorder with mood incongruent psychotic symptoms or bipolar I disorder (constituting Group 2: Affective psychotic disorders); and psychosis not otherwise specified, delusional disorder, or brief psychotic disorder (constituting Group 3: Other psychotic disorders). Patients were eligible for inclusion in the study up to 1 year following the start of first treatment.

This study includes the 84 participants who completed the AES-S and AES-C at both baseline and at the 1-year follow-up. A total of 124 took part in the 1- year follow up, but 40 of these were eliminated from the current study due to incomplete assessments by the AES-S or the AES-C, totaling this study to 84. There were no significant differences between the 124 participants and the 84 including the analyses regarding gender, age, level of education, duration of untreated psychosis (DUP), PANSS symptoms, or diagnostic distribution.

2.2. Assessment

The first assessment was carried out as close to first treatment contact as inclusion allowed for (T1) and repeated after 12 months (T2). Diagnostic assessment was carried out using the Structural Clinical Interview for DSM-IV (SCID-I). The duration of untreated psychosis (DUP) was measured from the first week that psychotic symptoms appeared, defined as having a score of ≥ 4 on the Positive and Negative Syndrome Scale (PANSS) (Kay SR and Fiszbein A, 1987) items P1, P3, P5, P6, or G9 until the first week of adequate antipsychotic medication.

Psychosocial functioning was assessed with the functioning score of the split version of the Global Assessment of Functioning Scale (GAF-F) (Pedersen et al., 2007). The GAF-F is scored between 0 and 100; a low score indicates worse functioning in independent living, degree of social relations, and ability to work.

Positive, negative, and general symptoms were assessed using the Structural Clinical Interview of the PANSS (SCI-PANSS). As in the previous validation study of the AES-C, we used Emsley's five factor model of PANSS (Emsley et al., 2003) to establish convergent and discriminate validity to positive, negative, disorganized, depressive, and excitatory symptoms. In this five factor model of PANSS, the positive factor is represented by items P1, P2, P5, P6, G9, and G12; the PANSS negative factor is represented by N1, N2, N3, N4, N6, G7, G13, and G16; the PANSS disorganized factor is represented by P2, N5, N7, G5, G10, G11, and G15; the PANSS depressive factor by G1, G2, G3, G4, and G6; and the PANSS excited factor by P4, P7, G8, and G14. For convergent and discriminative validity of the two negative factors, amotivation and expressive deficits, we used the model proposed by Liemburg et al. (2013) and established the PANSS amotivation factor, which consisted of items N2, N4, and G16 and the PANSS expressive deficits factor, which consisted of N1, N3, N6, G5, G7, and G13. Depression was assessed with the Calgary Depression Scale for