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# Is it possible to combine different psychotic symptom scales in bipolar disorder?



Helena Fernandez-Garcimartin<sup>a</sup>, Alexandra Bagney<sup>a,b</sup>, Marta Moreno-Ortega<sup>a,b</sup>,  
 Monica Dompablo<sup>a,b</sup>, Iosune Torio<sup>a</sup>, Antonio Lobo<sup>b,c,d</sup>, Miguel-Angel Jimenez-Arriero<sup>a,b,e</sup>,  
 Tomas Palomo<sup>a,b,e</sup>, Roberto Rodriguez-Jimenez<sup>a,b,e,\*</sup>

<sup>a</sup> Department of Psychiatry, Instituto de Investigación Hospital 12 de Octubre(i+12), Madrid, Spain

<sup>b</sup> Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Spain

<sup>c</sup> Department of Psychiatry, Universidad de Zaragoza, Spain

<sup>d</sup> Instituto de Investigación Sanitaria de Aragón (IIS Aragón), Spain

<sup>e</sup> Department of Psychiatry, Facultad de Medicina, Universidad Complutense de Madrid, Spain

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## ABSTRACT

It has been suggested that data on positive and negative psychotic symptoms in patients with schizophrenia as assessed using different scales may be combined. For the first time, we assessed correlations between the positive syndrome subscale of the Positive and Negative Syndrome Scale (PANSS-P) and the Scale for the Assessment of Positive Symptoms (SAPS), and between the negative syndrome subscale of the Positive and Negative Syndrome Scale (PANSS-N) and the Scale for the Assessment of Negative Symptoms (SANS) in patients with bipolar disorder. We also aimed to confirm these correlations in patients with schizophrenia. This cross-sectional study was conducted with a group of 94 patients (40 diagnosed with bipolar disorder, 54 with schizophrenia). Assessments were carried out using the PANSS, SAPS and SANS. Large significant correlations were found between the PANSS-P and SAPS, and between the PANSS-N and SANS, in both the bipolar disorder group and the schizophrenia group. These results confirm previous findings regarding correlations between these scales in schizophrenia, and support the hypothesis that similar correlations exist in bipolar disorder. Therefore, our data support the potential usefulness in collaborative research of combining results from different scales for the assessment of psychotic symptoms in patients with bipolar disorder.

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## 1. Introduction

Over the last decades, the symptoms that characterise psychotic disorders have been subject to considerable amount of research, leading to a better understanding and improved management of mental illness with psychotic symptoms (Lyne et al., 2012). In addition to schizophrenia, the prototypical psychotic disorder, it is well known that psychotic symptoms can be prominent in other psychiatric conditions, notably in affective disorders such as bipolar disorder and major depression.

Several diagnostic scales and instruments have been developed for the study of psychotic symptoms. The Scale for the Assessment of Negative Symptoms (SANS) (Andreasen, 1984a), the Scale for the Assessment of Positive Symptoms (SAPS) (Andreasen, 1984b) and the Positive and Negative Syndrome Scale (PANSS) (Kay et al.,

1986, 1987) are three of the most widely used diagnostic scales (Peralta et al., 1995; Lyne et al., 2012).

Although many studies of positive and negative psychotic symptoms have used these instruments, few of them have compared the different assessment scales. Some authors, such as Kay et al. (1988) or Peralta et al. (1995), have reported high correlations between the PANSS-P and the SAPS and between the PANSS-N and the SANS in patients with schizophrenia. Other authors have also found large correlations between the PANSS-N and the SANS (Fenton and McGlashan, 1992; Welham et al., 1999).

Both the PANSS and the SAPS/SANS were designed to assess psychotic symptoms in schizophrenia, and most of the studies that have used these scales to evaluate psychotic symptoms have been conducted in patients with this disorder. Although psychotic symptoms frequently appear in bipolar disorder, the clinical scales that are generally used to study patients with this condition mostly assess affective symptoms, and do not specifically evaluate psychotic symptoms. Thus, many studies have used the PANSS, the SAPS or the SANS as instruments to study psychotic symptoms in bipolar patients (Kitamura and Suga, 1991; Reddy et al., 1992;

\* Correspondence to: Department of Psychiatry, Instituto de Investigación Hospital 12 de Octubre (i+12). Avda. de Córdoba s/n 28041, Madrid, Spain.  
 Tel./fax: +34 91 390 85 36.

E-mail address: [roberto.rodriguez.jimenez@gmail.com](mailto:roberto.rodriguez.jimenez@gmail.com) (R. Rodriguez-Jimenez).

Atre-Vaidya et al., 1998; Raja and Azzoni, 2003; Canuso et al., 2008; Lindenmayer et al., 2008; Hirota and Kishi, 2013).

Recently, Lyne et al. (2012) have explored the possibility of combining psychiatric symptom scales for collaborative research projects. In their review, the authors only found 3 published studies where correlations between PANSS and SAPS/SANS had been evaluated (Fenton and McGlashan, 1992; Peralta et al., 1995; Norman et al., 1996), all of them being in patients with schizophrenia. Although considerable clinical differences were observed between these instruments, the scales were found to be highly correlated. To our knowledge, there are no published studies in the literature using the PANSS, the SANS and the SAPS concurrently in bipolar patients, or analysing the correlations between the scales in these patients.

In view of the potential usefulness of combining symptom scales, the aim of the present study was to evaluate whether the PANSS, the SANS and the SAPS would also be highly correlated in patients with bipolar disorder. In addition, the study was also performed with a sample of patients with schizophrenia in order to replicate previous studies (Lyne et al., 2012).

## 2. Methods

### 2.1. Subjects

This cross-sectional study was conducted with a sample of 100 patients. Six of them declined participation in the study, thus the final sample included 94 outpatients, of whom 40 had been diagnosed with bipolar-I disorder and 54 with schizophrenia according to DSM-IV criteria (American Psychiatric Association, 1994). Patients were diagnosed by a clinical psychiatrist using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (First et al., 1995). The sample was consecutively recruited from an outpatient mental health centre pertaining to the 12 de Octubre Hospital catchment area in Madrid. All patients included in the study were receiving medication and had been clinically stable (no hospital admissions, no changes in treatment and no significant psychopathological changes) for at least 6 months. The scales were administered by a psychologist with specific training and previous experience in the use of these instruments. The investigation was carried out in accordance with the Declaration of Helsinki, the study protocol was reviewed by the local Ethics Committee, and written informed consent was obtained from all participants prior to their inclusion in the study.

### 2.2. Instruments

#### 2.2.1. The Positive and Negative Syndrome Scale (PANSS)

The PANSS (Kay et al., 1986, 1987) evaluates psychopathology in patients with schizophrenia using a semi-structured interview lasting 30–40 min, and includes 30 items which are rated on a severity scale that ranges from 1 (absence of psychopathology) to 7 (extremely severe). Each item is systematically described, as well as the criteria for rating each level of severity. Seven of the 30 items are included in the PANSS Positive Scale (PANSS-P), another seven in the PANSS Negative Scale (PANSS-N), and the remaining 16 items in the PANSS General Psychopathology Scale (PANSS-GP). Scores range from 7 to 49 for the PANSS-P and PANSS-N, from 16 to 112 for the PANSS-GP, and from 30 to 210 for the total PANSS score. The scale has been validated in Spain by Peralta and Cuesta (1994).

#### 2.2.2. The Scale for the Assessment of Negative Symptoms (SANS)

The SANS (Andreasen, 1984a) was designed to assess negative symptoms in schizophrenia. It consists of 25 items divided into five subscales: alogia, affective flattening, avolition-apathy, anhedonia-asociality and attention impairment. Each subscale includes a final global rating item, which is intended to summarise the symptom assessed by the subscale. The severity of each symptom is rated on a severity scale that ranges from 0 (absence of psychopathology) to 5 (the greatest level of severity). Each level of severity is systematically defined for all items, which facilitates rating according to the observed patient's behaviour (Andreasen, 1989). The SANS can also be rated using a semi-structured interview lasting about 30 min.

#### 2.2.3. The Scale for the Assessment of Positive Symptoms (SAPS)

The SAPS (Andreasen, 1984b) was designed to assess positive symptoms in schizophrenia. It consists of 34 items that are rated on a severity scale ranging from 0 (absence of psychopathology) to 5 (the greatest level of severity). The items are divided into four subscales: hallucinations, delusions, bizarre behaviour and positive formal thought disorder. The SAPS is also rated using a semi-structured interview lasting about 30 min.

The SANS and the SAPS have been translated and adapted into Spanish (Obiols et al., 1985; Salvador et al., 1985). For both scales, a total score can be obtained by either adding the scores of all the individual items (known as the composite score) or by adding the global rating items of all the subscales (summary score). Summary scores were used in the present study, since they have been suggested to be a more sensitive index than composite scores (Andreasen, 1982). Summary scores range from 0 to 25 in the SANS, and from 0 to 20 in the SAPS.

### 2.3. Statistical analysis

Demographic characteristics of study participants were described using mean and standard deviation (S.D.) for continuous variables, and percentages for continuous variables. Pearson correlations were used to explore correlations between PANSS-P and PANSS-N total scores and SANS and SAPS summary scores in each sample, following Andreasen's suggestion that the summary score is a more sensitive index than the composite score (Andreasen, 1982). The SPSS statistical package version 21 was used for all analyses.

## 3. Results

### 3.1. Socio-demographic data and symptom scale scores

The age range of the sample was 18 to 58 years. Demographic data and average scores for the scales are shown in Table 1. No significant differences in age or gender were found between both groups.

### 3.2. Correlation between scales

In the bipolar group, large significant correlations were found between the total scores on the positive symptom scales PANSS-P and SAPS, and between the total scores on the negative symptom scales PANSS-N and SANS. Moderate significant correlations were also found between the PANSS-N and SAPS, between the PANSS-P and SANS, between the SANS and SAPS, and between the PANSS-P and PANSS-N (see Table 2).

In the schizophrenia group, large significant correlations were also obtained between the total scores on the positive symptom scales PANSS-P and SAPS, and between the total scores on the negative symptom scales PANSS-N and SANS. No significant correlations were found between the total scores on the PANSS-P and SANS, between the PANSS-N and SAPS, or between the PANSS-P and PANSS-N. However, a statistically significant correlation was found between the SANS and the SAPS (see Table 2).

In summary, large significant correlations between the positive symptom scales and between the negative symptom scales were found in both groups. Significant correlations were also found between the positive and negative scales in the bipolar group, but only between the SANS and the SAPS in the schizophrenia group.

**Table 1**  
Demographic data and mean symptom scores.

	Bipolar group (n=40)	Schizophrenia group (n=54)
Age (years)	44.3 (S.D.=8.4)	40.7 (S.D.=7.9)
Gender		
Male	17 (42.5%)	32 (59.3%)
Female	23 (57.5%)	22 (40.7%)
PANSS-P	13.95 (S.D.=4.8)	18.17 (S.D.=4.7)
PANSS-N	16.05 (S.D.=5.7)	22.31 (S.D.=6.3)
SAPS	2.40 (S.D.=4.1)	5.54 (S.D.=3.2)
SANS	7.98 (S.D.=4.4)	12.47 (S.D.=5.2)

S.D.: standard deviation.

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