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The Cognitive Assessment Interview: A comparative study in first episode and chronic patients with psychosis

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ABSTRACT

The Cognitive Assessment Interview (CAI) is an interview-based instrument to assess cognition considering the impact of cognitive impairment on daily activities. We aimed to explore the associations of the Spanish version of the CAI (CAI-Sp) with a neuropsychological battery and a measure of psychosocial functioning in psychosis. The sample consisted of fifty-six first episode psychosis (FEP) patients and 66 non-FEP patients, who were assessed with a neuropsychological battery, the CAI-Sp and the Short Disability Schedule (DAS-S). Patients also underwent clinical assessment. Additionally, 37 controls were assessed with the neuropsychological battery and CAI-Sp, for normalization purposes. The results showed that CAI-Sp scores were overall correlated with the neuropsychological battery in non-FEP patients. In FEP patients, we found fewer significant correlations. Most associations were maintained after controlling for clinical symptoms. CAI-Sp rater scores contributed to the variance in the DAS-S scores in both groups, as did negative and disorganized symptoms. The CAI-Sp may be a good instrument to assess cognition in non-FEP patients. In FEP patients, it was less effective in capturing cognitive impairments and their functional consequences, probably because cognitive deficits have yet to become evident, due to the recency of illness onset, and no functional disturbances were observed due to these cognitive impairments.

1. Introduction

Cognitive impairment is a core feature of psychotic disorders, and hence, it has become a therapeutic target. The Food and Drug Administration of the United States of America (FDA) indicated that drug treatments focused on improving cognition must demonstrate that their effect is clinically meaningful in real world settings (Buchanan et al., 2005; Green et al., 2008). In recent years, non-performance-based person-oriented assessments have been used as co-primary measures of cognition, as encouraged by the FDA guidelines. In accordance with these guidelines, interview-based measures of cognitive functioning have been developed.

Although the implementation of a comprehensive neuropsychological battery is the gold standard in cognitive assessment, in most clinical settings this is not feasible, due to both time constraints and a lack of specialized clinical neuropsychologists to make the assessments and interpret the results. In addition, objective cognitive assessment provides information about cognitive capacity of the patient, but there is a gap between what the patient is able to do and what he actually does (Harvey et al., 2010) as a consequence of cognitive impairments. Therefore, interview-based measures of cognitive functioning might be suitable instruments in clinical settings, because they could provide a profile of patients' cognitive deficits, considering the impact of those deficits on their daily activities.

The Cognitive Assessment Interview (CAI) (Ventura et al., 2010, 2013) is one of such measures, which was developed as part of the Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) initiative (Green et al., 2004a, 2004b; Green and Nuechterlein, 2004). The CAI is a briefer version of its parent instruments, the Clinical Global Impression of Cognition in Schizophrenia (CGI-CogS) (Ventura et al., 2008) and the Schizophrenia Cognition Rating Scale (SCoRS) (Keefe et al., 2006), and has demonstrated good psychometric properties (Sánchez-Torres et al., 2016; Ventura et al., 2013).

1.1. Aims of the study

We aimed to ascertain whether the CAI is a suitable instrument to assess cognitive performance in patients with first episode psychosis (FEP) and other patients with psychosis (non-FEP patients), as well as

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to explore the association of the CAI-Sp with a scale that assesses psychosocial functioning.

Our hypothesis was that the CAI would be an appropriate instrument to assess cognition in non-FEP patients, but not in FEP patients, in who functional deficits are not evident due to the recency of illness onset.

2. Material and methods

2.1. Participants

Fifty-six FEP patients and 66 patients with a DSM-IV psychotic disorder diagnosis (APA, 1994), who had experienced at least one previous episode (non-FEP patients) were recruited from consecutive admissions to the Psychiatric Department of the Complejo Hospitalario de Navarra in Pamplona, Spain. Thirty-eight healthy controls were also included.

All participants were aged 18 to 50 years, with no history of head trauma or drug dependence (except tobacco) and an IQ of over 70. Controls were also required to have no history (personal or first-degree relative) of major psychiatric illness. The study was approved by the local ethics committee and all participants signed an informed consent form.

2.2. Procedures

Patients were assessed once they had clinically stabilized, in two 1.5- to 2-hour sessions, by a psychiatrist (LM) and a neuropsychologist (RL or AMS). Controls only underwent the neuropsychological assessment and the interview-based assessment of cognition.

2.3. Measures

2.3.1. Clinical assessments

The Comprehensive Assessment of Symptoms and History (CASH) (Andreasen, 1992) interview was employed to collect demographic and clinical data. Five psychopathological syndromes scores were obtained, for positive, disorganization, negative, and two affective (mania and depression) dimensions.

2.3.2. Cognitive Assessment Interview (CAI)

The CAI (Ventura et al., 2010) includes 10 items which assess 6 cognitive domains included in the MATRICS battery (Nuechterlein and Green, 2006): working memory, attention, verbal learning, reasoning and problem solving, processing speed, and social cognition. It was administered to the patient and a close relative (one or both parents or a sibling), considering the predominant functioning of the patient during the last year. Two independent scores (patient and informant) were obtained, and combined by the clinician into a composite rater score. When no informant was available (in 3 cases in the FEP group and 12 in the non-FEP group), the rater score was based on the patient interview and all information available from medical records. The items were rated on a 7-point Likert-type scale, where higher scores reflect poorer cognitive functioning. We used a Spanish version of the CAI, which was approved by the original authors (Sánchez-Torres et al., 2016). The CAI has demonstrated adaptability to other countries, including Spain (Gonzalez et al., 2013; Velligan et al., 2012).

2.3.3. Neuropsychological assessments

Table 1 lists the neuropsychological tests used and the variables which composed each of the 7 cognitive domains included in the MATRICS battery (Green and Nuechterlein, 2004; Nuechterlein and Green, 2006).

Table 1
Tests and measures used to calculate the composite scores for each cognitive domain.

Cognitive domain	Test and measures used to calculate the domain's composite score
Premorbid IQ	Vocabulary subtest of the Wechsler Adult Intelligence Scale-III (WAIS-III (Wechsler, 1999): Premorbid IQ = (Standard Score × 5) + 50
Processing speed	Digit Symbol Coding and Symbol Search subtests of the WAIS-III: direct scores Word and Word-colour parts of the Stroop test (Golden, 2007): direct scores Trail Making Test (form A) (Reitan and Wolfson, 1993): time in seconds
Attention/vigilance	Continuous Performance Test-Identical pairs (Cornblatt et al., 1988, Nuechterlein and Green, 2006): correct answers and d′ (2, 3 and 4 digits). Digits forward (WAIS-III): direct score Spatial Span forward of the Wechsler Memory Scale-III (WMS-III Wechsler, 1998): direct score
Verbal memory	España-Complutense Verbal Learning Test (TAVEC, Benedet and Alejandre, 1998): Short and long-term free recall and recognition scores
Visual memory	Brief Visual Memory Test-Revised (BVMT-R, Benedict, 1997): direct score
Working memory	Digit and Spatial Span backwards tests (WAIS-III and WMS-III, respectively): direct scores Letter-number Sequencing (WAIS-III):direct score Arithmetics (WAIS-III): direct score
Executive functions	Wisconsin Card Sorting Test-64 cards computerised version (WCST-64) (Heaton et al., 1993): total number of categories, total number of errors, number of perseverative errors and number of conceptual-level responses Hayling Test (Burgess and Shallice, 1997): total score Semantic and phonological fluency: number of animal names and words starting with "p" produced in 1 min, respectively
Social cognition	Managing Emotions section of the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT, Mayer et al., 2009): scores of the emotion management and social management tasks

2.3.4. Assessment of psychosocial functioning: the Short Disability Assessment Schedule (DAS-S)

The DAS-S is a semi-structured interview derived from the DAS (WHO, 1988), validated in Spanish in patients with schizophrenia (Mas-Exposito et al., 2012). It is rated by the clinician, based on information from the patient, close relatives and medical records. This short version has four items, rated from 0 (no disability) to 5 (severe disability): personal care; occupational functioning; family functioning; and broader social context functioning. Also a total score is computed. For the purposes of this study, we considered the predominant functioning in these areas in the last month.

2.4. Data analysis

The demographic characteristics of patients and controls were compared using *t*-tests and chi-squared tests.

All neuropsychological variables were converted to z-scores, based on the means and standard deviations of the control group. Z-scores were averaged to calculate each of the cognitive domains and a Global Cognitive Index (GCI) (see Table 1). We used Cronbach's alpha to explore the reliability of the cognitive measures which composed the cognitive domains and the Fisher-Bonett test to calculate the differences in alpha between groups.

As the CAI-Sp scores, and some of the cognitive domain scores, were not normally distributed, we calculated non-parametric Spearman's correlation coefficients to explore the associations between CAI-Sp, DAS-S, cognitive domains and clinical syndromes scores. Further, partial correlations between CAI-Sp and objective cognitive performance, controlling for clinical syndromes scores, were calculated.

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