

Comparative psychometric properties of the BACS and RBANS in patients with schizophrenia and schizoaffective disorder

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Abstract

Objectives: There has been a recent impetus to develop short and portable instruments for the cognitive assessment of patients with schizophrenia in clinical settings, but direct comparative data are lacking. The objectives of the present study were to compare the psychometric properties of two such batteries, the BACS (Brief Assessment of Cognition in Schizophrenia) and the RBANS (Repeatable Battery for the Assessment of Neuropsychological Status).

Methods: The French version of the BACS and the RBANS was administered to 36 patients with schizophrenia and schizoaffective disorder, and 14 healthy controls. A subgroup of patients was also tested with a standard battery (WAIS-III).

Results: Both instruments were easily administrable. Internal consistency was satisfying (global scale reliability alphas of 0.90 for the BACS, and 0.87 for the RBANS), although some sub-scores from the RBANS decreased the overall consistency of the instrument. BACS and RBANS composite scores were highly correlated to verbal, non-verbal and total WAIS-III scores (BACS: $r=0.727$, 0.865 and 0.857 , respectively; RBANS: $r=0.843$, 0.747 and 0.875 , respectively). Patients underperformed controls by a magnitude of 1.81 SD (BACS), and 0.78 SD (RBANS), after adjusting for education. Both batteries showed good test–retest reliability, except for three sub-scores from the RBANS.

Conclusion: The psychometric properties and ease of use of the BACS and the RBANS were overall satisfying. The BACS demonstrated better internal consistency and test–retest reliability than the RBANS and was nominally more sensitive to diagnosis.

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1. Introduction

Schizophrenia is a chronic and invalidating mental disorder, affecting about 1% of the population. The value of the currently acknowledged symptoms dimensions (positive or negative symptoms, or disorganization of thought and behavior), has been discussed for lack of sufficient specificity or predictive functional value (Jablensky, 2006).

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This has led to an increased emphasis on the serious cognitive deficits found in schizophrenia (Gold, 2004), which range between one and a half and two standard deviations below healthy controls on several cognitive dimensions, including attention, working memory, verbal memory and fluency, verbal comprehension, visual memory and learning, executive functions, motor speed, and social abilities (Heinrichs and Zakzanis, 1998; Nuechterlein et al., 2004). Patients treated for a first episode of psychosis, persons at ultra-high risk of psychosis, and healthy first-degree relatives of patients with schizophrenia demonstrate cognitive impairments that are comparable, although of lesser magnitude, to those of patients with an established diagnosis of schizophrenia (Bilder et al., 2000; Cannon et al., 2000; Egan et al., 2001; Hill et al., 2004; Hoff et al., 1999; Kremen et al., 1994).

Cognitive impairments correlate poorly with the severity of other symptoms of schizophrenia (Elvevag and Goldberg, 2000); but have generally been shown to be more closely related to functional status (Green, 2006; Green et al., 2000 but see also Perlick et al., 2008).

There has therefore been growing interest in developing cognitive batteries that are sensitive and specific to cognitive impairments found in schizophrenia. The diversity of cognitive instruments has provided an impetus to achieve better standardization, as witnessed by the MATRICS initiative. Out of concern for the length and complexity of some batteries, there has been additional interest to develop and validate acceptable and portable instruments with adequate coverage of relevant cognitive domains, most notably in the context of clinical and therapeutic screening (Green et al., 2004; Harvey and Keefe, 2001; Marder and Fenton, 2004). Two such self-contained instruments have recently gained increasing recognition, namely the BACS (Brief Assessment of Cognition in Schizophrenia) and the RBANS (Repeatable Battery for the Assessment of Neuropsychological Status). Despite their increasing use, and somewhat similar focus (at least in the field of schizophrenia research), their psychometric properties have never been compared face to face.

The RBANS was first developed for dementia screening in elderly patients. It contains no specific measures of working memory, executive functions, or motor speed, two domains largely affected in schizophrenia; conversely, it contains measures of domains that are less impaired in the illness, such as visual recognition, semantic retrieval, and visual–perceptual abilities. Nevertheless, the RBANS has been validated in its original version, and provides a valid assessment of cognition in patients with schizophrenia (Gold et al., 1999; Hobart et al., 1999). Schizophrenic patients tested with the RBANS

showed marked impairment relative to normal standardization scores (approx. 2 SD), across all index scores. The RBANS is portable and repeatable, with alternate forms available. It is easily learned by caregivers of different trainings and comes with clear and extensive written instructions.

The BACS was developed shortly after the RBANS (Keefe et al., 2004); it provides assessments of verbal memory, working memory, motor speed, attention, executive functions and verbal fluency, and to such extent is tailored to measure cognitive impairment on domains clearly affected in schizophrenia. It can be easily and rapidly administered by various caregivers, being provided with clear written and filmed instructions. The battery of tests was originally validated in a study showing that it is as sensitive to cognitive impairment as a standard battery, and has good test–retest reliability. The scale showed good discriminating properties with patients with schizophrenia or schizoaffective disorder scoring 1.49 standard deviations (SD) under controls.

As mentioned previously, the BACS and RBANS share common characteristics and scope, being positioned as portable, acceptable and repeatable clinical instruments, but direct face to face comparison of their psychometric properties is lacking. We therefore launched the present study to compare the BACS and the RBANS between themselves and with a reference instrument, in order to help potential clinical users – and ourselves – to make more informed decisions regarding their respective use.

2. Methods

This project was authorized by our institutional review board.

2.1. Subjects

36 French-speaking patients, of which 19 were inpatients at the time, were recruited at the Department of Psychiatry, Sherbrooke University. Patients met DSM-IV-TR criteria for diagnosis of schizophrenia (28) or schizoaffective disorder (8). Patients were excluded from this study if they were diagnosed with mental retardation, brain trauma or any neurodegenerative disorder, if they did not master the French language, had visual or auditory impairment, or if they were on a combined first- and second-generation antipsychotics regimen.

14 healthy adults meeting the same linguistic, visual and auditory criteria were recruited as controls. The absence of any active psychiatric disorder or any past

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