Clinical global impression of cognition in schizophrenia (CGI-CogS): Reliability and validity of a co-primary measure of cognition

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Abstract

Background: Cognitive deficits are core features of schizophrenia that have been associated reliably with functional outcomes and now are a focus of treatment research. New rating scales are needed to complement current psychometric testing procedures, both to enable wider clinical use, and to serve as endpoints in clinical trials.

Methods: Subjects were 35 schizophrenia patient-and-caregiver pairs recruited from the UCLA and West Los Angeles VA Outpatient Psychiatry Departments. Participants were assessed with the Clinical Global Impression of Cognition in Schizophrenia (CGI-CogS), an interview-based rating scale of cognitive functioning, on 3 occasions (baseline, 1 month, and 3 months). A computerized neurocognitive battery (Cogtest), an assessment of functioning, and symptom measures were administered at two occasions (baseline and one month).

Results: The CGI-CogS ratings generally showed a high level of internal consistency (Cronbach’s alpha=.69 to .96), adequate levels of inter-rater reliability (ICC’s=.71 to .80), and high test–retest stability (ICC’s=.92 to .95). Correlations of caregiver and rater global (but not “patient only rating”) CGI-CogS ratings with neurocognitive performance were in the moderate range (r’s=−.27 to −.48), while most of the correlations with functional outcome were moderate to high (r’s=−.41 to −.72). In fact, the CGI-CogS ratings were significantly more correlated with Social Functioning than were objective neurocognitive test scores (p=.02) and showed a trend in the same direction for predicting Instrumental Functioning (p=.06). We found moderate correlations between CGI-CogS global ratings and PANSS positive (r’s=.36 to .49) and SANS negative symptoms (r=.41 to .61), but not with BPRS depression (r=.11 to .13).

Conclusions: An interview-based measure of cognition demonstrated high internal consistency, good inter-rater reliability, and high test–retest reliability. Caregiver ratings appear to add important clinical information over patient-only ratings. The CGI-CogS showed moderate validity with respect to neurocognitive performance and functional outcome, and correlations of CGI-CogS with functional outcomes were stronger than correlations of objective neurocognitive performance with functional outcomes. The CGI-CogS appears to offer a reliable and valid method for clinical rating of cognitive deficits and their impact on everyday functioning in schizophrenia.

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1. Introduction

Cognitive deficits are a defining feature of schizophrenia that are closely related to functional outcomes and activities of daily living (Green, 1996; Green et al., 2000, 2004; Green and Nuechterlein, 1999). There has been increasing attention on developing effective treatment interventions both psychopharmacological and non-pharmacological, to remediate these core cognitive deficits (Carpenter, 2004; Gold, 2004; Silverstein and Wilkniss, 2004). The value of cognitive assessment in clinical trials has been supported by the NIMH MATRICS project, which identified seven domains of cognition important for schizophrenia; vigilance/attention, working memory, processing speed, verbal learning and memory, visual learning and memory, reasoning and problem solving, and social cognition (Green and Nuechterlein, 2004; Nuechterlein et al., 2006a,b). However, there are both theoretical and practical limitations to the primary reliance on measuring improvement in cognition through objective, cognitive performance tests. In fact, there is a significant gap between identifying schizophrenia patient deficits in objective testing situations and in understanding their impact on patient’s lives and everyday functioning. The FDA has indicated that neuropsychological tests alone are inadequate for the evaluation of improvement of a patient’s cognitive functioning. Guidelines for the development of interview-based measures of cognition can be found in a recent document from the FDA that emphasize sensitivity to patient defined change and the importance of developing patient oriented outcome measures (February, 2006).

Clinicians who work with schizophrenia patients and their families need cognitive assessment tools that are easy to administer and can validly evaluate change in cognitive functioning. In addition, researchers need a tool that can assess cognitive skills and abilities that are directly linked with behaviors associated with a patient’s daily functioning, e.g., paying attention at work. Patients, families, and clinicians are seeking improved real world outcomes and a better quality of life rather than improved scores on a battery of neuropsychological tests. But, there are limitations to neuropsychological tests used by researchers in clinical trials and by clinicians in neuropsychological assessments. For example, patients who score well on objective memory tests might still have problems with memory that interfere with their daily functioning. In addition, practical limitations such as the amount of prior training, administration and scoring time, practice effects, and validity issues associated with interpretation ultimately reduce the feasibility of objective tests. To measure change in cognition during clinical trials and clinical practice, new assessment tools are needed. Interview-based assessments might offer some promise in overcoming the practical limitations that exist regarding the primary use of objective tests of neurocognitive functioning.

The use of interview-based measures of cognition that includes a clinician’s judgment potentially improves validity because purely subjective impressions of cognitive function alone are only weakly or not at all correlated with objective neurocognitive testing (Moritz et al., 2004; Prouteau et al., 2004; Harvey et al., 2001; van den Bocsh and Rombouts, 1998). Nonetheless, purely objective impressions by a clinician alone cannot be used without being evaluated through a patient’s or a caregiver’s report. Designing an interview-based cognitive functioning scale almost certainly could follow the dementia model and incorporate not only patient report but also caregiver collateral information (Keefe et al., 2006). Of course, the inclusion of caregiver input does not assure validity in the clinical assessment of any disorder. Reliable and valid interview-based assessments of cognition might be dependent upon obtaining the patient’s report, a caregiver’s report, and a clinical evaluation of both sources of information. In fact, some studies have suggested that a patient’s complaints about cognitive functioning should be used to assist in the evaluation of a patient’s current level of cognitive functioning (Prouteau et al., 2004).

The current study evaluated the inter-rater reliability and validity of an interview-based co-primary measure of cognition called the Clinical Global Impression of Cognition in Schizophrenia (CGI-CogS) that was administered to schizophrenia patients and their caregivers. We examined the inter-rater reliability and validity of the CGI-CogS according to the criteria established by the FDA panel and the MATRICS committee: a) good test—retest reliability, b) demonstrated associations with cognitive performance measures, and c) demonstrated associations with community functioning. To examine reliability of the CGI-CogS, we evaluated the internal consistency using Cronbach’s alpha, tested the inter-rater reliability among independent raters, and assessed the test—retest reliability. To examine validity of the CGI-CogS, we evaluated correlations with an objective test of cognitive functioning, psychiatric symptoms, and functional outcome.

2. Methods

2.1. Subjects

The sample consisted of 35 patient and caregiver pairs that were recruited from ongoing research projects at the UCLA Aftercare Research Program and the West