Available online at www.sciencedirect.com

SCIENCE DIRECT®

Psychiatry Research 134 (2005) 123–129

PSYCHIATRY RESEARCH

www.elsevier.com/locate/psychres

Social cognitive problem-solving in schizophrenia: Associations with fluency and verbal memory

Chiyo Yamashita, Masafumi Mizuno*, Takahiro Nemoto, Haruo Kashima

Department of Neuropsychiatry, School of Medicine, Keio University, 35 Shinanomachi, Shinjuku-ku, Tokyo 160-8582, Japan

Received 6 February 2004; accepted 12 June 2004

Abstract

This study assessed the relationship between social functioning and neurocognitive function in individuals with schizophrenia. Social cognitive problem-solving (SCPS) is a significant contributor to social competence and is an aspect of information processing that is involved in the identification and resolution of interpersonal or social problems. We examined 49 schizophrenia patients and 28 healthy controls using the means–ends problem-solving procedure (MEPS) for SCPS, the Rey Auditory Verbal Learning Test (RAVLT), the Wisconsin Card Sorting Test (WCST), and a series of fluency tests for neurocognitive assessment, as well as the Positive and Negative Syndrome Scale (PANSS) and the Global Assessment of Functioning (GAF). Fluency tests can be used to evaluate divergent thinking, and a qualitative analysis was done of the fluency test responses. The results suggest that patients with schizophrenia have a significantly poorer MEPS performance than normal controls. In patients with normal RAVLT scores, MEPS scores were correlated with task-modified responses on the fluency test but not with any of the WCST scores. This suggests that SCPS is related to divergent thinking that requires concept flexibility and/or the conversion of viewpoint in patients with schizophrenia in whom verbal memory function is preserved.

Keywords: Social functioning; Cognition; Neuropsychology; Schizophrenia; Problem-solving

1. Introduction

Impaired social functioning or social competence in people with schizophrenia is an important contributor to the social prognosis or quality of life of many individuals with this disorder (Bellack et al., 1990a,b; Sullivan et al., 1992; Peralta et al., 1994). Poor social competence is thought to be associated with a higher vulnerability to relapse and a poorer outcome (Bellack et al., 1990a,b). To improve psychiatric rehabilitation programs for social functioning, the cognitive domains related to social functioning and the exact nature of these relationships must be considered from various viewpoints (Bellack, 1992; Brenner et al., 1992; Bowen et al., 1994). Recently, issues regarding the mechanisms underlying social

* Corresponding author. Tel.: +81 3 5363 3829; fax: +81 3 5379 0187.

E-mail address: mizuno@sc.itc.keio.ac.jp (M. Mizuno).

0165-1781/$ - see front matter © 2005 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.psychres.2004.06.018

dysfunction in patients with schizophrenia have been receiving increased attention from researchers. Although many past studies have suggested that certain cognitive deficits are related to social functioning (Green, 1996; Addington et al., 1998; Ohno et al., 2000; Twamley et al., 2002; Rempfer et al., 2003), the actual impact of the neurocognitive deficits on social competence is not yet clear. To investigate these questions about the relationship between neurocognitive and social function, further research must be performed on the molecular cognitive deficits that are related to impaired social functioning (Penn et al., 1997).

D'Zurilla and Goldfried (1971) and Platt and Spivack (1975) have proposed that social cognitive problem-solving (SCPS) is a significant contributor to social competence. SCPS is an aspect of information processing that is concerned with an individual's ability to identify and resolve interpersonal or social problems. SCPS is commonly divided into three components: receiving skills, processing skills and sending skills (Donahoe et al., 1990). Processing skills involve the formation of strategies for problem-solving. To determine which kinds of neurocognitive functions are related to social functioning, each component of social functioning must be evaluated in detail. In the current study, the processing skills of patients with schizophrenia were specifically assessed and the relationships between SCPS and neurocognitive deficits in brain dysfunction were discussed. Divergent thinking is a way of thinking that is used to answer questions without fixed answers. This thinking process is known as one of the factors in the structure-of-intellect model proposed by Guilford (1967), who viewed divergent thinking as the most important type of thinking in problem-solving. Fluency tests can be used as molecular neurocognitive measures to assess divergent thinking. To investigate the hierarchical sequence from molecular to molar involved in divergent thinking, the current study simultaneously assessed several neurocognitive functions using various fluency tasks. SCPS processing skills were also evaluated using the means–ends problem-solving procedure (MEPS) (Platt and Spivack, 1975).

A series of studies (Corrigan et al., 1994; Kern et al., 1992; Mueser et al., 1991) has suggested that individuals with schizophrenia have an impaired verbal memory. However, previous SCPS studies related to verbal memory have shown that some individuals with schizophrenia retain adequate verbal memory in a clinical setting. To exclude the effects of verbal memory function, patients with comparatively well-preserved verbal memory should be investigated. The current study investigates the relationship between SCPS and molecular neurocognitive tests, including fluency tests, in schizophrenia patients with preserved verbal memory.

2. Methods

2.1. Subjects

Forty-nine Japanese outpatients with schizophrenia (27 men and 22 women) were recruited for the current study. All patients were diagnosed by trained interviewers according to ICD-10 criteria (World Health Organization, 1993). The subjects had a mean age of 37.9 years (SD = 11.0) and a mean formal education level of 13.7 years (SD = 2.4).

The subjects had been ill for a mean period of 14.0 years (SD = 9.4). All subjects were taking neuroleptics, and the mean chlorpromazine-equivalent dose was 380.0 ± 355.0 mg/day. Twenty-eight healthy control subjects (15 men and 13 women), chosen from among the employees and relatives of the hospital staff, were also included in the study. A Mann–Whitney *U* test comparing the characteristics of the two groups revealed no significant differences in age, sex or length of formal education. Table 1 summarizes the data on sex, age, length of formal education and disease duration.

All the subjects were right-handed, according to the Edinburgh Inventory (Oldfield, 1971), and all

Table 1
Subjects

	Schizophrenia	Control
N (male/female)	49 (27/22)	28 (15/13)
Age (years)	37.9 ± 11.0	35.6 ± 9.9
Education period (years)	13.7 ± 2.4	14.2 ± 1.6
Disease duration (years)	14.0 ± 9.4	
Medication dose[a]	380.0 ± 355.0 mg/day	

[a] Chlorpromazine-equivalent mg.