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CANTAB explicit memory is less impaired in addicted schizophrenia patients

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Abstract

It has been suggested that in order to sustain the lifestyle of substance abuse, addicted schizophrenia patients would have less negative symptoms, better social skills, and less cognitive impairments. Mounting evidence supports the first two assumptions, but data lack regarding cognition in dual diagnosis schizophrenia. Seventy-six schizophrenia outpatients (DSM-IV) were divided into two groups: with ($n = 44$) and without ($n = 32$) a substance use disorder. Motor speed and visuo-spatial explicit memory were investigated using CANTAB. As expected, dual diagnosis patients showed a better cognitive performance. Our results suggest either that substance abuse relieves the cognitive deficits of schizophrenia or that the patients with less cognitive deficits are more prone to substance abuse.
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1. Introduction

Epidemiological studies show that the lifetime prevalence of substance use disorders (SUD) is close to 50% among schizophrenia patients. Psychoactive substances (alcohol, cannabis, and cocaine) exert a negative impact on the course of the pathology. Compared to abstinent patients, addicted schizophrenia patients relapse more frequently, they are more depressed and suicidal, they engage more often in criminal activities, and they are more frequently homeless and unemployed (Mueser, Drake, & Wallach, 1998).

It has been suggested that in order to find, acquire, and sustain alcohol and/or drug use, schizophrenia patients would have better social skills, less negative symptoms, and better cognitive functioning than abstinent patients (Joyal, Hallé, Lapierre, & Hodgins, 2003). Supporting this assumption, it has been shown that schizophrenia patients addicted to cannabis or cocaine have less severe negative symptoms (Bersani, Orlandi, Kotzalidis, & Pancheri, 2002; Serper et al., 1995). When compared to abstinent ones, dual diagnosis patients also appeared to have a better pre-morbid adjustment (Arndt, Tyrrell, Flaum, & Andreasen, 1992). They also seemed to have better social functioning (Côté, Lesage, Chawky, & Loyer, 1997). Further, it has been shown that the DSM-IV deficit syndrome of schizophrenia is related to less substance abuse (Kirkpatrick et al., 1996).

Regarding cognition of dual diagnosis schizophrenia, robust evidence is lacking. Recently, Carey, Carey, and Simons (2003) have shown that dual diagnosis patients

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suffer from less global cognitive impairments. Joyal et al. (2003) obtained similar results but their sample size was small (total $n = 30$). The current study was undertaken in order to further strengthen the preliminary evidence supporting the hypothesis of a better cognitive functioning in dual diagnosis patients. To find, acquire, and sustain alcohol and/or drug use, we hypothesised that dual diagnosis patients would have less deficits in explicit memory. A fronto-temporal function, explicit memory is significantly impaired among schizophrenia patients, and it is an important predictor of their social and occupational functioning (Hoff & Kremen, 2003).

2. Methods

2.1. Participants

Recruited from a convenient sample, participants were 76 outpatients with schizophrenia (SCZ) or schizoaffective disorder (SA), diagnosed using the Structured Clinical Interview for DSM-IV (SCID-IV). The assessment was approved by the local ethics committee. All subjects gave informed consent.

The study was cross-sectional. According to DSM-IV criteria, participants were divided into two groups: with and without a current SUD (last 6 months). Forty-four patients were included in the dual diagnosis (DD) group and 32 patients were included in the single diagnosis schizophrenia (SCZ) group. Patients ($n = 44$) from the DD group suffered from one or more of the following SUD (abuse/dependence): alcohol (20 patients), cannabis (28 patients), cocaine (12 patients), other substance (five patients), and poly-addiction (17 patients). The two groups of patients were matched for age, sex, diagnosis subtype, ethnicity, education level, and duration of illness. However, the two groups differed in terms of antipsychotic medication. Patients in the DD group were more frequently treated with typical antipsychotics, compared to patients from the SCZ group (Table 1).

The Positive and Negative Syndrome Scale (PANSS) (Kay, Fiszbein, & Opler, 1987) was administered in order to measure severity of symptoms. Compared to patients from the SCZ group, DD patients showed more severe positive, general and total symptoms. But no differences emerged for negative symptoms (Table 1).

Table 1
Comparative sociodemographic data

	DD group ($n = 44$)	SCZ group ($n = 32$)
Age (years)	31.4 ± 11	34.3 ± 11.1
Females	8	7
Males	36 (81.8%)	36 (81.8%)
Diagnosis subtype		
Schizophrenia	34 (77.7%)	26 (81.2%)
SA disorder	10	6
Ethnicity		
Caucasian	41	32
Other	3	0
Education level (years)	11.4 ± 2.2	11.3 ± 2.3
Duration of illness (months)	90.9 ± 104.5	109.6 ± 117.4
Antipsychotics		
Atypical	38 (86%)	32 (100%)
Typical[a]	18 (40.9%)	6 (18.7%)
PANSS		
Positive[b]	16.7 ± 6.3	13.4 ± 4.9
Negative[c]	17.8 ± 7.3	17.2 ± 6.8
General[d]	37.8 ± 13	30.4 ± 8.2
Total[e]	72.2 ± 24.4	61 ± 16.6

SA, schizoaffective.
[a] $\chi^2 = 32$; $p = .0001$.
[b] $t = 2.540$; $p = .013$.
[c] $t = 0.354$; $p = .725$.
[d] $t = 3.015$; $p = .004$.
[e] $t = 2.378$; $p = .020$.

2.2. Assessments

DD and SCZ patients were assessed using the Cambridge Neuropsychological Test Automated Battery (CANTAB) (Fray, Robbins, & Sahakian, 1996), a series of computerised tasks. The tests were run on computers with touch-sensitive colour monitors. Patients were asked to respond by simply touching the screen with a finger. Patients first completed a motor screening task (MOT), an index of psychomotor speed, which familiarised them with the testing procedure. In this screening task, patients are asked to place a finger on a flashing cross. After completion of this task, patients completed the paired associates learning (PAL) task.

The PAL task is designed to assess visuo-spatial explicit memory. During the PAL task, patients are asked to remember up to eight pattern–location associations. Patients are instructed that the white boxes presented on the screen will open up one by one, in a random order. Their task is to look for coloured patterns in the boxes, and to remember which pattern belongs in which box. On the first stage, only one box contains a coloured pattern. This initial stage is followed with another stage with one pattern, then two stages with two patterns each, two patterns with three patterns each, one stage with six patterns, and a last stage with eight patterns (one pattern by box). On each trial of every stage, if the patients' choices are incorrect, the boxes are re-opened successively. For each stage, patients are allowed up to nine reminding phases. If they fail all the phases (for a given stage), the task is stopped.

Performance was scored using five indices: (i) *First trial memory score*: the total number of patterns correctly located, on the first trial, summed across the eight stages (range: 0–26); (ii) *Stages completed* (range: 1–8); (iii) *Stages completed on first trial* (range: 1–8); and (iv) *Total errors*: the total number of incorrect placements,

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