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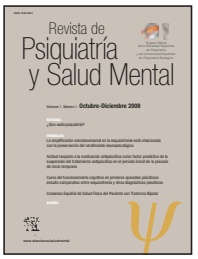

ORIGINAL ARTICLES

Course of Cognitive Functioning in First-Episode Psychosis: A Comparison Between Schizophrenia and Non Schizophrenia Psychosis

Arantzazu Zabala,[a,b] José I. Eguiluz,[a,c] Rafael Segarra,[a,c] Sonsoles Enjuto,[c] Jesús Ezcurra,[d] Edorta Elizagarate,[a,d] Ana M. González Pinto,[a,b,e] and Miguel Gutiérrez[a,b,e]

[a]*Departamento de Neurociencia, Sección de Psiquiatría, Facultad de Medicina y Odontología, Universidad del País Vasco (UPV-EHU), Vizcaya, Spain*
[b]*Salud Mental CIBER-SAM, Centro de Investigación Biomédica en Red de Salud Mental, Instituto de Salud Carlos III, Ministerio de Sanidad, Spain*
[c]*Departamento de Psiquiatría, Hospital de Cruces, Sistema de Salud Mental Osakidetza, Vizcaya, Spain*
[d]*Hospital Psiquiátrico de Álava, Sistema de Salud Mental Osakidetza, Álava, Spain*
[e]*Departamento de Psiquiatría, Hospital Santiago Apóstol, Sistema de Salud Mental Osakidetza, Álava, Spain*

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KEY WORDS
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Abstract

Aims: To describe the course of cognitive functioning in first-episode psychosis and to determine possible differences in the degree and trajectory of cognitive deficits between schizophrenia and non-schizophrenia first-episode psychosis.

Method: We assessed attention, working memory, and executive functioning in 57 patients with first-episode psychosis both at baseline and at 1-year of follow-up.

Results: For the overall group, significant reductions were found in the percentage of omission and commission errors for the sustained attention task ($P < .001$ and $P = .001$, respectively), in the total time to complete the Stroop-I task ($P < .001$), in the percentage of omission errors for the working memory task ($P = .001$), and in the percentage of perseverative errors for the Wisconsin card sorting test (WCST; $P < .001$), as well as a significant increase in the number of categories completed in the WCST ($P < .001$). The remaining cognitive variables analyzed remained stable (4 of the 10 variables tested). The pattern of change was similar for patients with schizophrenia (n = 20) and non-schizophrenia (n = 37) in the areas of attention of working memory. For executive functioning, the non-schizophrenia group showed a more beneficial pattern of change. No significant differences were detected in the cognitive performance among subgroups at baseline or at the 1-year follow-up.

Conclusions: The course of cognitive deficits in first-episode psychosis showed significant improvements over the 1-year period in the areas of attention, working memory, and executive functioning. Neuropsychological performance did not seem to be specific enough to distinguish between patients with schizophrenia and non-schizophrenia first-episode psychosis, at least during the first year.

*Corresponding author.
E-mail: arantzazu.zabala@ehu.es (A. Zabala).

PALABRAS CLAVE
Cognición.
Curso.
Esquizofrenia.
Primer episodio.
Psicosis.

Curso del funcionamiento cognitivo en primeros episodios psicóticos: estudio comparativo entre esquizofrenia y otros diagnósticos psicóticos

Resumen
Objetivos: Describir el curso del rendimiento cognitivo en primeros episodios psicóticos y determinar posibles diferencias en el grado de afectación y evolución de los déficit cognitivos entre esquizofrenia y otras psicosis.
Método: Se evaluaron las áreas de atención, memoria de trabajo y funciones ejecutivas en 57 primeros episodios psicóticos en el momento basal y al año de seguimiento.
Resultados: Para la muestra total, se detectaron reducciones significativas en: porcentaje de errores de omisión y comisión en la tarea de atención sostenida ($p < 0,001$ y $p = 0,001$, respectivamente), tiempo total empleado en el Stroop-I ($p < 0,001$), porcentaje de errores de omisión en memoria de trabajo ($p = 0,001$), porcentaje de errores perseverativos del WCST ($p < 0,001$), así como un incremento en el número de categorías completadas en este último ($p < 0,001$). El resto de variables analizadas permanecieron estables (4 de un total de 10). El perfil de cambio fue similar para el grupo de esquizofrenia ($n = 20$) y no esquizofrenia ($n = 37$) en las áreas de atención y memoria de trabajo. Para el funcionamiento ejecutivo, el grupo de no esquizofrenia presentó un perfil de cambio más favorable. No se detectaron diferencias significativas entre grupos en su rendimiento cognitivo en ninguna de las evaluaciones.
Conclusiones: El curso de los déficit cognitivos en primeros episodios psicóticos presenta mejorías significativas durante el primer año en las áreas de atención, memoria de trabajo y funciones ejecutivas. El rendimiento neuropsicológico no parece ser lo suficientemente específico para diferenciar pacientes con esquizofrenia de pacientes con otros diagnósticos psicóticos, al menos durante el primer año tras la instauración del tratamiento.

Introduction

Cognitive deficits have been extensively studied in psychosis and have been characterized as an inherent feature of the illness.[1] Neuropsychological studies have consistently described deficits affecting attention, working memory, executive functioning, learning and memory.[2] These impairments have been reported in first-episode psychosis (FEP) patients, and are present in individuals even before they develop psychotic symptoms.[3-7] The course of the cognitive deficits in schizophrenia seem to be relatively stable. Longitudinal studies in first episode patients have shown stability of neurocognitive functioning in the subsequent period between 2 and 5 years.[8] Furthermore, most of the functions affected seem to improve modestly after instauration of treatment.[9-12] The relationship between clinical variables and cognitive functioning is still uncertain. Literature suggests that there may be a relationship between symptoms and cognitive dysfunction. However, that relationship accounts for only a minor portion of the variance (ie, 10%-15%) in the severity of cognitive dysfunction in FEP patients.[13]

One of the current aims of neuropsychological research in psychosis is the identification of concrete patterns of cognitive deficits associated with specific psychotic diagnoses. Few studies have directly compared neuropsychological functioning among patient subgroups. Unfortunately, it is unclear whether the cognitive deficits described in schizophrenia are also present to the same extent as in other forms of psychosis. Overall, the literature suggests that there may be an overlap in cognitive impairment across psychotic diagnoses, although deficits tend to be milder in non-schizophrenia patients.[14-16] To our knowledge, there are a previous study that directly compared the course of cognitive deficits between schizophrenia and other psychoses FEP patients.[17] In this study, no differences were detected in performance in the areas of attention, working memory, executive functioning and, learning and memory, either at baseline or at a 2-year follow-up, except for learning and memory, where the other psychosis group scored higher than the other psychoses group at the 2-year assessment.

The main objectives of this study were to describe the course of cognitive functioning during a 1-year follow-up in a sample of patients with FEP and to determine possible differences in the degree and trajectory of cognitive deficits among patients with schizophrenia and non-schizophrenia psychosis. We hypothesized that: *a)* cognitive performance in the overall patient group would be stable over the 1-year period; and *b)* patients diagnosed with schizophrenia would show a lower cognitive performance than patients diagnosed with other psychotic diagnoses

both at baseline and at the 1-year follow-up. Research on this population affords an opportunity to study the early phases of this disease and avoids dealing with certain confounding variables such as chronicity or long-term antipsychotic treatment that could interfere with the results.

Method

This article reports the longitudinal neuropsychological results from a prospective study of FEP. Fifty-seven patients were assessed at baseline and at 1-year follow-up with the same battery of cognitive tests.

Subjects

Recruitment of patients has been described in detail in a previous report.[18] Inclusion criteria for participation in the study were: *a)* age between 15 and 65 years; *b)* presence of FEP defined as the existence of at least one of the following symptoms: delusions, hallucinations, formal thought disorder, and catatonic symptoms, and symptoms were determined to be present when the Positive and Negative Syndrome Scale (PANSS) score for item 1, 2, or 3 was greater than or equal to 4; and *c)* presence of a first degree relative to act as an informant, when necessary. Exclusion criteria were: *a)* previous hospitalizations or outpatient psychiatric treatment for psychotic symptoms; *b)* significant medical or neurological illness; *c)* history of head injury with loss of consciousness; *d)* mental retardation; *e)* current diagnosis of substance dependence (except tobacco); and *f)* participation in a clinical trial. A total of 89 patients with FEP were enrolled in a general FEP research project. Only patients that completed the neuropsychological assessment at the 1-year follow-up have been included in the present report; n = 57 (64%). Thirty-two (36%) FEP patients were lost at this visit.

The institutional review boards of the participating hospitals approved the study. After receiving a comprehensive explanation of the study procedures, all patients provided written informed consent.

Psychiatric Assessment

The Structured Clinical Interview for DSM-IV Axis I disorders[19] was used for diagnostic purposes, both at baseline and 1-year follow-up. FEP was defined as the first time a patient displayed positive psychotic symptoms. Considering the 1-year follow-up diagnostic assessment, patients were divided into 2 groups: first episode schizophrenia group (n = 20) and first episode non-schizophrenia psychosis group (n = 37). The latter group was composed as follows: 2 substance induced psychosis, 13 schizophreniform disorders, 2 schizoaffective disorders, 3 delusional disorders, 9 brief psychotic disorders, 4 atypical psychosis, 3 bipolar disorders, and 1 depression with psychotic features. The presence and severity of psychotic symptoms at baseline and follow-up were evaluated using the Spanish version of the Positive and Negative Syndrome Scale (PANSS).[20] The clinical presentation data correspond to discharge examinations at baseline and at 1 year assessment.

Neuropsychological Assessment

The cognitive functioning of patients was assessed at baseline and 1-year follow-up with the same neuropsychological test battery that included computerized measurements of sustained and selective attention, working memory, and executive functioning. In the sustained attention task, the subject was instructed to press the button as quickly as possible when the letter O appeared on the screen. In the working memory task the subject was instructed to respond only when the letter O was preceded by the letter X. For both tasks, the following results were analyzed: mean reaction time for hits, percentage of commissions, and percentage of omissions. Selective attention was evaluated with the Stroop Color-Word Test-Interference (Stroop-I); the mean time to complete this task and the percentage of errors were recorded. Executive functioning was assessed using the Wisconsin Card Sorting Test (WCST). Data on this test are reported for the number of categories completed (with a maximum of 6) and percentage of perseverative errors.

The tests were always administered by the same experienced clinical psychologist, trained in neuropsychological assessment. At baseline, cognitive evaluations were performed during or immediately after discharge, when symptomatology was properly remitted.

Data Analysis

Distributions of variables were examined and log-transformations were done in order to correct for skewness, where appropriate. Descriptive data are tabulate as means and standard deviations (SD). Differences in the socio-demographic and treatment characteristics between groups (schizophrenia and non-schizophrenia psychosis) were assessed using Student *t* tests for the continuous data and χ^2 analyses for the nominal data. To examine the evolution of cognitive performance over the 1-year follow-up (intra-group comparisons for the overall FEP group and for the schizophrenia and non-schizophrenia psychosis groups), paired samples Student *t* test analyses were performed. To examine differences in cognitive performance between-groups (schizophrenia vs non-schizophrenia psychosis) at baseline and at the 1-year follow-up, Student *t* tests were conducted. Possible associations between cognitive performance and symptoms (measured by total PANSS score) at baseline and at the 1-year follow-up were analyzed using a Pearson correlation test. Bonferroni correction for multiple comparisons was used and level of significance (*P*-value) after correction for this method was established at .005 (.05/10). All statistical tests were 2-tailed and analyses were performed using SPSS for Windows software, version 11.5.1.

Results

Socio-Demographic Data

Socio-demographic data are presented in Table 1. There were no significant differences between schizophrenia and non-schizophrenia psychosis patients in age, gender, years of education, marital status, residence, or work status.

Antipsychotic Treatment

At the time of the basal neuropsychological assessment, all patients were on antipsychotic treatment. For the schizophrenia group, 45%(n = 9) were on olanzapine, 40%(n = 8) on risperidone, and 15%(n = 3) on other antipsychotic treatments. For the non-schizophrenia psychosis group, 43% (n = 16) were on olanzapine, 43%(n = 16) on risperidone, and 14%(n = 5) on other antipsychotic treatments. At the 1-year follow-up, 40%(n = 8) of the schizophrenia patients were on olanzapine, 30%(n = 6) on risperidone, 20%(n = 4) on other antipsychotic treatments, and 10%(n = 2) were free of antipsychotic treatment. For the non-schizophrenia psychosis group of patients, 30%(n = 11) were on olanzapine, 32% (n = 12) on risperidone, 8%(n = 3) on other antipsychotic treatments, and 30%(n = 11) were free of antipsychotic treatment.

There were no significant differences in distribution of antipsychotic treatment among the groups at baseline, χ^2 (2) = 0.062, P = .969 or at the 1-year follow-up assessment, χ^2 (3) = 4.146, P = 0.246.

Course of Cognitive Performance

Course of Cognitive Performance for the Overall FEP Group

The mean raw scores and standard deviations on cognitive variables for the baseline and for the 1-year follow-up assessments are presented in Table 2. All the differences detected between both assessments were in the direction of improvement. Significant reductions were detected in the percentage of omission and commission errors for the sustained attention task, in the total time to complete the Stroop-I task, in the percentage of omission errors for the

Table 1. Sociodemographic Information on First-Episode Psychosis Patients

	First Episode Psychosis (n = 57)	First Episode Schizophrenia (n = 20)	First Episode Non Schizophrenia (n = 37)	Analysis
	Mean (SD)	Mean (SD)	Mean (SD)	
Age (range)	24.46 (7.34) (17-53)	23.30 (6.58) (17-38)	25.08 (7.74) (18-53)	t (55) = —0.872, P = .387
	No. (%)	No. (%)	No. (%)	
Gender				
Male	40 (70)	14 (70)	26 (70)	χ^2 (1) = 0.000, P = .983
Female	17 (30)	6 (30)	11 (30)	
Education, y				
≤ 5	11 (19)	3 (15)	8 (22)	χ^2 (3) = 2.601, P = .457
6-8	24 (42)	11 (55)	13 (35)	
9-11	20 (35)	5 (25)	15 (40)	
> 11	2 (4)	1 (5)	1 (3)	
Marital status				
Single	51 (89.5)	18 (90)	33 (89)	χ^2 (1) = 0.009, P = .924
Married	6 (10.5)	2 (10)	4 (10)	
Divorced/ separated	0			
Residence				
Alone	4 (7)	0	4 (11)	χ^2 (3) = 3.307, P = .347
Couple	4 (7)	1 (5)	3 (8)	
Parents	48 (84)	19 (95)	29 (78)	
Children	1 (2)	0	1 (3)	
Work status				
Active	20 (35)	5 (25)	15 (41)	χ^2 (1) = 1.377, P = .241
Non-active	37 (65)	15 (75)	22 (59)	

Table 2. Course of Cognitive Performance of First-Episode Psychosis Patients

First Episode Psychosis (n = 57)	Baseline Assessment	1-Year Assessment	Analysis[a]
Sustained attention			
Reaction time, s	0.486 (0.067)	0.481 (0.075)	$t(53) = 0.310$, $P = .758$
Omissions,%	4.26 (7.60)	1.41 (3.09)	$t(53) = 3.874$, $P < .001$
Commissions,%	0.22 (0.53)	0.02 (0.132)	$t(53) = 3.607$, $P = .001$
Selective attention			
Stroop-I			
Total time, s	31.27 (10.89)	27.14 (7.57)	$t(44) = 19.72$, $P < .001$
Errors,%	15.11 (23.07)	8.21 (16.69)	$t(44) = 2.739$, $P = .009$[b]
Working memory			
Reaction time, s	0.431 (0.103)	0.42 (0.119)	$t(50) = 0.333$, $P = .741$
Omissions,%	8.19 (11.56)	3.71 (4.71)	$t(50) = 3.438$, $P = .001$
Commissions,%	1.87 (7.79)	0.41 (1.42)	$t(50) = 2.423$, $P = .019$
Executive functioning			
WCST			
Categories	3.98 (2.39)	5.31 (1.46)	$t(40) = 6.776$, $P < .001$
Perseverative errors,%	18.98 (15.99)	12.46 (10.86)	$t(40) = 4.222$, $P < .001$

[a]Paired samples Student t test.
[b]No longer significant after Bonferroni correction.

working memory task, and in the percentage of perseverative errors for the WCST. Additionally, a significant increase in the number of categories completed in the WCST is reported.

Course of Cognitive Performance for Schizophrenia and Non-Schizophrenia Psychosis Sub-Groups

The mean raw scores and standard deviations on cognitive variables for the baseline and for the 1-year follow-up as-

Table 3. Course of Cognitive Performance of Schizophrenia and Non-Schizophrenia First-Episode Psychosis Patients

	Baseline Assessment		
	First Episode Schizophrenia (n = 20)	First Episode Non Schizophrenia (n = 37)	Analysis[b]
	Mean (SD)	Mean (SD)	
Sustained attention			
Reaction time, s	0.492 (0.077)	0.486 (0.064)	$t(52) = 0.485$, $P = .629$
Omissions,%	4.11 (8.77)	4.54 (7.10)	$t(51) = 0.557$, $P = .580$
Commissions,%	0.22 (0.55)	0.23 (0.54)	$t(51) = 0.489$, $P = .627$
Selective attention			
Stroop-I			
Total time, s	30.64 (10.38)	32.59 (12.56)	$t(44) = 1.058$, $P = .296$
Errors,%	8.57 (15.86)	18.13 (24.94)	$t(44) = 0.856$, $P = .396$
Working memory			
Reaction time, s	0.452 (0.119)	0.427 (0.096)	$t(50) = 0.987$, $P = .329$
Omissions,%	10.41 (14.99)	7.31 (9.47)	$t(50) = 0.924$, $P = .360$
Commissions,%	1.18 (1.78)	2.29 (9.32)	$t(50) = -0.929$, $P = .357$
Executive Functioning			
WCST			
Categories	3.31 (2.52)	4.23 (2.32)	$t(42) = 0.206206$, $P = .838$
Perseverative errors,%	23.17 (23.20)	16.92 (10.82)	$t(40) = -0.899$, $P = .097$

[a]Within group analysis; paired samples Student *t* test.
[b]Between group analysis; Student *t* test.
*No longer significant after Bonferroni correction.

sessments on each subgroup of patients are presented in Table 3. When changes in the cognitive performance were analyzed for each subgroup over the 1-year period, all the differences reported were in the direction of improvement. The schizophrenia group showed a significant decrease in the total time to complete the Stroop-I task and a significant increase in the number of categories completed in the WCST. Similarly, the non-schizophrenia group showed the same improvements as the schizophrenia group and additionally showed a significant decrease in the percentage of perseverative errors in the WCST.

Between Group Comparisons

There were no significant differences between schizophrenia and non-schizophrenia psychosis patients, either at baseline or at the 1-year follow-up (Table 3).

Confounding Factors

In order to rule out the effect of potential confounding variables, such as degree of symptoms, associations between PANSS total score and cognitive performance were assessed at baseline and at the 1-year follow-up (Table 4). There were no correlations that reached statistical significance.

Discussion

Findings in our sample showed that the cognitive deficits affecting attention, working memory and executive functioning consistently described to be present in patients with a FEP,[11] tend to improve over the first year after the instauration of treatment. Although some specific measures remained stable over this period (4 of the 10 cognitive variables tested), none of them showed any decline. This result is in accordance with previous literature, in which there is little evidence for deterioration of cognitive abilities over the first few years of illness.[8] Moreover, it has been reported that the most significant improvement occurs during the first year of treatment.[12] When subgroups of patients were considered, ie, schizophrenia and non-schizophrenia psychoses, improvement only reached significance for 2 and 3 cognitive variables respectively. Again, none of the subgroups showed any deterioration. Overall, the course of deficits in attention and working memory in FEP patients with a diagnosis of schizophrenia or with a diagnosis other than schizophrenia seem to be very similar over the first year after instauration of treatment. In relation to executive functioning, the FEP patients with a non-schizophrenia diagnosis showed a slightly more beneficial course of deficits than the FEP schizophrenia patients.

We were not able to detect differences among schizophrenia and non-schizophrenia FEP patients in the degree of the cognitive impairment described, at baseline or follow-up.

1-Year Assessment			Longitudinal Assessment[a]	
First Episode Schizophrenia (n = 20)	First Episode Non Schizophrenia (n = 37)	Analysis[b]	First Episode Schizophrenia (n = 20)	First Episode Non Schizophrenia (n = 37)
Mean (SD)	Mean (SD)			
0.507 (0.092)	0.472 (0.066)	$t(55) = 1.928$, $P = .059$	$t(17) = -0.682$, $P = .505$	$t(36) = 1.492$, $P = .144$
0.91 (1.20)	1.79 (3.74)	$t(55) = -0.557$, $P = .580$	$t(19) = 3.114$, $P = .006$*	$t(33) = 2.399$, $P = .022$*
0.05 (0.22)	0.05 (0.32)	$t(19.00) = 1.00$, $P = .330$	$t(19) = 2.48$, $P = .023$*	$t(33) = 2.210$, $P = .034$*
28.50 (7.35)	27.11 (8.76)	$t(54) = 0.999$, $P = .322$	$t(14) = 12.888$, $P < .001$	$t(30) = 13.979$, $P < .001$
11.25 (20.58)	7.84 (16.05)	$t(54) = 0.837$, $P = .406$	$t(14) = 1.364$, $P = .194$	$t(30) = 2.002$, $P = .054$*
0.454 (0.167)	0.407 (0.080)	$t(23.62) = 1.294$, $P = .208$	$t(16) = -0.354$, $P = .728$	$t(34) = 1.327$, $P = .193$
4.30 (5.28)	3.57 (4.48)	$t(54) = 0.650$, $P = .518$	$t(19) = 1.926$, $P = .069$	$t(31) = 2.607$, $P = .014$*
0.30 (0.571)	0.62 (1.93)	$t(54) = -0.219$, $P = .827$	$t(19) = 1.937$, $P = .068$	$t(31) = 1.587$, $P = .123$
5.32 (1.20)	5.31 (1.61)	$t(54) = -0.073$, $P = .942$	$t(16) = 4.961$, $P < .001$	$t(23) = 4.801$, $P < .001$
14.18 (10.88)	11.14 (10.91)	$t(54) = 1.092$, $P = .282$	$t(13) = 1.719$, $P = .109$	$t(12) = 5.046$, $P < .001$

Table 4. Correlation Between PANSS Total Score and Neuropsychological Tests

	PANSS Baseline Assessment Mean (SD)	PANSS 1-Year Assessment Mean (SD)
	55.89 (17.22)	33.72 (13.38)
Sustained attention		
Reaction time, s	$r = 0.025$, $P = .859$	$r = 0.032$, $P = .826$
Omissions, %	$r = -0.006$, $P = .966$	$r = 0.216$, $P = .131$
Commissions, %	$r = -0.031$, $P = .830$	$r = -0.014$, $P = .923$
Selective attention		
Stroop-I		
Total time, s	$r = 0.014$, $P = .928$	$r = -0.018$, $P = .902$
Errors, %	$r = 0.058$, $P = .706$	$r = 0.031$, $P = .884$
Working memory		
Reaction time, s	$r = -0.092$, $P = .527$	$r = 0.266$, $P = .064$
Omissions, %	$r = -0.088$, $P = .543$	$r = 0.233$, $P = .107$
Commissions, %	$r = -0.112$, $P = .437$	$r = -0.045$, $P = .756$
Executive functioning		
WCST		
Categories	$r = -0.309$, $P = .052$[a]	$r = -0.219$, $P = .144$
Perseverative errors, %	$r = 0.168$, $P = .287$	$r = 0.278$, $P = .111$

[a]No longer significant after Bonferroni correction.

Our results indicate a lack of specificity of cognitive alterations related to the degree of affectation for attention, working memory and executive functioning in our sample of FEP patients, at least during the first year after instauration of treatment. The notion of an overlap in cognitive performance across diagnostic categories has been previously described in the literature and research has concluded that psychotic disorders comprise similar cognitive deficits.[14,21] Although some studies have indicated that cognitive deficits may be significantly more marked in schizophrenia patients than in other psychotic disorders,[22] it is not clear whether these differences are observable at the early stage of the disease or later in the course of the illness. The lack of differences between FEP patients with schizophrenia and with other psychotic diagnoses in the areas of attention, working memory and executive functioning early in the course of the illness, ie, at baseline and at a 2-year follow-up, have been previously reported.[17]

Severity of symptoms improved over the follow-up, as well as some cognitive scores. However, we did not detect any correlation between cognitive scores and severity of symptoms at any assessment time. Therefore, severity of symptoms appears not to be related to performance on neuropsychological test in our sample of FEP. The relationship between cognitive dysfunction and clinical symptomatology is not well understood yet. Although some studies have detected a relationship between concrete dimensions of symptoms and neuropsychological tests scores in FEP patients, this relationship accounts for only a minor portion of the variance (ie, 10%-15%) in the severity of cognitive dysfunction.[12,23] This findings have provided support for the notion that severity of cognitive deficits may not be exclusively explained by severity of symptoms.

Although the cognitive assessment was performed using a neuropsychological battery, there are cognitive domains such as learning and memory, psychomotor speed, visuo-constructive abilities, visual learning and memory, or social cognition that have not been evaluated in this study. Another limitation is the small sample size of the patient subgroups, which could possibly explain the lack of significant intra-group differences in some cognitive variables over the 1-year follow-up and the lack of significant differences between subgroups both at baseline and follow-up. This fact may contribute to increasing the possibility of type II error due to low statistical power, limiting the study's ability to detect moderate to small intra-group or between-groups differences. Finally, we did not include a sample of healthy controls and therefore longitudinal changes in our sample of patients were not compared to changes in a control group. Thus when improvement is observed it is not clear how much is due to a genuine improvement in cognitive abilities and how much is due to learning or practice effects.[24]

Conclusions

Our results do not support dissimilarities in the degree of cognitive deficits related to attention, working memory, and executive functioning among schizophrenia and non-schizophrenia psychosis patients with a first-episode during the first year after instauration of treatment. During this early phase, cognitive impairment may constitute a non-specific marker for psychosis with a stable course that tends toward improvement. The more extended longitudinal study of this sample may help to elucidate whether the course of the cognitive deficits is similar for the different psychotic diagnoses

or whether those entities with a better prognosis display better cognitive performance during remission.

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