



The association of lifetime insight and cognition in psychosis

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ABSTRACT

Poor insight has been related to poor course in psychosis. However, the role of cognition in insight remains unclear.

The aim of this study was to examine the influence of cognition and lifetime psychopathological dimensions on insight in psychosis. We followed up 42 patients with psychotic disorders over 10 years. Lifetime psychopathological dimensions and cognitive performance were assessed. Patients were divided into two groups by lifetime patterns of insight and compared with 42 healthy volunteers.

Lower IQ and poorer social cognition were associated with higher risks of poorer lifetime insight of feeling ill and global insight respectively. Lifetime negative symptoms were associated with a higher risk of poorer lifetime insight into symptoms.

Lifetime lack of insight is independent of cognitive impairment in specific domains, except for social cognition. Higher IQ may contribute to better lifetime awareness of illness, while better ability to manage emotions is involved in lifetime global insight.

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1. Introduction

Patients with psychotic disorders often exhibit lack of awareness of their illness, commonly known as lack of insight. David (1990) differentiated three components of insight into psychosis: recognition that one has an illness, the ability to recognise the symptoms of the illness and the compliance with treatment.

Poor insight is associated with psychosocial dysfunction, as well as poor treatment adherence and more rehospitalisations (Amador and David, 2004). Hence, an understanding of the mechanisms of insight is necessary for improving outcomes in psychotic disorders.

Among the various different aetiological models for lack of insight in psychosis, the neuropsychological model has generated extensive research in recent years. Studies investigating lack of insight and cognition have obtained inconsistent findings. On the one hand, lack of insight has been found to have a small but significant association with cognitive functioning, especially executive functioning, memory and global cognition (Aleman et al., 2006; Nair et al., 2014), while on the other, some authors observed a non-specific relationship with general cognitive deficits (Morgan et al., 2010) or no relationship at all (Mintz et al., 2004). Most of the research on this topic has focused on executive functioning, in many cases assessed by the Wisconsin Card Sorting Test (Rossell et al., 2003; Keshavan et al., 2004; Saeedi et al., 2007), based on the idea that a failure to change cognitive set and to

monitor errors may lead to impaired insight. Again, results have been inconclusive.

The purpose of this study was to examine the relationship between cognitive performance and lifetime patterns of insight over 10 years in a sample of outpatients with a diagnosis of a psychotic disorder, controlling for the lifetime psychopathological dimensions. We hypothesised that the evolution of lifetime patterns of insight would be independent of current cognitive performance.

2. Methods

2.1. Sample

The sample was part of a family cohort recruited between 1999 and 2001, which included 89 nuclear families. Patients who were affected by DSM-IV schizophrenia spectrum disorders (APA, 1994) were recruited from consecutive admissions to the Psychiatric Unit of Virgen del Camino Hospital in Pamplona, Spain; the admissions were due to psychotic exacerbations. The original sample has been described elsewhere (Rosa et al., 2004, 2005).

For the present study, we selected data from the patients who agreed to participate in a second evaluation in 2009. At the follow-up evaluations, the sample population consisted of 42 patients. The reasons for patients being lost to follow-up were as follows: 7 died; 1 had traumatic brain injury; 11 moved or were not contactable; and 28 declined to participate.

As this was a naturalistic study, patients were followed up after hospitalisation in their respective mental health settings. None of

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Table 1
Neuropsychological tests.

Cognitive domain	Type of test	Measures used for domain summary scores
Attention	Continuous Performance Test-Identical Pairs (CPT-IP) (Cornblatt et al., 1988; Nuechterlein and Green, 2006) Digit Span Test — Forward (Wechsler Adult Intelligence Scale-III) (Wechsler, 1999) Spatial Span-Forward (Wechsler Memory Scale-III) (Wechsler, 1998)	Mean response sensitivity (D-prime). Total number of series correctly repeated. Total number of series correctly performed.
Processing speed	Digit Symbol Coding (WAIS-III) Symbol Search (WAIS-III)	Total scale score of the coding part of the test. Total scale score
Verbal memory	Trail Making Test (Form A) (Reitan and Wolfson, 1993) California Verbal Learning Test, Spanish version (TAVEC) (Benedet and Alexandre, 1998)	Time to complete form A Total number of words recalled at immediate, delayed and recognition trials.
Visual memory	Brief Visual Memory Test—Revised (BVM-T-R) (Benedict, 1997)	Total T score
Working memory	Digit Span Test—Backward (WAIS-III) Spatial Span Test—Backward (WMS-III) Letter–Number Sequencing (WAIS-III) N-Back task (Braver et al., 1997)	Total backward score Total backward score Total scale score Total number of errors
Executive functions	Wisconsin Card Sorting Test, (WCST-128-CV) (Heaton et al., 1993) Iowa Gambling Task (Bechara, 1992) Tower of Hanoi test (four discs) Semantic fluency (Peña-Casanova, 1990) Phonological fluency (Peña-Casanova, 1990) Hayling Sentence Completion test (Burgess and Shallice, 1997) Trail Making Test (form B) (Reitan and Wolfson, 1993) Similarities subtest (WAIS-III)	Number of completed categories, total correct responses and perseverative errors. Total T score Number of movements to complete the task Number of animal names produced in 1 min Number of words beginning with “P” produced in 1 min Total score Time to complete form B Total scale score
Social cognition	Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT) (Mayer et al., 2009): Managing emotions branch, which is composed of the “Emotion management” and “Social management” tasks	Total T score of the “Managing emotions” branch
Estimated IQ	Vocabulary, Block design and Similarities (WAIS-III), based on the proposal of Sattler (Sattler, 2001).	

them were institutionalised or followed any specific program focused on awareness of illness.

In addition, 42 healthy volunteers were included as a control group, according to the following inclusion criteria: an absence of major psychiatric disorders and drug dependence disorder, of first-degree relatives with major psychiatric illnesses, and of any current pharmacological treatments. The healthy control group was mainly recruited in a hospital located outside of Pamplona, in the trauma and neurologic rehabilitation department. Some of the controls were staff and relatives of patients. We also recruited controls through fliers in health care centers of Pamplona, at the university and word-of-mouth. Controls received a compensation of 50 euros for their participation.

All subjects provided written informed consent for participation in the study, and the local ethics committee approved the study.

2.2. Procedures

2.2.1. Clinical assessments

The demographic and clinical variables were assessed according to the lifetime version of the Comprehensive Assessment of Symptoms and History (CASH) (Andreasen et al., 1992) at baseline and at the follow-up evaluations.

The assessment of insight was made by means of three insight items from the Manual for the Assessment and Documentation in Psychopathology (the AMDP system) (Guy and Ban, 1979). These items were lack of feeling ill (the patient denies that he/she feels ill), lack of insight (the patient is unable to recognise as morbid experiences that the doctor has judged to be due to the disease) and refusal of treatment (resistance to or refusal of various therapeutic measures). Responses were scored according to the CASH guidelines for lifetime scoring of symptoms. Lifetime insight was defined as the dominant pattern of insight over the course of illness, taking into account the course of insight in each insight dimension. Insight symptoms were surveyed to assess the current level and dominant pattern over the course of the illness at both assessments by asking whether the patient had ever

experienced the symptom and, if so, ascertaining its frequency and severity. Thus, insight symptoms were endorsed for the lifetime frame at the first assessment and for the inter-evaluation period at the second one. A global insight score for the whole lifetime period was built by averaging the score on the three dimensions.

Clinical assessments were performed by experienced psychiatrists blind to participants' cognitive status. Both assessments were carried out when patients were clinically stabilised.

2.2.2. Neuropsychological assessments

A wide neuropsychological battery was applied to all patients at follow-up. The tests selected are listed in Table 1.

To normalise the different scales of measurements used for the neuropsychological tests, we calculated z-scores based on the means and standard deviations of the control group. Composite scores for cognitive domains that were represented by more than one measure (attention, processing speed, verbal memory, working memory and executive functioning) were calculated by taking the mean of all the z-scores included in each cognitive domain. Cronbach's alpha was calculated to assess the internal consistency of the composite scores.

Cognitive assessments were performed by an experienced neuropsychologist (AMS) who was blinded to the subjects' clinical status.

2.2.3. Data analysis

Patients were divided into two groups according to their insight lifetime profile. The demographic characteristics of these two groups were compared using t-tests and chi-squared tests. Analyses of variance (ANOVAs) were then used to compare cognitive performance at follow-up in the two groups.

Patients were also grouped according to their lifetime patterns in each insight dimension to explore the differences in cognitive performance. Bonferroni's correction for multiple comparisons was applied.

Logistic linear regression using the stepwise entry method was performed to better characterise the relationship between insight dimensions, psychopathological dimensions and cognitive performance.

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