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Facial expressivity during the clinical interview as a predictor functional disability in schizophrenia. A pilot study

Alfonso Troisi [a,*], Enrico Pompili [b], Luigi Binello [b], Alessandro Sterpone [b]

[a] *Department of Neurosciences, University of Rome Tor Vergata, via G.A. Guattani, 00161, Rome, Italy*
[b] *ASL RM-G Monterondo, Italy*

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Abstract

Despite the central role of nonverbal behavior in regulating social interactions, its relationship to functional disability in schizophrenia has received little empirical attention. This study aimed at assessing the relationship of patients' spontaneous facial expressivity during the clinical interview to clinician-rated and self-reported measures of functional disability. The nonverbal behavior of 28 stabilized patients with schizophrenia was analyzed by using the Ethological Coding System for Interviews (ECSI). Functional disability was assessed using the Global Assessment of Functioning (GAF) scale and the Sheehan Disability Scale (DISS). Partial correlation analysis controlling for the confounding effects of neuroleptic treatment showed that facial expressivity was correlated with the GAF score ($r=0.42$, $P=0.03$) and the scores on the subscales of the DISS measuring work ($r=-0.52$, $P=0.005$) and social ($r=-0.50$, $P=0.007$) disability. In a multiple regression model, nonverbal behavior explained variation in patients' work and social disability better than negative symptoms. The results of this pilot study suggest that deficits in encoding affiliative signals may play a role in determining or aggravating functional disability in schizophrenia. One clinical implication of this finding is that remediation training programs designed to improve nonverbal communication could also serve as a useful adjunct for improving work and social functioning in patients with schizophrenia.

Keywords: Disability; DISS; ECSI; Facial expressivity; GAF; Schizophrenia

1. Introduction

Functional disability is a prominent feature of the schizophrenic syndrome. A recent longitudinal study assessing social disability in schizophrenia found that, at 15 years from the onset, only 17% of the patients had no disability and 24% still suffered from severe disability (Wiersma et al., 2000). In a recent 14-country study on disability associated with physical and mental conditions, active psychosis was ranked the third most disabling condition, higher than paraplegia and blindness, by the general population (Ustun et al., 1999). In the global burden of disease study, schizophrenia accounted for 1.1% of the total disability-adjusted life years and 2.8% of years of life lived with disability (World Health Organization, 2001). Clinical descriptions of schizophrenia have consistently reported that, even after the most obvious symptoms of the disorder have disappeared, some residual functional deficits may remain. These include lack of interest and initiative in daily activities and work, social incompetence, and difficulties in everyday social experiences (Breier et al., 1991).

The origins of functional disability in schizophrenia are likely to be multifactorial, with positive symptoms (Ertugrul and Ugul, 2002; Norman et al., 1999), negative symptoms (Ertugrul and Ugul, 2002; Johnstone et al., 1990), cognitive deficits (Green, 1996; Sponheim et al., 2003), theory of mind deficits (Brune, 2005), and social rejection (Penn et al., 2000), each making a contribution. However, social functioning in schizophrenia does not improve following medication treatment (Bellack et al., 2004), and this finding suggests that the causative role of positive and negative symptoms is not a major one (Lenzenweger and Dworkin, 1996; McClellan et al., 2002).

One additional factor that may be implicated in the etiology of functional disability in schizophrenia is dysfunctional

Abbreviations: DISS, Sheehan Disability Scale; ECSI, Ethological Coding System for Interviews; GAF, Global Assessment of Functioning scale.

* Corresponding author.
E-mail address: alfonso.troisi@uniroma2.it (A. Troisi).

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nonverbal behavior. Several studies have shown the presence of significant nonverbal behavior deficits in patients with schizophrenia, including inappropriate facial expressions, gestures, and postures, as well as poor synchronizing, inadequate gaze and deficits in assertion (Gaebel and Wolwer, 2004; Mattes et al., 1995; Pitman et al., 1987; Trémau et al., 2005; Troisi et al., 1991, 1998). Analysis of childhood home movies of patients who later became schizophrenic and of their well siblings has shown subtle abnormalities in display of affect many years before the onset of overt illness (Walker et al., 1993).

Facial displays are seemingly determined by a complex of factors that arise from the emotional and social context in which they occur. Facial movements may be expressive of underlying emotional states. However, there is no isomorphic relation between a particular configuration of facial activity and a given emotional state. For example, we may smile when feeling happy, but also when feeling moved, afraid, uncertain, or ashamed (Manstead et al., 1999). According to the behavioral ecology view of human nonverbal behavior (Fridlund, 1994), postures, gestures and facial expressions are basically social tools. They serve to communicate social motives, and they are driven by social intents. Nonverbal behavior signals motives such as the readiness to affiliate, appease, attack or continue current interaction. Based on this view, it is clear that even subtle abnormalities in encoding nonverbal signals can have a major impact on social interactions. Therefore, functional disability in schizophrenia may be partially explained by deficits in patients' nonverbal behavior skills, which presumably play an important role in determining the frequency and adequacy of social interactions.

Despite the central role of nonverbal behavior in regulating social interactions, its relationship to functional disability in schizophrenia has received little empirical attention. This pilot study used ethological methods to allow the analysis of facial behavior of stable schizophrenia patients during the psychiatric interview. The study aimed at assessing the relationship of patients' facial expressivity within a relevant social context to clinician-rated and self-reported measures of functional disability. It was expected that ethological ratings of nonverbal behavior would be related to functional disability such that patients with fewer outward displays of prosocial behavior would suffer from more severe disability.

2. Methods

2.1. Participants

The sample reflected consecutive admissions for acute or exacerbated DSM-IV schizophrenia and consisted of 28 newly admitted patients (18 men and 10 women) who were able and willing to give written consent after the procedure of the study had been fully explained. The University Intramural Ethical Committee approved all procedures and protocols. Based on the predominant symptomatology at the time of evaluation, 23 patients had the paranoid subtype, 4 the disorganized subtype and 1 the undifferentiated subtype. Patients with a history of known organic syndrome, mental retardation, mood disorder, or any additional current psychiatric disorder were excluded from the sample. The patients had a mean±S.D. age of 40.32±13.45 years, and their average educational level was 10.46±3.89 years. They had a mean±S.D. age at onset of 25.57±7.07 years, and their average illness duration was 173.86±145.44 months.

2.2. Clinical assessment

One trained clinical psychiatrist, who was unaware of the aims of the study, interviewed the patients using a validated Italian version of the Structured Clinical Interview for the DSM-IV (SCID) (First et al., 1996). This interview allowed confirming that the patient met the DSM-IV criteria for schizophrenia. All patients were interviewed when they had partially improved and reached the neuroleptic dosage prescribed for maintenance therapy.

At the end of the clinical interview, the interviewer rated the patient's symptoms on the standard 18-item version of the Brief Psychiatric Rating Scale (BPRS) (Overall and Gorham, 1962). The BPRS was rated following the instructions published by Woerner et al. (1988) to improve the reliability of the scale. Thanks to extensive training prior to the beginning of the study and the use of anchor points, interviewer's reliability was excellent: the item-level Intraclass Correlation Coefficients (ICC) ranged from 0.70 (BPRS Emotional Withdrawal) to 0.98 (BPRS Hostility). The ICC for the BPRS total score was 0.95. BPRS ratings consisted of assessments of total BPRS score and five BPRS factor scores (anxiety/depression, thought disturbance, activation, hostile suspiciousness, and anergia) (Guy, 1976). A recent meta-analysis of the BPRS factor structure has confirmed the validity of the five-factor solution in schizophrenic samples (Shafer, 2005). At the time of the interview, patients' mean±S.D. BPRS total score was 39.29±11.49 and their mean±S.D. neuroleptic dosage was 330±207 mg/day of chlorpromazine equivalents (16 patients were treated with typical antipsychotics, 7 with atypical antipsychotics, and 5 with a combination of typical and atypical antipsychotics).

2.3. Assessment of functional disability

Functional disability was assessed using two different instruments: the Global Assessment of Functioning (GAF) scale and the Sheehan Disability Scale (DISS). For both the scales, the preceding 6 months were chosen as the time frame over which functional disability was assessed.

The GAF is a clinician-rated measure of "overall level of functioning" including clinical symptoms, coping abilities, general social function and, in its more impaired scores, measures of self-preservation skills (i.e., avoiding self-harm and maintaining self-care). Higher scores reflect better functioning. The GAF has been shown to exhibit excellent levels of interrater reliability, even after minimal training (Hilsenroth et al., 2000). In terms of concurrent validity, GAF ratings in schizophrenic patients have been found to be highly correlated with ratings of social behavior as measured by the Social Behaviour Schedule