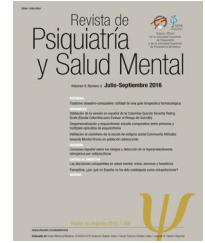




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## ORIGINAL ARTICLE

### Clinical symptoms and social functioning in schizophrenia



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#### KEYWORDS

Schizophrenia;  
Social functioning;  
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#### Abstract

**Introduction:** The aim of the present study was to assess the relationship between social functioning and clinical symptoms in people with schizophrenia, analyzing the influence of both global social functioning and the specific aspects of social functioning, assertiveness and communication skills in the explanation of type of symptoms.

**Material and methods:** A cross-sectional descriptive study composed of 125 people diagnosed with schizophrenia was performed. Patients were assessed with the Communication Skills Questionnaire (CSQ), the Gambrill and Richey Assertiveness Inventory (GR), the Global Assessment of Functioning Scale (GAF) and the Global Assessment of Social Functioning Scale (SOFAS), Social Functioning Scale (SFS), Life Skills Profile (LSP) scale and the Clinical Global Impression scale for Schizophrenia (CGI-S).

**Results:** SOFAS, LSP and GR are related to each of the subscales and total scores of symptoms ( $p < 0.05$ – $0.001$ ). The multiple regressions show that SOFAS and GR explained 59% of the total symptoms. SOFAS and GR, accounting for 65% of the variance, explain positive symptoms. GR and SOFAS explained 34% of the variance of negative symptoms. SOFAS, CSQ and LSP, accounting for 20% of the variance, explain depressive symptoms. SOFAS explained 46% of the variance of cognitive symptoms.

**Conclusions:** Our findings suggest the usefulness of social functioning assessment in the explanation of clinical symptoms in people with schizophrenia. Moreover, our results point out that not only negative and cognitive symptoms, but also positive and depressive symptoms, should be taken into account in the rehabilitation process in order to improve patient adaptation in the community.

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**PALABRAS CLAVE**

Esquizofrenia;  
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social;  
Síntomas clínicos;  
Rehabilitación

**Síntomas clínicos y funcionamiento social en la esquizofrenia****Resumen**

**Introducción:** El objetivo del presente estudio fue evaluar la relación entre el funcionamiento social y los síntomas en las personas esquizofrénicas, analizando la influencia del funcionamiento social global y los aspectos específicos del funcionamiento social, la asertividad y las competencias de comunicación en la explicación del tipo de síntomas.

**Material y métodos:** Se realizó un estudio descriptivo transversal integrado por 125 personas con diagnóstico de esquizofrenia. Se evaluó a los pacientes utilizando Communication Skills Questionnaire (CSQ), Gambrill and Richey Assertiveness Inventory (GR), Global Assessment of Functioning Scale (GAF) y Global Assessment of Social Functioning Scale (SOFAS), Social Functioning Scale (SFS), Life Skills Profile (LSP) scale y Clinical Global Impression scale for Schizophrenia (CGI-S).

**Resultados:** SOFAS, LSP y GR están relacionadas con cada una de las sub-escalas y puntuaciones totales de los síntomas ( $p < 0,05-0,001$ ). Las regresiones múltiples muestran que SOFAS y GR justifican el 59% de los síntomas totales. SOFAS y GR, que representan el 65% de la varianza, explican los síntomas positivos. GR y SOFAS justificaron el 34% de la varianza de síntomas negativos. SOFAS, CSQ y LSP, que representaron el 20% de la varianza, justificaron los síntomas depresivos. SOFAS justificó el 46% de la varianza de los síntomas cognitivos.

**Conclusiones:** Nuestros hallazgos sugieren la utilidad de la evaluación del funcionamiento social para explicar los síntomas clínicos de las personas esquizofrénicas. Además, nuestros resultados apuntan que, no solo deberían considerarse en el proceso de rehabilitación los síntomas negativos y cognitivos, sino también los síntomas positivos y depresivos, a fin de mejorar la adaptación del paciente dentro de la comunidad.

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**Introduction**

Social functioning is one of the core impairments consistently reported in schizophrenia.<sup>1</sup> Although this construct is in widespread use, it has a limited consensus.<sup>2</sup> It could be defined as the capacity of a person to function, and in this sense, it includes aspects such as how patients live, function in society and perform social roles.<sup>3</sup> Several studies have shown poor social functioning to be a significant contributor to poor community functioning, to predict worse quality of life of people with schizophrenia<sup>4,5</sup> and to contribute to deterioration in the course of the disease.<sup>1</sup>

The consensus about the concept of social functioning is difficult to achieve due to the complexity of the construct. Several instruments have been used, each covering different areas of social functioning.<sup>2,3,6,7</sup> Some of these scales assess global social functioning, as is the case of the Social Global Assessment Functioning (SOFAS).<sup>8</sup> Other scales are more specific, such as the Social Functioning Scale (SFS)<sup>9</sup> and the Life Skills Profile (LSP),<sup>10</sup> describing social impairments at work, interpersonal relationships, participation in recreational and community activities and self-care. Another specific area of social functioning impaired in people with schizophrenia is communication and assertiveness skills, for which instruments such as the Communication Skills Questionnaire (CSQ),<sup>11</sup> and Gambrill and Richey Assertiveness Inventory<sup>12</sup> will be useful in the assessment.

Several studies have explored the relationship between clinical symptoms and social functioning in people with

schizophrenia. These studies show a correlation between poor social functioning and more severe symptoms of the disorder.<sup>13–19</sup> The negative and cognitive symptoms are the clinical areas most related to social dysfunction.<sup>15,20–23</sup> Moreover, remission of positive symptoms is related with better social functioning.<sup>24–26</sup> The appearance of affective symptoms is also associated with social functioning, but in this case, it has been shown that they contribute independently of other symptoms to poor functional outcome.<sup>14</sup>

All these data suggest the importance of taking into account both symptoms and social functioning for the effective psychosocial community functioning of people with schizophrenia. However, there is a lack of studies addressing the relationship of psychotic symptoms with several aspects of social functioning, given the heterogeneity of the social functioning assessment. Moreover, specific areas, such as assertiveness and communication skills<sup>5,27</sup> have been little studied. The majority of studies have assessed the influence of symptoms in social functioning. Nevertheless, to our knowledge, no study has assessed the influence of several aspects of social functioning in the severity of symptoms. Therefore, our hypothesis is that certain specific domains of social functioning will be related to symptoms.

The aim of the study was to deepen our understanding of the relationship between social functioning and clinical symptoms in people with schizophrenia. Concretely, we aim to analyze the influence of both global social functioning and specific aspects of social functioning – assertiveness and communication skills – in the explanation of symptoms.

## Materials and methods

### Design

A cross-sectional descriptive study was performed.

### Study subjects

A total of 125 people diagnosed with schizophrenia<sup>28</sup> between 18 and 65 years of age and resident in the province of Barcelona (Spain; 65 from the Parc Sanitari Sant Joan de Déu and 60 from the Mental Health Division of the Fundació Althaia) were included in the study. The Parc Sanitari Sant Joan de Déu covers a catchment area of 1,199,389 of the general population; the Fundació Althaia covers a population of 215,000 people. All people attending the Rehabilitation Services who met criteria for the inclusion were proposed to participate in the study. Those who presented an organic mental disorder or a diagnosis comorbid with intellectual disability, a relapse that required admission to acute units, or those who expressed a wish not to participate in the study were not included in it. All patients were voluntary and all of them gave written informed consent prior to their inclusion in the study. Research and ethics committees of both clinical centres approved the study protocol.

### Instruments

A psychologist applied all the instruments in one session with specific training in the administration of the instruments of the study. The following instruments were used to assess clinical and social functioning. The data collection sheet consisted of:

#### Sociodemographic data

The following variables were collected: age, gender, marital status, educational level, living circumstances and employment situation.

#### Communication Skills Questionnaire (CSQ)

This consists of a self-administered 29-item questionnaire that evaluates communication in various areas.<sup>11,29</sup> The items in this questionnaire were grouped into two blocks: one of 6 items (score of 1-deficient, 5-always good, Likert type) which evaluates general communication skills, and a second one of 23 items (score of 0-deficient, 2-good most of the time, Likert type) which evaluates interpersonal communication skills in 6 different areas: family, close friends, friends, neighbours, authority figures, and strangers. Higher scores indicate better communication skills. The Spanish version of the CSQ<sup>29</sup> shows a Cronbach's alpha of 0.96, and test-retest reliability showed coefficients between 0.60 and 0.70.

#### Gambrill and Richey (GR) assertiveness inventory

This self-administered inventory evaluates assertiveness in the general population.<sup>12,30</sup> The instrument is composed of 40 items, which evaluate, in two subscales, the degree of distress and response probability when dealing with a particular social situation through a 5-point Likert scale. A general

assertiveness score is obtained with the scores from the two subscales (each one with scores between 40 and 200). A high score indicates dysfunction while low scores indicate few difficulties. Internal consistency of the instrument shows a Cronbach alpha of 0.935, and test-retest reliability ranged between 0.21 and 0.78, in the Spanish validation.<sup>30</sup>

**Global Assessment of Functioning Scale (GAF),<sup>31</sup> and the Global Assessment of Social Functioning Scale (SOFAS)<sup>8</sup>**  
The GAF is in accordance with the V axis of the DSM-IV-TR. Two subscales compose this scale: clinical and social functioning. The general and clinical GAF measures the patient's clinical functioning. The SOFAS measures social functioning; it was developed to complete and specify the measurement of general functioning in the relational area. Both scales have a score range from 0 to 100, in which the lowest scores indicate worse functioning. They are widely used as they provide general patient information in a short space of time. The intraclass correlation coefficient was between 0.69 and 0.91.

#### Social Functioning Scale (SFS)

This scale allows assessment of social functioning in various areas and it is intended specifically for people with schizophrenia. It is widely used in planning rehabilitation processes for people with schizophrenia.<sup>9</sup> The SFS assesses Social Withdrawal, Interpersonal Communication, Prosocial Activities, Recreational Activities, Independence Competence, Independence-Performance and Work. The informant version was used in the study. Cronbach's alpha of the instrument<sup>32</sup> was 0.85 and *t*-retest reliability ranged between 0.41 and 0.80.

#### Life Skills Profile (LSP) scale

This is a scale of 39 items which assesses self-care, social-interpersonal behaviour, social communication-contact, non-personal social behaviour and independent living. Each item is evaluated according to four possibilities, from 1 to 4, which increase depending on the disability.<sup>10,33</sup> The scale assesses aspects of functioning which affect daily activities and the adaptation of people with psychiatric illnesses to the community, evaluating both skills and deficits. A higher score represents greater ability in this area. Cronbach's alpha was 0.918.

#### Clinical Global Impression scale for Schizophrenia (CGI-S)

This scale evaluates severity of symptoms and the change obtained following therapeutic intervention. The version used is specific for people with schizophrenia and is composed of 4 items which represent four subscales<sup>34</sup>: positive, negative, cognitive and depressive symptoms, and an overall score. Each item includes a Likert scale of 7 points, from 1-well to 7-extremely ill. The test-retest reliability of the instrument was 0.64 and it has a high concurrent validity with the PANSS.

### Statistical analysis

Both database design and data analysis were carried out with the SPSS/PC+ (version 19.0) statistical package. Descriptive

**Table 1** Sociodemographic description of the sample.

Variables	% (N)
<i>Gender</i>	
Men	77.4% (96)
Women	22.6% (28)
<i>Marital status</i>	
Single	88.8% (111)
Married	4.0% (5)
Divorced	6.4% (8)
Widowed	0.8% (1)
<i>Educational level</i>	
Primary	49.7% (59)
Secondary	45.3% (54)
University	5% (6)
<i>Living with</i>	
Alone	11.2% (14)
Parents	53.6% (67)
Other family members	4.8% (6)
Own family	8.8% (11)
Sheltered flat	17.6% (22)
Psychiatric hospital	2.4% (3)
Other	1.6% (2)
<i>Working situation</i>	
Employed	0.8% (1)
Employed in sheltered work	1.6% (2)
Unemployed	2.4% (3)
Temporary sick leave	1.6% (2)
Housewife	2.4% (3)
Sick leave	84.8% (106)
Others	6.4% (8)
	Mean (SD)
Age	42.43 (10.29)

statistics for all the study variables were determined. Pearson correlation was used in order to relate symptoms and social functioning measures. To study the influence of social functioning measures in the variance of clinical symptoms, a multiple regression analysis with stepwise method was performed, including all the significant variables ( $p < 0.05$ ) in the correlation analysis.

## Results

Sociodemographic, psychosocial and clinical characteristics of the sample are shown in Table 1. Most of the sample was male (77%), single (88%), living with parents (53.6%) and in a sick leaving situation (84.8%). Table 2 shows the clinical and social functioning description of the sample.

The relationship between social skills and psychosocial functioning and symptoms is shown in Table 3. SOFAS, LSP and degree of discomfort of the GR are related to each of the subscales and total scoring for symptoms ( $p < 0.05$ – $0.001$ ). SFS is related to positive subscales and total symptoms ( $p < 0.05$ – $0.005$ ). Communication skills of the CSQ are related to depressive symptoms ( $p < 0.05$ ).

**Table 2** Description of the clinical and social functioning variables of the sample.

	Mean (SD)
Positive symptoms CGI-S	2.96 (1.52)
Negative symptoms CGI-S	3.28 (1.23)
Depressive symptoms CGI-S	2.54 (1.04)
Cognitive symptoms CGI-S	2.94 (1.31)
Total symptoms CGI-S	3.22 (1.17)
Clinical GAF	50.66 (12.07)
SOFAS	47.35 (10.03)
LSP	126.47 (12.99)
SFS	99.68 (28.89)
Degree of discomfort GR	2.45 (0.72)
Probability of response GR	2.97 (0.68)
Communication skills CSQ	19.76 (4.72)
Personal skills CSQ	142.55 (45.55)

A multiple regression analysis was performed for each domain of the CGI-S including significant psychosocial variables (Table 4). SOFAS and degree of discomfort of the GR explained positive symptoms; SOFAS alone accounted for 47.8% of the variance. Degree of discomfort of the GR and SOFAS explained 34% of the variance of negative symptoms, with the GR accounting for 23.05% of the variance. SOFAS, communication skills of the CSQ, and LSP explained depressive symptoms; SOFAS explained 8.7% and CSQ 6.1% of the variance. SOFAS explained 46% of the variance of cognitive symptoms. Finally, both SOFAS and degree of discomfort of the GR explained 59% of the total symptoms.

## Discussion

Our results show that clinical symptoms and social functioning are related. Specifically, general functioning is related with all subscales of CGI symptoms, degree of discomfort with positive and negative symptoms, and communication skills and social functioning assessed with the LSP with depressive symptom.

These findings are in agreement with those obtained previously by several other authors.<sup>16,22,24,35</sup> Concretely, our data showed that four of the five social functioning and communication skills measures used (SOFAS, degree of discomfort of the GR, total LSP and communication skills of the CSQ scores) explained the severity of clinical symptoms. Specifically, SOFAS explained most of the variance of the severity of different types of symptoms (positive, negative, affective and cognitive) and total score of the CGI-S. Moreover, the degree of discomfort of the GR is also an important variable to explain the total score of the CGI-S and of the positive and negative symptoms. Furthermore, the communication skills of CSQ and the total score of LSP account for the variance of depressive symptoms of schizophrenia, and although in this case the percentage of variance explained is lower, it is still significant.

SOFAS is related with all subscales of CGI. Moreover, SOFAS is the only social functioning scale that explains all psychotic symptoms. This result could be into accordance with the general social function assessment that this instrument provides. This result clearly suggests that



**Table 3** Relationship between symptoms, and social skills and psychosocial functioning.

	Positive symptoms CGI-S	Negative symptoms CGI-S	Depressive symptoms CGI-S	Cognitive symptoms CGI-S	Total symptoms CGI-S
SOFAS	−0.372****	−0.462****	−0.299***	−0.401****	−0.503****
Probability of response GR	0.112	0.028	0.101	0.002	0.087
Degree of discomfort GR	0.285***	0.197*	0.262**	0.192*	0.307***
Communication skills CSQ	−0.167	−0.119	−0.231*	−0.031	−0.093
Personal skills CSQ	−0.044	−0.121	−0.131	−0.088	−0.169
LSP	−0.300***	−0.349****	−0.256**	−0.288***	−0.371****
SFS	−0.305***	−0.179	−0.083	−0.157	−0.198*

\*  $p < 0.05$ .\*\*  $p < 0.01$ .\*\*\*  $p < 0.005$ .\*\*\*\*  $p < 0.001$ .

the severity of the symptoms of people with schizophrenia could be inferred simply assessing their general social functioning. In fact, Granö, Karjalainen, Suominen, and Roine (2011)<sup>36</sup> found that people at risk for developing schizophrenia presented a poor functioning ability assessed with the SOFAS. More accurately, SOFAS mainly explains positive and cognitive clinical symptoms. In this sense, several authors have described how people with better social functioning showed fewer positive and cognitive symptoms.<sup>1,24–26,37,38</sup> Regarding negative symptoms, the SOFAS explains these to a lesser degree, as noted by Velligan, Alphs, Lancaster, Morlock, and Mintz (2009).<sup>39</sup> Prior research has demonstrated that premorbid social functioning is strongly associated with symptom variables, specifically to higher severity of negative,<sup>40–43</sup> and depressive symptoms.<sup>44</sup> Taking into account these results, general social functioning should always be assessed in relation to symptoms.

Degree of discomfort of GR strongly explains the variance of negative symptoms, and, to a lesser degree, but significantly, the positive and the total score of clinical symptoms. This result indicates that the level of social discomfort explains the presence of nuclear psychotic symptoms (negative and positive). Although it is known that better social functioning is related to fewer negative and positive symptoms,<sup>21–23</sup> the fact that degree of discomfort explains both clearly suggests that distress in social relationships could contribute to the presence of negative and positive symptoms. Peters et al. (2012)<sup>45</sup> found that delusions and hallucinations rated at a moderate level of intensity were associated with distress, interference and worry. In the same way, Waller et al. (2015)<sup>46</sup> found that treating several aspects including distress significantly reduced positive symptoms. Our results showed that social discomfort could increase these kinds of clinical symptomatology, as previous studies have noted.

Communication skills (CSQ) and social functioning assessed by the LSP together with SOFAS explained a small part of the variance of depressive symptoms (20%). This finding suggests that more social factors are required to explain the presence of this kind of symptoms. Complexity of depressive symptoms and the particular relationship of affectivity with social functioning may underlie this.<sup>14,47</sup>

This may be the case with the minimum basis of communication skills and the real-world social daily skills measured by LSP (social contact and communication) in order to establish emotional bonds. Moreover, our results could be related to emotional processing, since previous studies have found a relationship between depressive symptoms and dysfunction in the perception of emotional states in people with schizophrenia.<sup>48,49</sup> All these explanations are related to the concept of social cognition. Considering that social cognition has been established as a mediator between social functioning and clinical symptoms, depressive symptoms should be assessed.<sup>50</sup>

Considering all the scales used for the assessment of social functioning, SOFAS has demonstrated to be the best social measure to explain clinical symptoms. This scale also has the advantage of being easy and quick to use, so it is a good choice for evaluating both social functioning and clinical symptoms. The use of other measures could also be useful to determine specific types of clinical symptoms, such as CSQ (Communication Skills) and LSP for depressive symptoms, and degree of discomfort of GR for positive and negative symptoms. The SFS is not a significant scale for the assessment of the relation between symptoms and social functioning. In this latter case, a possible explanation is that patients included in the study were being attended in a rehabilitation service, and the aspects of social functioning measured by SFS are geared to meet social objectives and not specifically to reduce clinical symptoms. In this line, the scores obtained on the SFS were average.

Some limitations should be considered. The most important is related with the instrument used for the assessment of symptoms. Although the CGI-S is a valid and reliable scale for the assessment of clinical symptoms, other scales will be more appropriated, for instance the Positive and Negative Syndrome Scale (PANSS).<sup>52</sup> Moreover, considering the relationship between negative symptoms and social functioning, future studies should include specific instruments as the Scale for the Assessment of Negative Symptom (SANS),<sup>53</sup> the Negative Symptom Assessment (NSA),<sup>54</sup> the Schedule for the Deficit Syndrome (SDS),<sup>55</sup> the Clinical Assessment Interview for Negative Symptoms (CAINS)<sup>56</sup> or the Brief Negative Symptom Scale (BNSS).<sup>57</sup>

**Table 4** Multiple regression of symptoms and predictors of psychosocial variables.

	CGI-S 1 Positive symptoms B (CI)	CGI-S 2 Negative symptoms B (CI)	CGI-S 3 Depressive symptoms B (CI)	CGI-S 4 Cognitive symptoms B (CI)	CGI-S 5 Total symptoms B (CI)
SOFAS	-0.082 (-0.137; -0.065)	-0.040 (-0.079; -0.002)	-0.021 (-0.041; -0.001)	-0.086 (-0.118; -0.053)	-0.061 (-0.089; -0.032)
Degree of discomfort GR	0.0883 (0.410; 1.355)	0.743 (0.176; 1.309)	-	-	0.750 (0.329; 1.171)
Communication skills CSQ	-	-	-0.060 (-0.100; -0.19)	-	-
LSP	-	-	-0.017 (-0.001; -0.033)	-	-
R <sup>2</sup>	0.651	0.345	0.202	0.467	0.591

## Conclusions

In conclusion, our results suggest the usefulness of social functioning assessment to explain clinical symptoms in people with schizophrenia. Specifically, our results suggest that the different measures of social functioning used in this study are related to psychotic symptoms. In this way, our data demonstrate the usefulness of the social functioning measurement, in order to assess the clinical severity of people with schizophrenia. Moreover, it is of great clinical relevance, mostly in the rehabilitation area, in which therapeutic goals often include social functioning aspects. On this matter, it is noteworthy that different aspects of social functioning are mainly related to psychotic symptoms, not only to negative or cognitive symptoms, but also to positive and depressive symptoms. This data "agrees with" the integrative and holistic approach of psychosocial treatment in schizophrenia rehabilitation. Likewise, this implies approaches that address not only general social functioning but also some specific aspects of social functioning, such as communication skills and strategies to cope with social discomfort, in order to ameliorate psychotic symptomatology.<sup>3,51</sup> Nevertheless, more studies should be done in other clinical settings in order to generalize these results, using other social assessments such as social cognition measures.

## Conflict of interest

The authors have no conflict of interests.

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