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Evidence of validity and reliability of the Spanish version of the "Observable Social Cognition: A Rating Scale" (OSCARS) in patients with schizophrenia

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ABSTRACT

Introduction. Social Cognition (SC) impairment is part of the deficit syndrome of schizophrenia. The Observable Social Cognition: A Rating Scale (OSCARS) evaluates the perceived SC through an external reference informant. The aim of this paper is to analyze the psychometric properties of validity and reliability of its cross-cultural adaptation for the Spanish population.

Methods. Observational and cross-sectional study in a sample of outpatients with schizophrenia (n = 109), selected by simple randomized sampling. Selected instruments: Hinting task, MATRICS cognitive consensus battery, clinical global impression scale (CGI-SCH) and specific data collection logbook.

Results. Exploratory Factor Analysis identified a two-factor model, like the original version, that explains 59.02% of the total variance: social cognitive bias and social cognitive ability. As in the original version, no correlation results were found with other SC measures: Hinting task (r: - 0.085; p value = 0.382) or MSCEIT of the MATRICS (r: 0.015; p value 0.877). No specific correlations were observed with other neurocognitive domains. Cronbach's alpha coefficient was 0.82 (0.75 and 0.76, for each factor). The mean weighted kappa value was 0.43. Intraclass Correlation Coefficient score, 0.84 (95% CI: 0.76 - 0.88; p <0.001)

Conclusions. These findings support the validity and the reliability of the cross-cultural adaptation of the OSCARS a tool to assess SC by a referent informant in individuals with schizophrenia with similar psychometric properties to the original version.

Key words. Schizophrenia; social cognition; caregivers; OSCARS scale; psychometric properties.

Actas Esp Psiquiatr 2021;49(6):253-68

EVIDENCIAS DE VALIDEZ Y FIABILIDAD DE LA VERSIÓN ESPAÑOLA DE LA "OBSERVABLE SOCIAL COGNITION: A RATING SCALE" (OSCARS) EN PACIENTES CON ESQUIZOFRENIA

RESUMEN

Introducción. El deterioro en la Cognición Social (CS) forma parte del síndrome deficitario de la esquizofrenia. La Observable Social Cognition: A Rating Scale (OSCARS) evalúa la CS percibida a través de un informador externo clave. El objetivo del estudio es analizar las propiedades psicométricas de validez y fiabilidad de su adaptación transcultural para población española.

Metodología. Estudio observacional y transversal en una muestra de pacientes ambulatorios con esquizofrenia (n = 109) seleccionados mediante muestreo simple aleatorizado. Instrumentos seleccionados: Tarea de Hinting, batería cognitiva de consenso MATRICS, escala de impresión clínica global (CGI-SCH) y cuaderno de datos ad hoc.

Resultados. El Análisis Factorial Exploratorio identificó un modelo de dos factores, igual al original, que explican el 59,02% del total de la varianza: sesgo cognitivo social y habilidad cognitiva social. Al igual que en la versión original, no se encontraron resultados de correlación con otras medidas de CS: tarea de Hinting (r: - 0,085; p = 0,382) o MSCEIT de la MATRICS (r: 0,015; p = 0,877). No se observaron correlaciones significativas con otros dominios neurocognitivos. El coeficiente alpha de Cronbach fue de 0,82 (0,75 y 0,76, para cada factor). El valor de kappa ponderado medio fue 0,43. La puntuación del Coeficiente de Correlación Intraclass, 0,84 (IC95%: 0,76 - 0,88; p<0,001)

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Conclusiones. Los hallazgos apoyan la validez y fiabilidad de la adaptación transcultural de la OSCARS como una herramienta de propiedades psicométricas equivalentes a la original que permite la evaluación de la CS mediante un informante referente en individuos con esquizofrenia.

Palabras clave Esquizofrenia; cognición social; cuidadores; escala OSCARS; propiedades psicométricas

INTRODUCTION

The concept of social cognition (SC) refers to the set of mental operations that underlie social interactions and guide social behavior^{1,2}. SC is one of the key endophenotype domains in the Research Domain Criteria (RDoC), a new classification system for mental disorders developed by the National Institute of Mental Health³. Some studies have suggested that SC mediates between neurocognition and functioning⁴⁻⁹. Individuals with schizophrenia may present impairments determined by a cognitive syndrome, with alterations at different levels^{2,10-13}.

The practical implications of these alterations on functioning make SC a potential therapeutic target. However, it is first essential to adequately define SC and its dimensions in schizophrenia¹³ and to reach consensus with regard to the optimal tools for the assessment of SC^{4,14}. Most of the currently available instruments present important limitations, including poorly-established psychometric properties (especially measures that evaluate specific dimensions)¹⁵, conceptual and content overlap between the various tests¹⁶, and the relatively long time required to administer the tests. These limitations hinder the practical application of these tools in the clinical setting.

Currently, two main strategies are available to evaluate SC. The most common strategy is to administer tests to evaluate performance on specific, conceptually-established domains. A second strategy involves the use of instruments designed to assess a general conceptualization of SC, such as the GEOPTE (Scale of Social Cognition for Psychosis)¹⁷, or analogous concepts, such as the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)¹⁸, which was included in the battery of tests for SC selected by the National Institute of Mental Health's "Measurement and Treatment Research to Improve Cognition in Schizophrenia" (MATRICS) consensus conference.¹⁹

An alternative approach involves characterising SC deficits based on information provided by the patient's primary caregiver, defined as the person who maintains regular contact with the patient. In fact, this approach—which has previously been used for neurocognitive assessment in schizophrenia (Schizophrenia Cognition Rating Scale; SCoRS)²⁰—inspired a

working group coordinated by David L. Penn at the University of North Carolina to develop a similar scale for SC, known as OSCARS (Observable Social Cognition: A Rating Scale)²¹. The OSCARS is a semi-structured clinical interview that evaluates SC by incorporating the perspectives of a key informant, the primary caregiver. OSCARS measures several of the main SC domains derived from the consensus established in the Social Cognition Psychometric Evaluation (SCOPE) study^{4,14}, including perception of emotion, theory of mind, attributional style, cognitive rigidity, and jumping to conclusions.

Although the GEOPTE scale can be used to assess SC¹⁷, the OSCARS take a different approach to measuring this construct by incorporating information provided by the key informant. The concurrent and discriminant validity and content of OSCARS were previously demonstrated, this scale has not yet been adapted and validated for use in Spanish-speaking countries. As a result, before this tool can be made available for use in routine clinical practice in Spain, it must first be translated and adapted, and then undergo psychometric evaluation.

In this context, the objective of the present study was to analyze the psychometric properties of the Spanish language version of the OSCARS and to determine the validity and reliability of this scale to assess social cognition in a sample of patients with schizophrenia receiving treatment at six therapeutic communities (TC) in Spain.

MATERIAL AND METHODS

Participants and procedures

The inclusion criteria for patients were as follows: (a) age ≥ 18 years; (b) diagnosis of schizophrenia based on ICD-10 (F20) criteria²²; (c) availability of active, specialised follow-up at a community mental health centre; and (d) presence of a primary caregiver, defined operationally as the person with the closest and/or regular contact with the patient, regardless of the specific relationship or bond. Inclusion criteria for caregivers were: a) age ≥ 18 years; b) fulfilment of criteria as "primary caregiver".

Exclusion criteria for patients and caregivers were as follows: a) presence of a comorbid mental disorder impairing cognitive performance (e.g., intellectual disability, severe cognitive impairment, or organic brain syndrome); b) psychotic decompensation; or c) difficulty in understanding Spanish language.

All participants (both patients and caregivers) signed the informed consent form. The study protocol was approved by

the provincial ethics committee of the Hospital de Puerta del Mar (Cádiz, Spain). Participants were recruited by simple random sampling from the list of patients with schizophrenia treated at our hospital. The evaluation was divided into four phases: 1) clinical interview (sociodemographic/clinical data, Clinical Global Impression-Schizophrenia scale [CGI-SCH], and the Hinting task); 2) neurocognitive assessment (MATRICS test battery, including the MSCEIT); 3) administration of specific interviews with the caregiver about the patient (the Subjective and Objective Family Burden Interview-II [SOFBI-II/ECFOS-II] and OSCARS) and MSCEIT for the caregiver; and 4) retest of the OSCARS.

These four phases of the study were performed by a psychiatrist and a psychologist specifically hired and trained for this study. The OSCARS retest was performed by telephone from 7 to 10 days after the first test. The participants' anonymity and confidentiality were guaranteed. No financial compensation was provided to any of the participants. Data collection was carried out from May 2016 to May 2019. The sample size was estimated according to the criteria established by MacCallum et al.²³. Assuming a loss rate of 20% (patients) and 15% (caregivers), we calculated that a sample of 110 participants would be needed.

Assessment instruments

Neurocognitive evaluation: The MATRICS consensus cognitive battery (MCCB)¹⁹ is a structured battery of tests designed to evaluate cognition. The MCCB consists of 10 instruments to assess cognitive function in patients with schizophrenia, which together take > 60 minutes to administer. The instrument was adapted and validated into Spanish by Rodríguez-Jiménez et al.²⁴. The scale uses one or more tests to evaluate cognitive functioning on different domains, as follows: processing speed; attention/vigilance; working memory; learning and verbal memory; visual learning and memory; reasoning and problem solving; and social cognition. All of the tests have shown adequate psychometric properties for each domain. Scores are normalised by age, sex and educational level.

Direct measures of social cognition in patients: Two measures were used to assess SC in the patients: 1) the MCCB¹⁹, which specifically and globally assesses the SC dimension, among other neurocognitive dimensions, through the MSCEIT¹⁸, which was originally developed to assess emotional intelligence by evaluating the individual's capacity to solve emotional problems. The MSCEIT was included in the MCCB battery as a measure of SC given that social cognition and emotional intelligence are analogous general concepts. The MSCEIT was adapted into Spanish by Extremera, Fernández-Berrocal, and Ramos²⁵. The test yields a total score and

specific scores on the four main areas defined in the model developed by Mayer et al.¹⁸: emotional perception, facilitation, understanding, and management. Second, the theory of mind dimension was specifically evaluated with the Hinting task (HT)²⁶, an instrument that requires subjects to demonstrate the ability to interpret clear hints dropped by two characters in a brief story. We used the short version (5 stories) validated into Spanish by Gil et al.²⁷.

Measure of social cognition through a key informant: The OSCARS²¹, validated for individuals with schizophrenia, assesses the overall impairment of SC based on information provided by the main caregiver. The OSCARS is administered through a semi-structured interview with the main caregiver²¹, although it can also be used as an informant-based questionnaire. During the interview (conducted individually), the evaluators provide a copy of the questionnaire to the caregiver to facilitate direct assessment of the patient. The interviewer's final assessment allows for disagreement on the various items based on the additional information obtained through interviews with the patient. If there are any doubts about a given item, the interviewer and the referring physician discuss the item to reach a consensus agreement. The total administration time ranges from 15 to 25 minutes. The scale contains eight items rated on a Likert-type scale ranging from 1 (no severity) to 7 (very severe).

Healey et al.²¹ determined the psychometric properties of the original scale. Construct validity was evaluated by exploratory factor analysis (EFA) using the maximum likelihood method, with Crawford-Ferguson Quartimax oblique rotation. In that study, the two-factor model presented a better fit: factor I (denominated *social cognitive bias*), contains items on attributional style (item 2), jumping to conclusions (item 3), and cognitive rigidity (items 4 and 5). Factor II (social cognitive ability) includes the items referring to theory of mind (items 6, 7, and 8) and emotional perception (item 1). Item 6 (theory of mind) did not clearly load on either factor. Patients with schizophrenia had significantly greater deficits in OSCARS than healthy controls [$F(1,108)$, $p < 0.001$] after controlling for IQ and educational level. No convergent validity was observed, except with the aggression index score of the Ambiguous Intentions Hostility Questionnaire (AIHQ). External validity with measures of functioning (the Global Social Functioning Scale [GSF]) showed a significant negative correlation ($r = -0.27$; $p < 0.05$). No discriminant validity with other measures of neurocognition (Wechsler Abbreviated Scales for Intelligence [WASI]) or clinical symptoms (the subscales of the Positive and Negative Syndrome Scale [PANSS]) was observed. Internal consistency was adequate, with a Cronbach's alpha coefficient (α) of 0.80 in this patient sample. The OSCARS showed moderate test-retest reliability, with a mean kappa value of 0.62, and an intraclass correlation coefficient (ICC) of 0.86.

We obtained the express authorization from the developers of the original scale to translate and adapt the scale into Spanish, following the conventional three stage process²⁸. First, two mental health care professionals, both with a strong understanding of English, translated the scale separately. Then, the two versions were actively compared to obtain a single, consensus-based version. This process was supervised by a third mental health care professional. Subsequently, the Spanish version was back-translated into English and sent to the original author (Dr. David L. Penn), who verified its conceptual equivalence.

Sociodemographic and clinical variables of patients and caregivers: Sociodemographic variables were collected using an ad hoc data collection notebook, which was completed for each patient and caregiver. For the patient, we also recorded clinical and disease-related variables, including duration of illness and number of admissions. The general severity of the disorder at the time of the interview was assessed by the CGI-SCH²⁹. For the caregiver, selected items taken from the SOFBI-II/ECFOS-II were included³⁰: type of living situation, type of kinship, and frequency of the relationship with the patient. In addition, the MSCEIT was administered according to the general population scales.

Statistical analysis

An OSCARS EFA of the translated version was performed using principal component analysis. The Kaiser criterion³¹ was applied to determine the number of factors to extract. Stevens criterion³² was used to select the items that loaded onto each factor. The VARIMAX rotation method (orthogonal transformation) was used to transform the solutions of the resulting matrix³¹. The overall homogeneity of the OSCARS was analyzed using two suitability tests from the EFA: the Kaiser-Meyer-Olkin (KMO) test³¹ and Bartlett's sphericity test³³. Convergent validity was assessed by determining the association between the OSCARS score and scores on the MSCEIT and the Hinting Task. Discriminant validity was determined according to the association between the OSCARS and scores of the other neurocognitive domains of the MATRICS. Pearson correlation coefficients were calculated in both cases³⁴.

For the reliability analysis, Cronbach's alpha³⁵ was determined to verify the internal consistency of the components. The resulting coefficient values were interpreted according to the criteria proposed by Nunnally³⁶. The item-by-item, test-retest analysis was estimated using the mean weighted kappa coefficient value. ICCs were calculated to assess concordance between the total scores³⁷. The difference in means between the two tests (test and retest) was evaluated using Student's t test. Statistical significance

was set at $p < 0.05$ for all tests. All analyses were applied to the entire sample. The only missing data were some variables from the HT and the MCCB. For all estimators, we calculated 95% confidence intervals (CI). All statistical analyses were performed with the SPSS statistical software, v.24.0 (IBM-SPSS Inc., Chicago, IL, USA).

RESULTS

Characterization and description of the sample

A total of 142 patients were initially identified for possible study inclusion. Of these, 21 did not meet the inclusion criteria and 11 dropped out during the evaluation process. Thus, the study sample included 109 patients (one fewer than the initial estimate of 110) with their corresponding caregiver. One patient and caregiver were subsequently excluded because the retest of the caregiver could not be included. Three other patients were excluded because of missing test data (HT, $n=2$; MCCB, $n=1$). The loss rate was less than the expected 10%, thus allowing for a sufficient sample size. Most of the sample (Table 1) was comprised of male patients (74.3%) diagnosed with chronic schizophrenia (mean duration: 18.8 years, $SD=11.47$), single (78.0%), living with their family of origin (62.4%), and permanently disabled or retired (48.6%).

The caregivers, by contrast, were mostly women (73.4%), married (59.6%), living with their own family (78.9%) and, to a lesser extent, either retired or with permanent work disability (37.6%). It can be seen in Table 2 how patients were moderately ill (mean CGI - SCH 2.95, $SD = 1.08$) at the time of evaluation, with a global neurocognitive impairment (mean global MATRICS percentile of 5.66 [$SD=12.42$]). According to the caregivers' assessment, the baseline impairment in SC was mild to moderate (mean OSCARS: 20.83, $SD=9.09$). However, the SC score given by caregiver on the MSCEIT deviated slightly from normality, with a mean percentile score of 41.57 ($SD=30.17$).

Analysis of the evidence of validity of the adapted version of the OSCARS

a) Evidence based on the internal structure of the adapted OSCARS (EFA) ($n=109$)

The correlation matrix was considered suitable for performing the EFA, given the value of 0.816 obtained for the Kaiser-Meyer-Olkin statistic and the high significance on Bartlett's sphericity test [$X^2 (28) = 258.78$; $p < 0.001$]. Based

Table 1 Demographic and clinical characteristics of patients and caregivers. Clinical aspects associated with clinical course in patients over the first few years and aspects related to the burden of care among caregivers.

Variable	Patients	Cuidadores N=109
Age. M (SD)	42.40 (12.71)	50.83 (15.52)
Sex. n (%)		
Male	81 (74.3)	29 (26.6)
Female	28 (25.7)	80 (73.4)
Civil status. n (%)		
Single	85 (78.0)	10 (9.2)
Married/cohabitating	13 (11.9)	65 (59.6)
Separated/divorced	9 (8.3)	13 (11.9)
Widowed	2 (1.8)	21 (19.3)
Years of schooling. M (SD)	11.56 (4.59)	8.5 (5.72)
Living situation. n (%)		
Alone	16 (14.7)	3 (2.8)
With own family	24 (22.0)	86 (78.9)
With family of origin	68 (62.4)	17 (15.6)
With own family and family of origin	0 (0.0)	1 (0.9)
Other family and/or friends	1 (0.9)	2 (1.8)
Work status. n (%)		
Paid work	6 (5.5)	25 (22.9)
Paid work without legal coverage	4 (3.7)	5 (4.6)
Unpaid work	4 (3.7)	5 (4.6)
Unemployed	42 (38.5)	33 (30.3)
Retired/Pensioner	53 (48.6)	41 (37.6)
Years since disease onset. M (SD)	18.81 (11.47)	-
Number of hospital admissions. M (SD)	1.91 (1.69)	-
Number of people in their care. M (SD)	-	1.82 (1.22)
Time dedicated to care (hours per week). n (%) ^a		
< 1 hour	-	50 (45.9)
From 1 to 4 hours	-	46 (42.2)
From 5 to 7 hours	-	12 (11.0)
From 8 to 14 hours	-	1 (0.9)

a. The time ranges are based on the ECFOS-II scale. Higher ranges are not included as no caregivers dedicated more than 14 hours per week

- M: mean; SD: standard deviation; n: number of subjects. %: percentage of total in each group (n=109).

Table 2

Psychopathological status at evaluation. Mean values (M) with standard deviation (SD) are given for clinical status assessed by clinical impression and measures of social cognition and neurocognition. OSCARS scores are given for the initial evaluation and the retest (performed 7 to 10 days later).

Social cognition, neurocognition, and clinical variables	Patients
CGI-SCH, M (SD)	2.97 (1.08)
OSCARS, baseline, M (SD)	20.83 (9.09)
OSCARS, retest, M (SD)	19.75 (7.79)
HT total ^a , M (SD)	7.09 (2.88)
MATRICES domains ^b (percentiles). M (SD)	
Processing speed	10.77 (16.65)
Attention/vigilance	15.74 (19.92)
Verbal learning	8.70 (18.05)
Visual learning	12.35 (21.39)
Working memory	12.11 (16.45)
Reasoning and problem solving	18.54 (23.45)
Social cognition (MSCEIT)	35.99 (29.37)
Global neurocognition	5.66 (12.42)

a. Sample size (N): 107.

b. Sample size (N): 108.

• M: mean; SD: Standard deviation.

• CGI-SCH: Clinical Global Impression-Schizophrenia scale; OSCARS: Observable Social Cognition Rating Scale; HT: Hinting Task, total score; MATRICES: Measurement and Treatment Research to Improve Cognition in Schizophrenia; MSCEIT: Mayer-Salovey-Caruso Emotional Intelligence Test.

44.02% of the total variance; when factor 2 was added, the two factors explained 59.02% of the variance.

Factor I (*social cognitive bias*) included items associated with attributional style (item 2), jumping to conclusions (item 3), and cognitive rigidity (item 4 and item 5). For this reason, we decided to maintain the same term used in the original study—*social cognitive bias*—to describe factor 1. Similarly, factor II incorporated the items that explore theory of mind (items 6, 7, and 8) and emotional perception (item 1), which also supports the use of the term *social cognitive ability* to describe factor II.

on the Kaiser criteria³⁸, we obtain a two-factor solution (Table 3), both of which are easy to interpret clinically. This two-factor solution agreed with the solution found in the validation of the original OSCARS²¹. Factor I explained

Table 3 Evidence of validity of the internal structure of OSCARS: confirmatory factor analysis. After the VARIMAX rotation and orthogonal transformation, we obtained the weighted loading values (Pearson correlations) for each item in the two-factor model.		
OSCARS items	Factors ^{a,b}	
	I	II
1. Recognizing other people's emotions based on facial expression (EP).	0.083	0.730
2. Interpreting social interactions (AS).	0.731	0.343
3. Making decisions quickly without examining other evidence (JC).	0.638	0.156
4. Flexibility in interpreting social situations (CF).	0.837	0.053
5. Change or correct interpretation of social interactions when wrong (CF).	0.702	0.239
6. Understanding subtle jokes, sarcasm and insults (TOM).	0.340	0.579
7. Seeing things from the perspective of others (TOM).	0.305	0.774
8. Understanding subtle social cues, hints and indirect requests (TOM).	0.126	0.828
^a The component loadings > 0.55 are highlighted in bold to facilitate interpretation of the data ^b The names of the factors are social cognitive bias (I) and social cognitive ability (II) • EP: Emotion Perception; AS: Attributional style; JC: Jumping to conclusions; CF: cognitive flexibility; TOM: Theory of mind		

b) Evidence based on the association with other variables: convergent and discriminant validity

Table 4 shows the convergent validity values for the OSCARS. The Pearson correlation coefficient between the total OSCARS and HT scores (n=107) was not statistically significant (r: -0.085, p = 0.382). Likewise, we found no significant association between the HT score and the scores on OSCARS factors I and II. However, factor II presented a low, but non-significant negative correlation (r: -0.168; p = 0.084).

As the Pearson r values shown in Table 4 indicate, neither the total OSCARS score (r: 0.015; p=0.877) nor either of the two factors significantly correlated with the MSCEIT (n=108).

Table 4 Validity analysis based on the correlations with other variables: convergent and discriminant validity. Pearson correlations (r) with p values between the OSCARS and other convergent variables (e.g., theory of mind and social cognition) and divergence with the other dimensions of the MATRICS		
Correlation of instruments	OSCARS basal	p – value
<i>Hinting task (TOM^a)^b</i>	- 0.085	0.382
MATRICS domains ^c :		
<i>Processing speed</i>	0.010	0.919
<i>Attention/ vigilance</i>	- 0.071	0.466
<i>Verbal learning</i>	0.049	0.612
<i>Visual learning</i>	- 0.022	0.819
<i>Working memory</i>	- 0.001	0.995
<i>Reasoning and problem solving</i>	- 0.016	0.872
<i>Social cognition (MSCEIT)</i>	0.015	0.877
<i>Global neurocognition</i>	- 0.016	0.868
^a Theory of mind ^b N = 107 ^c N = 108		

In terms of the association between OSCARS and the other neurocognitive dimensions (n=108) assessed on the MCCB, we found no significant association between any of those domains and the total score of the OSCARS or its factors.

Analysis of the reliability of the adapted version of the OSCARS (n = 109)

Cronbach's alpha was 0.82 (0.75 and 0.76 for factors I and II, respectively), which is considered adequate based on the criteria proposed by Nunnally³⁶. In terms of item-by-item, test-retest reliability, the weighted Cohen's kappa coefficients presented a mean value of 0.43, indicating a moderately strong agreement. The difference in means between the initial and retest scores was 1.08 points (95% CI: -0.12 to 2.28), a non-significant difference. The differences between the test and retest score for each item was close to zero (maximum and minimum differences: 0.21 and 0.05, respectively) and not statistically significant. Test-retest reliability for the total scores was good, with an ICC of 0.84 (95% CI: 0.76 - 0.88; p <0.001).

DISCUSSION

The results of this study confirm the validity and reliability of the Spanish-language version of the OSCARS. The Spanish version presents similar characteristics and limitations to those identified in the original scale, most notably the lack of convergent validity with other measures of social cognition. Despite its limitations, OSCARS is a brief, comprehensive instrument to determine social cognition based on the perspectives of caregivers.

In the present validation study, the Spanish version had the same two-factor structure as the original version and a congruent clinical interpretation. Factor I (*social cognition bias*) evaluates indicators of social cognition related to impulsivity, hostility, and rigidity. Factor II (*social cognition ability*) assesses aspects related to perceptual skills and reasoning that are closer to the theory of mind domain. In the original scale, item 6 (understanding of jokes, sarcasm, or insults) was included in the second factor for conceptual reasons. However, in our study, the factor II load was sufficient (0.579) and significant. Structurally, this finding strengthens support for the two-factor model and the distribution of the items.

As Healey et al. indicated in the original validation study²¹, the total or factor scores of the OSCARS have not shown convergent validity with other measures of SC in patients with schizophrenia. Although our study involved a larger sample of patients and caregivers with less diagnostic diversity (i.e., only patients diagnosed with schizophrenia were included), we did not observe any significant correlation between the OSCARS and other measures of SC (MSCEIT¹⁸ or Hinting task²⁶). Healey and colleagues suggested that the lack of correlation between these scales could have been attributable to the heterogeneity of the informants. Although we also observed some variability among the caregivers in our sample, parents (mothers or fathers) accounted for nearly half of the sample. Furthermore, the slight impairment in SC observed in these individuals could explain the absence of convergent validity. Similarly, this lack of correlation could be attributable to differences in the conceptualization of SC in the different measures. For example, Hinting's task involves the operationalized evaluation of a single domain, the theory of mind. OSCARS factor II is the closest measure of this dimension, but it also assesses other SC-related capacities and the patient's usual relational environment. In fact, in the study by Healey et al., AIHQ was only non-significantly correlated ($p=0.09$) with OSCARS and factor II scores. Although the clinical value of the AIHQ is low, its inclusion would have enriched the validation process. The lack of convergence with the MSCEIT has a similar explanation. The MSCEIT is designed to evaluate the SC dimension in the MCCB, and thus it has an analogous

but different conceptualization of SC better understood as emotional intelligence. In contrast, the divergent validity was clearly demonstrated in both the present and original validation studies.

This validation study further confirms the scale's internal consistency, with a Cronbach's alpha³⁵ that was greater than the 0.7 cut-off point established by Nunnally³⁶, and practically the same as that observed in the original study (0.82 and 0.80, respectively). Item-to-item agreement was moderate based on the mean weighted kappa value (0.43), which was somewhat less than the value (0.62) found by Healey et al. Finally, the test-retest total scores showed a high level of agreement, with a³⁷ Cronbach's α of 0.84, confirming the stability of the values obtained in the same participants at different time points. The ICC in our study was also similar to the original (0.84 vs. 0.86), indicating similar test-retest reliability.

Although the time interval between the test and retest was the same as in the original study, we encountered logistical difficulties due to the geographic dispersion of our health catchment area. To overcome this issue, we took a more flexible approach, extending the retesting window to 10 days and allowing for the test to be performed telephonically. We believe that this increased flexibility allowed the caregivers to maintain their global impression of the patient's condition, but probably made it more difficult to refine the specific score of each item. When interviews are performed in person, communication is more fluid, allowing for more time to fine-tune the response. Nevertheless, we believe that the clinician's training and experience with the instrument and the face-to-face interviews have minimised the impact of this situation.

The published evidence supports the clinical potential of OSCARS to assess SC, which may better reflect patient functioning³⁹ and social outcomes⁶ than neurocognitive tests. The external evaluation from an informant/caregiver may reduce the influence of insight. Indeed, SC correlates more closely with functioning when assessed by an informant⁴⁰. Recently, Harverson et al. evaluated the psychometric properties of the self-administered OSCARS and its correlation with functioning, which may permit a more comprehensive exploration of this area in the future⁴¹. In future studies, it would be valuable to explore the validity and reliability of this tool to measure perceived SC and its correlation with insight, and to explore the convergence with other SC assessment tools that are conceptually closer. Similarly, as in the original validation study, it would be interesting to better study the psychometric properties of this scale by comparing results in a sample of healthy controls, even to assess its capacity to clinical discriminate between patients and controls.

This study has several limitations. First, it was conducted in an outpatient sample. This was necessary in part due to the type of instrument, which requires caregivers who know the patient well and are in close and frequent contact. In addition, the telephone-based retest may have influenced the test-retest reliability; the results would have been more reliable if both tests had been performed under identical conditions. Finally, more studies that include additional scales are needed to better determine the discriminant and convergent validity of this tool.

CONCLUSIONS

There is a growing body of evidence pointing to the clinical utility of evaluating social cognition, which may also provide valuable data for research. Despite the limited convergent validity between the OSCARS and other measures of SC, the OSCARS, developed by the working group coordinated by David L. Penn²¹, provides a reliable, brief alternative to assessing SC through an informant. The data provided in the present study support the cross-cultural validation into Spanish of the OSCARS scale for patients with schizophrenia.

Conflict of interests

The authors declare that they have no conflict of interest.

Acknowledgments

This study was financed by the European Regional Development Fund (ERDF) after competitive calls from the Health Department of the Regional Government of Andalucía in 2016 (project PS-0037-2016) and Integrated Territorial Investment of the province of Cádiz in 2017 (project PI-0064-2017). The promoting institution was the Progress and Health Foundation (PHF) within the framework of the Biomedical Research and Innovation Institute of Cadiz (INiBICA). We thank all these institutions and, especially, the participants for their collaboration, without whose help we would not have been able to conduct this study. Neither the PHF nor INiBICA were involved in the publication strategy for this manuscript.

Annex A: Spanish-language version of the OSCARS scale.

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ABBREVIATIONS

SC, social cognition; USMC Unidad de Salud Mental Comunitaria; UGC Unidad de gestión clínica; AGS Área de Gestión Sanitaria; EFE, *exploratory factor analysis*; SD, *standard deviation*.

Annex

OBSERVABLE SOCIAL COGNITION: A RATING SCALE (OSCARS)

David L. Penn, Ph.D.; Dennis Combs, Ph.D.; David Roberts, M.A.; Steven Silverstein, Ph.D.; and Richard Keefe, Ph.D.

Relación con la persona que puntúa (paciente): _____

Fecha de la entrevista: ____/ ____/ ____/

Por favor, evalúe la dificultad del paciente en cada una de las 8 áreas usando la escala proporcionada a continuación. Por favor puntúe la gravedad de sus problemas desde 1 (ninguno) hasta 7 (muy grave). Los números más altos sugieren mayor gravedad.

Evalúe el comportamiento de la persona a lo largo de los últimos 7 días. Considere cualquier interacción que haya tenido con él/ella y la que haya observado que él/ella haya tenido con otras personas.

Para cada pregunta, proporcionamos un ejemplo general sobre el comportamiento en cuestión, la escala de calificación (del 1 al 7), el nivel de gravedad (desde ninguno a muy grave) y las descripciones de los comportamientos que corresponden a cada puntuación. Por favor puntúe todas las preguntas. Indique sus puntuaciones rodeando los números de la escala para cada pregunta. Puede usar cualquier número de la escala.

Nivel de gravedad en la escala de puntuación

1	2	3	4	5	6	7
Ninguno	Muy leve	Leve	Moderado	Moderada- mente grave	Grave	Muy grave

¿El sujeto tiene dificultad en las siguientes áreas?

1. ¿Reconoce las emociones de otras personas, particularmente las emociones negativas (tristeza, miedo y enfado) a partir de las expresiones faciales, el lenguaje corporal y/o el tono y el ritmo de la voz?

Ejemplos: Cuando habla con alguien, el sujeto no puede decir si la otra persona está molesta o enfadada. Parece no percibir cómo se sienten otras personas.

1	Ninguno	Puede reconocer expresiones emocionales marcadas, moderadas o sutiles. Se le reconoce como "socialmente perceptiva" (reconoce las claves sociales).	Informante 1 2 3 4 5 6 7
2	Muy leve		
3	Leve	Reconoce fácilmente la expresión de las emociones marcadas y explícitas, tales como llorar, gritos de enfado o la risa eufórica. Puede no reconocer las emociones expresadas de forma moderada. Sin embargo, él/ella no reconoce las expresiones sutiles, tales como una decepción expresada solo mediante una mueca o un leve movimiento bucal.	Entrevistador 1 2 3 4 5 6 7
4	Moderado		
5	Moderadamente grave	Reconoce la mayoría de las emociones marcadas y explícitas. No reconoce las expresiones moderadas o sutiles.	
6	Grave		
7	Muy grave	No reconoce o nunca reconoce la expresión de emociones marcadas, moderadas ni sutiles. La otra persona debe indicarle qué emoción está expresando ("Estoy muy enfadado").	

2. ¿Interpreta las interacciones sociales de forma malévola u hostil?

Ejemplo: el sujeto ve a los demás como si intentaran hacerle daño, especialmente en situaciones ambiguas (poco claras). Por ejemplo, él/ella camina entre un grupo de personas que se están riendo y piensa que se ríen de él/ella. O, cuando el sujeto no encuentra un objeto personal piensa que alguien se lo ha quitado. (Si es así, pregunte la frecuencia).

1	Ninguno	El sujeto no culpa inmediatamente a los demás ni piensa que tengan malas intenciones. Él/ella considerará la posibilidad de que otros factores, como los relacionados con el contexto, podrían haber causado el resultado (por ejemplo, que los demás se estén riendo de una broma y no de él/ella).	Informante 1 2 3 4 5 6 7 Entrevistador 1 2 3 4 5 6 7
2	Muy leve	A veces siente que otros intentan hacerle daño de forma fugaz o efímera.	
3	Leve		
4	Moderado		
5	Moderadamente grave	Frecuentemente interpreta el comportamiento de los demás de forma malintencionada. Puede que a veces acuse a sus amistades/personas más cercanas de actuar de forma malintencionada.	
6	Grave	De forma generalizada, piensa que los demás actúan con mala intención, lo cual incluye tanto a sus amistades/personas más cercanas como a los extraños. La mayoría de las veces estas creencias son infundadas.	
7	Muy grave		

3. ¿Toma decisiones rápidamente (p.e, se precipita al llegar a una conclusión) sin haber analizado otras pruebas?

Ejemplo: El sujeto intenta llamarle y usted no contesta. Inmediatamente, él/ella cree que no contesta porque está enfadado con él/ella. (Si es así, pregunte por la frecuencia).

1	Ninguno	No toma decisiones a la ligera; es reflexivo y prudente. La persona contrasta la información y se toma su tiempo para sopesar cuidadosamente los pros y contras antes de tomar una decisión.	Informante 1 2 3 4 5 6 7 Entrevistador 1 2 3 4 5 6 7
2	Muy leve	A veces toma decisiones usando únicamente la información más inmediata. Algunas veces, si el sujeto está motivado, puede decidir utilizando información adicional, sopesando los pros y los contras.	
3	Leve		
4	Moderado		
5	Moderadamente grave	A menudo toma decisiones usando únicamente la información más inmediata. Es necesario sugerirle al sujeto que tenga en cuenta otras fuentes de información y se tome su tiempo para decidir.	
6	Grave	Con frecuencia solamente usa la información más inmediata para tomar decisiones. El sujeto no contrasta información adicional y parece que juzga casi sin pensarlo. Se muestra irracional.	
7	Muy grave		

4. ¿Es flexible al interpretar las situaciones sociales?

Ejemplo: El sujeto está esperando a alguien en un restaurante y este llega 20 minutos tarde. El sujeto concluye que la persona no quiere quedar con él cuando en realidad podría estar en un atasco o haber tenido un pinchazo de neumático. Él/ella no considera otras alternativas que hayan causado que la persona llegue tarde y se aferra a una única opinión.

1	Ninguno	Cuando considera el comportamiento de otros, él/ella puede plantear múltiples razones por las cuales ellos han actuado del modo en que lo hicieron.	Informante 1 2 3 4 5 6 7 Entrevistador 1 2 3 4 5 6 7
2	Muy leve		
3	Leve	Tiene problemas a la hora de hacer conjeturas /suposiciones, pero puede hacerlas si le dan otro punto de vista.	
4	Moderado		
5	Moderadamente grave	Tiene problemas para pensar en múltiples explicaciones posibles para entender el comportamiento social de los demás. Tiene que ser incitado para que considere diferentes conjeturas /suposiciones sobre el comportamiento de otras personas.	
6	Grave		
7	Muy grave	No comprende que sea posible más de una interpretación sobre una situación y es incapaz de considerar otras conjeturas/suposiciones.	

5. ¿Puede cambiar o corregir su interpretación de interacciones sociales cuando se equivoca?

Ejemplo: El sujeto ve a dos personas susurrando y piensa que están hablando sobre él/ella. Esta creencia se mantiene incluso cuando le dicen que una de estas personas está hablando sobre situaciones personales que no tienen que ver con el sujeto.

1	Ninguno	Es capaz de buscar y sopesar pruebas a favor y en contra de una creencia dada sobre otra persona.	Informante 1 2 3 4 5 6 7
2	Muy leve		
3	Leve	El sujeto considerará pruebas que contradigan las posibles malinterpretaciones que él o ella haya hecho, aunque, en cualquier caso, puede mantener la creencia errónea.	Entrevistador 1 2 3 4 5 6 7
4	Moderado		
5	Moderadamente grave		
6	Grave	A menudo, el sujeto evita considerar hechos que contradigan su punto de vista, o puede argumentar fuertemente en contra de ellos, en general manteniendo la creencia equivocada.	
7	Muy grave		
		El sujeto rechaza considerar pruebas contradictorias. Es imposible hacerle cambiar de idea, incluso cuando esta es claramente errónea.	

6. En una conversación, ¿entiende las bromas sutiles, el sarcasmo o los insultos?

Ejemplo: Alguien dice durante una comida, en tono sarcástico, que es la mejor que ha probado nunca pero el sujeto no se da cuenta de que se trata de un insulto y/o sarcasmo.

1	Ninguno	El sujeto capta las bromas sutiles, los insultos o los sarcasmos.	Informante 1 2 3 4 5 6 7
2	Muy leve		
3	Leve	A veces el sujeto no capta las bromas sutiles o los insultos hechos por otros (por ejemplo, "¡Oh sí, me <i>encanta</i> trabajar 15 horas al día!"). Parece que le cuesta captar el significado de las bromas y el sarcasmo.	Entrevistador 1 2 3 4 5 6 7
4	Moderado		
5	Moderadamente grave		
6	Grave		
7	Muy grave		
		El sujeto no capta las sutilezas en absoluto. Las conversaciones deben ser concretas y directas para que pueda comprenderlas (por ejemplo, payasadas).	

7. ¿Ve las cosas desde el punto de vista de los demás? (p.e. ponerse en la piel del otro).

Ejemplo: el sujeto no puede entender por qué alguien se siente molesto o enfadado en una situación concreta. O, cuando está viendo una película triste, no se siente conmovido.

1	Ninguno	Al sujeto se le puede describir como empático. Cuando está viendo una película triste o alegre (o leyendo un libro triste o alegre) puede con- comverse.	Informante 1 2 3 4 5 6 7
2	Muy leve		
3	Leve	Rara vez indaga o se pregunta sobre los sentimientos o el estado mental de los demás (por ejemplo, "¿Te gusta eso?" o "¿Estás confundido?"), pero entiende cuando la gente lo expresa claramente.	Entrevistador 1 2 3 4 5 6 7
4	Moderado		
5	Moderadamente grave	Solamente reacciona empáticamente con los demás cuando expresan fuertes emociones. No pregunta ni responde a las opiniones o experien- cias ajenas. Cuando pregunta, puede tener dificultad al imaginar lo que los demás podrían estar pensando.	
6	Grave		
7	Muy grave	Es incapaz de juzgar adecuadamente lo que los demás podrían estar pensando o sintiendo, excepto en las circunstancias más extremas (sen- tir tristeza tras la muerte de un ser querido).	

8. Comprende las señales sociales sutiles, insinuaciones y peticiones indirectas (un ejemplo de una petición indirecta sería cuando un hijo/hija quiere un juguete, pero en vez de decirlo directamente, comenta lo bonito que es).

Ejemplo: estás intentando leer un libro o ver la televisión y el sujeto sigue hablándote, incluso cuando tú das señales sutiles e insinuaciones de que la conversación no te interesa en esos momentos (por ejemplo, utilizas respuestas cortas; no mantienes el contacto ocular).

1	Ninguno	El sujeto capta fácilmente las señales sociales y/o las peticiones indirectas. Por ejemplo, si estás ocupado y él empieza a hablarte, percibe fácilmente que tú no puedes hablarle en ese momento.	Informante 1 2 3 4 5 6 7
2	Muy leve	El sujeto no capta las señales sociales al principio, pero lo hace tras uno o dos minutos. Le lleva más tiempo captar los consejos y las señales sutiles.	
3	Leve		
4	Moderado		Entrevistador 1 2 3 4 5 6 7
5	Moderadamente grave	El sujeto no capta las señales sociales y necesita un número de pistas explícitas (que uno se gire cuando habla) para que entienda el mensaje.	
6	Grave		
7	Muy grave		El sujeto no capta las señales sociales y se le deben hacer explícitas directamente. O el sujeto no entiende las insinuaciones sutiles o las peticiones indirectas.

OSCARS Spanish versión:

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