Originals

R. Mendoza Quiñones¹ M. Martín Reyes¹ T. Díaz de Villalvilla¹ D. T. M. Bravo¹ A. Caballero Moreno² P. Lomba³ A. Padrón Fernández⁴ Scale for assessing perceptual anomalies. Validation of a Spanish version of the SIAPA scale in a sample of Cuban schizophrenic patients

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alntroduction. Perceptual-attentional disorders other than hallucinations in schizophrenic patients have been studied little. In this work, the results of the Spanish version of the SIAPA scale to detect perceptual-attentional anomalies to real stimuli other than hallucinations in a sample of schizophrenic patients in a community study in Cuba are presented

Methods. 329 subjects were studied: 129 schizophrenic patients and 200 controls. Patients were diagnosed by psychiatrists according to DSM-IV criteria. The SIAPA and PANSS scales were used for the study. Cronbach's alpha coefficient was determined to analyze internal consistency. Reliability, validity of current criterion and structural validity were measured. Comparisons between groups were made using the ANOVA.

Results. Schizophrenic patients had more perceptual anomalies than healthy controls. Auditory and visual perceptual anomalies were more frequent. The scale showed high internal consistency (Cronbach's alpha 0.84). Using a PANSS scale cut-off score of 60, validity had a sensitivity of 56 % and specificity of 79%. All modalities of SIAPA scales showed good kappa coefficients (0.72-0.85).

Conclusions. This scale showed similar internal validity and test-retest reliability to those reported in the English version. The results showed that this scale can differentiate the presence of perceptual anomalies in schizophrenic patients from healthy controls. Therefore, we suggest that the SIAPA scale may be useful for assessing perceptual anomalies in clinical researching for cognitive impairment evaluations.

Positive and negative symptoms. Schizophrenia. Perceptual anomalies. SIAPA scale.

Actas Esp Psiquiatr 2007;35(1):15-19

Correspondence: Migdyrai Martín Reyes Centro de Neurociencias de Cuba. CNC Centro Nacional de Investigaciones Científicas. CNIC Av 25, esquina 158. Cubanacán. Playa 11400 Ciudad Habana. Cuba E-mail: migdyrai@yahoo.com Escala de evaluación de las anomalías perceptuales. Validación de la escala SIAPA al español en una muestra de pacientes esquizofrénicos cubanos

Introducción. Las alteraciones perceptuales-atencionales diferentes de las alucinaciones en los pacientes esquizofrénicos han sido poco estudiadas. En este trabajo se presentan los resultados de la versión al español de la escala SIAPA para detectar anomalías perceptuales-atencionales a estímulos reales diferentes de las alucinaciones en una muestra de pacientes esquizofrénicos en un estudio comunitario en Cuba.

Métodos. Se estudiaron 329 sujetos: 129 esquizofrénicos y 200 controles. Para el diagnóstico se usaron los criterios diagnósticos del DSM IV. Para el estudio se aplicó la escala SIAPA y la escala PANSS. Se determinó el coeficiente alpha de Cronbach para analizar la consistencia interna. Se determinó la fiabilidad, la validez de criterio concurrente y la validez estructural. La comparación entre los grupos se realizó con el test de análisis de varianza ANOVA.

Resultados. Los pacientes presentaron más alteraciones perceptuales-atencionales diferentes de las alucinaciones que los sujetos normales, principalmente en las modalidades auditivas y visuales. La consistencia interna fue de 0,84. Se obtuvo una sensibilidad del 56% y una especificidad del 79%. Se obtuvo índices de fiabilidad (Kappa) adecuados (0,72-0,85) en las diferentes subescalas del SIAPA

Conclusiones. En este estudio se obtuvieron valores de confiabilidad y validez de la escala similares a los obtenidos con la versión inglesa. Esta escala permite diferenciar la presencia de alteraciones perceptuales-atencionales diferentes de las alucinaciones en pacientes esquizofrénicos en comparación con la población general. Esta escala puede ser utilizada en investigaciones clínicas y epidemiológicas para la evaluación de alteraciones perceptuales-atencionales.

Palabras clave: Síntomas negativos y positivos. Anomalías perceptuales. Esquizofrenia. Escala SIAPA.

Key words

INTRODUCTION

Schizophrenia is a mental disease that affects 1% of the world population. This disease causes great incapacity to the patient, family and society. It generally initiates in adolescent or early adult age with tendency to evolve towards chronicity. That is why it is considered as a health problem¹. Schizophrenic patients may have symptoms characteristic of psychosis. These should be taken into account in the diagnostic criteria of the current classifications^{2,3}. However, they also have cognition disorders within which we can include perceptual-attentional anomalies to real stimuli and alterations in the sensorial gating^{4,5}. Since the initial works of McGhie and Chapman^{6,7} the presence of perceptual-attentional anomalies other than hallucinations have been described in schizophrenic patients. Symptoms that go from concentration problems, increased awareness of background noises and intensity of light and colors to hyperalert states and poor selective attention to real stimuli have been reported⁸. However, these clinical alterations do not form a part of the diagnostic criteria for the disease because, as we previously mentioned, the basic emphasis is focused on the psychosis symptoms^{2,3}. Due to this and the limitations in the methodology to approach the perceptual-attentional anomalies to the real stimuli, they have been studied little.

The same does not occur with hallucinations. These are the most characteristic symptoms of the schizophrenic patients and their presence forms a part of the current diagnostic criteria. Thus, hallucinations have been studied more than perceptual anomalies to real stimuli. Instruments have been designed that aim to evaluate hallucinations or the beliefs the patients have about them. Some of these scales have been validated to Spanish. An example of this is the PSYRATS Scale (Psychotic Symptom Rating Scales) that evaluates auditory hallucinations and showed excellent psychometric qualities in the Gonzáles JC et al. study⁹. Another translation to Spanish has been done on The Revised Beliefs About Voices Questionnaires (BAVQ) in a sample of Mexican patients. It has been demonstrated that it is a valid and reliable instrument for the Hispanic population¹⁰.

Some authors propose that hallucinations should be understood as a functional continuum that goes from normal behavior to the very psychotic⁹. In spite of this, there are few instruments that evaluate perceptual-attentional anomalies other than hallucinations.

Since the initial works of McGhie and Chapman, it has been hypothesized that disorders of attention and perception to sensorial stimuli are secondary to loss of capacity to filter sensorial stimuli and that these alterations may contribute to the psychotic condition^{11,12}.

In order to have an instrument that could study perceptual-attentional anomalies other than hallucinations, clinical symptoms described by Chapman et al.¹¹ and to also be able to relate this anomalies in some way with the psychophysiological findings that report sensorial gating problems of the patients, Bunney et al., in 1999, elaborated the SIAPA scale (Structured Interview for Assessing Perceptual Anomalies)⁸.

This scale makes it possible to examine: *a*) hypersensitivity to real external stimuli; *b*) sensation of inundation to real stimuli, and *c*) selective attention problem to «real» external stimuli. This work found that schizophrenic patients had more perceptual alterations, basically auditory and visual, than normal subjects⁸.

Currently, there is no similar battery in the Spanish language that can measure perceptual-attentional alterations other than hallucinations. The purpose of our work is to translate the SIAPA scale into to Spanish and determine its psychometric properties in a sample of Cuban schizophrenic patients.

METHODS

Sample

A total of 329 patients were studied: 129 were out-patient schizophrenic patients in two Cuban communities. The patients were interviewed with the SCAN system¹³ (Schedules for Clinical Assessment in Neuropsychiatry) and the DSM IV criteria were used for diagnosis¹⁴. Two hundred normal subjects without any personal or family background of psychiatric diseases were studied and were included as controls (table 1). All accepted and signed the terms of the consent to perform the study.

A Spanish version of the SIAPA scale was designed for the examination of perceptual-attentional anomalies. The scale was translated into Spanish and retranslated to English by two independent bilingual translators familial with the subject matter of the scale. One of the translators is a specialist in neurophysiology and the other is a psychiatrist. The translation was also discussed among the group of psychiatrists who participated in the study to control the objectivity and clarity of the scale in that Spanish spoken in our country.

The scale consists of 15 items, that are grouped into 5 sensorial subscales or modalities (auditory, visual, tactile, olfactory and gustative); each modality is made up of 3 sections that examine the phenomena of: a) hypersensitivity to real stimuli; b) sensation of inundation to the stimuli, and c) selective perception to real stimuli⁸.

Each item is graded according to a Likert type scale of 5 values that refers to the frequency in which the symptoms occur (1: never or no symptom; 2: sometimes; 3: half of the time; 4: frequently, and 5: always). The score of each one of the modalities is obtained by adding the scores of the three sections. For each sensorial modality, the score ranges from 3 to 15. The time reference framework is one week prior to the interview.

Table 1	Gen	General characteristics of sample			
		Patients	Controls		
Ν		129	200		
Age		38.69 (<u>+</u> 12.19)	49.56 (<u>+</u> 16.68)		
Gender (male)		80%	41%		
Race (n)					
White		114 (88.37%)	140 (70.00%)		
Black		9 (6.97%)	35 (17.50%)		
Mixed		6(4.65%)	25 (12.50%)		
Schooling					
Primary level		32 (24.80%)	33 (16.00%)		
Secondary level		35 (27.13%)	67 (33.50%)		
Pre-university level		52 (40.30%)	83 (41.50%)		
University level		10 (7.75%)	17 (9.00%)		
Diagnosis					
Paranoid schizophrenia		110 (85.27%)			
Non-paranoid					
schizophrenia		19 (13.73%)			
Onset age	Onset age				
Evolution time		17.37 (<u>+</u> 12.6)			

No score for the evaluation was assigned to the normal and daily perceptual experiences that could be unpleasant or bothersome to most of the people. Hallucination or delusional experiences in patients with psychotic episodes were also not taken into account and seriousness was defined (pathological symptoms) based on degree of interference with mental functions, social and occupation performance. The scale was applied by five previously trained psychiatrists, using the structured interview technique. Approximate administration time was 25 minutes.

The Spanish version of the positive and negative syndrome scale (PANSS) of schizophrenia¹⁵ was used to evaluate psychopathology. Schizophrenic syndrome was evaluated from the dimensional perspective that measures the seriousness of the positive and negative syndrome and of the general psychopathology. It is made up of a positive and negative subscale that includes 7 items each and a third subscale of general psychopathology of 16 items. Each item is scored according to a 7 grade Likert scale of intensity or seriousness that went from 1 (no symptom) to 7 (extreme seriousness of the symptom). The scale was also applied to normal subjects chosen as controls to be compared with the patients.

Statistical analysis

Analysis of variance test (ANOVA) was used for the global comparison of the SIAPA scale results. Dependent variable

was the sum of the three sections that examined hypersensitivity, inundation and selection attention to real stimuli in each one of the sensorial modalities. The Tukey test of the ANOVA was used to compare the groups divided into patients and controls. Tests were calculated for the 95% significance index.

Predictor used for the analysis of the validity of concurrent criterion was the presence or lack of presence of perceptual anomalies (cut-off greater than 15 in the total score of the scale). Criterion was the presence or not of alterations in PANSS scale (cut-off 60 in the total sub of the three subscales). Pearson correlation coefficient was evaluated and sensitivity and specificity of the SIAPA scale calculated. Structural validity of the scale was measured by a factorial analysis to know how the items of the scale were distributed into components or analysis factors.

Internal consistency of the instrument was evaluated by calculating the Cronbach's alpha coefficient.

Reliability: a sample of 60 patients from the study universe was obtained. They were evaluated by three interviewers using the interviewer/evaluator modalities in 30 patients and the test/retest modality for the rest of the subsample. The reliability analysis was done by calculating agreement between interviews with the *Kappa* coefficient of agreement.

RESULTS

To determine the construct validity of the known groups, the average global scores of the perceptual-attentional anomalies between the two groups were compared in each one of the sensorial modalities (table 2). The patients were significantly different from the normal subjects. These differences were greater in the auditory and visual modalities than in the other ones. The Bunney et al. work also reported that the greatest differences between the patients and control group were found in the auditory and visual modalities.

It is seen in figure 1 how the patients had more auditory and visual perceptual-attentional anomalies than the controls (auditory: p < 0.0001; visual: p < 0.0001).

In the criterion validity analysis, we found that only the auditory subscale weakly correlated with intensity of negative symptoms measured with the PANSS scale (r = 0.15; p = 0.041). At present, they are many works that try to correlate the presence of alterations in cognition of the patients with the PANSS scale^{16,17}. Presence of negative symptoms measured with the PANSS scale^{16,17}. Presence of negative symptoms is associated with a decreased frontal activity and hypodopaminergia in the prefrontal cortex and has shown a significant correlation with worse premorbid adaptation and more alterations in these patients' cognition¹⁶.

Table 2	(t	Global scores of perceptual anomalies between the three groups					
Modality	Pati	Patients		Controls			
	Mean	SD	Mean	SD	г	þ	
Auditory	5.68	3.18	3.07	0.33	133	>0.0001	
Visual	3.82	2.08	3.02	0.17	30	>0.0001	
Olfactory	3.39	1.38	3.03	0.26	7	0.01	
Tactile	3.15	0.72	3.02	0.14	13	0.02	
Gustative	3.08	0.59	3.0	0.0	4	0.0	
SD: standard deviation.							

Sensitivity of 56% and specificity of 79% were found for the SIAPA scale. The factorial analysis done with the principal components method with Varimax rotation for two factors showed that the items that responded to auditory and visual modalities were associated to a factor other than the items corresponding to tactile, olfactory and gustative modalities. These factors account for 56% of the variance. Figure 2 shows a factorial analysis with variables from the SIAPA and PANSS scales and we found that the positive and negative symptoms responded to factors other than the auditory and visual perceptual-attentional variables. This suggests the idea that both scales respond to different neurobiological bases.

Agreement calculated between interviewers showed high reliability between raters in the two evaluation modalities. In the interviewer/evaluator modality, the Kappa index for the total of the different subscales was 0.85 for the auditory subscale, 0.70 for the visual one, 0.76 for tactile and



Figure 1 | Global scores of auditory and visual perceptual anomalies.





0.80 for olfactory and gustative, showing an acceptable temporal stability. As expected in the interviewer/evaluator modality, most of the Kappa indexes were superior. These indexes are adequate compared with the results of the Eng-lish version⁸.

Internal reliability: the overall internal reliability of Cronbach's coefficient for the SIAPA scale was 0.84. The scale in its English version had an overall coefficient of 0.80. Table 3 shows the coefficients for each one of the modalities. It stands out that when the influence of the coefficients that correspond to the olfactory, tactile and gustative modalities are eliminated the overall coefficient increases. This indicates that the most reliable data are collected for the auditory and visual modalities.

CONCLUSIONS

Scale for Assessing Perceptual Anomalies. Validation of a Spanish version of the SIAPA

Validation of the SIAPA scale to the Spanish language shows validity indexes similar to those obtained in the Eng-

Table 3	Internal consistency coefficient, Cronbach's alpha, in each one of the sensorial modalities				
Sensorial moda	lity Cronbach's coeficient	Corrected Cronbach coefficient*			
Auditory	0.731410	0.845422			
Visual	0.614421	0.823038			
Tactile	0.319934	0.836817			
Olfactory	0.487412	0.830690			
Gustative	0.487412	0.839472			

* Coeficcient that is found after eliminating the variable in question.

lish version. This scale measures the presence of perceptual-attentional anomalies in the auditory and visual modalities very well. The results of the scores collected for the tactile, olfactory and gustative modalities are discreet so that a more detailed analysis is needed to measure perceptual-attentional anomalies in these areas.

The reliability indexes of the scale are high and endorse this scale for the measurement of perceptual-attentional disorders other than hallucinations.

The possibility that this scale discriminates well between the groups of schizophrenic patients in regards to the general population allows us to use it as a feasible instrument to measure perceptual-attentional disorders other than hallucinations.

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