

Spanish adaptation of the Green Paranoid Thought Scales

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Abstract

Background: The aim of this study was to adapt and obtain validity evidence of the Spanish Green Paranoid Thought Scales (S-GPTS). **Method:** 191 Spanish people responded to S-GPTS, Peters Delusions Inventory (PDI), and measures of psychopathology. **Results:** Principal Component Analyses on the polychoric correlation matrix identified two factors accounting for 71.0% of the cumulative variance. Cronbach alphas for S-GPTS total and its subscales were above .90 in clinical and non-clinical group. The value of the area under the receiver operating characteristic curve was higher for the S-GPTS (.898), than for the PDI (.859). The best S-GPTS threshold to discriminate between cases and non-cases was 92 (sensitivity, 97.35%; specificity, 65%). S-GPTS scores positively correlated with PDI and measures of anxiety and depression. **Conclusion:** The S-GPTS has adequate psychometric properties to provide valid measures of delusional ideation in a Spanish population.

Keywords: Delusions, Paranoia, Psychometrics, Spanish GPTS.

Resumen

Adaptación española de las Escalas de Pensamiento Paranoide de Green. Antecedentes: el objetivo del presente estudio fue adaptar y obtener evidencias de validez de la versión española de las escalas de pensamiento paranoide de Green (S-GPTS). **Método:** 191 participantes españoles respondieron al S-GPTS, al Inventario de Delirios de Peters (PDI) y a medidas de psicopatología. **Resultados:** el Análisis de Componentes Principales a partir de la matriz de correlaciones policóricas identificó dos factores que explicaban el 71% de la varianza acumulada. El coeficiente α de Cronbach para el S-GPTS y sus subsescalas fue superior a .90 en ambos grupos. El valor del área bajo la curva ROC fue más alto para el S-GPTS (.898) que para el PDI (.859). El punto de corte que mejor discriminaba entre el grupo clínico y el no clínico fue 92 (97,35% de sensibilidad, 65% de especificidad). Las puntuaciones del S-GPTS correlacionaron positivamente con el PDI y con medidas de ansiedad y depresión. **Conclusiones:** el S-GPTS posee propiedades psicométricas adecuadas para proporcionar una medida válida de la ideación delirante en población española.

Palabras clave: delirios, paranoia, propiedades psicométricas, S-GPTS.

Delusions are a common symptom in a wide range of conditions, both psychiatric and neurological. Interestingly, delusion-like experiences are also evident in a high percentage of the general healthy population, reaching figures between 15-18% (Freeman, McManus, Brugha, Meltzer, & Jenkins, 2011; Freeman, 2007). This finding has been interpreted as evidence for the existence of a continuum in the severity of these symptoms between healthy and clinical populations (Kaymaz & van Os, 2010) and supports the psychosis-proneness-persistence-impairment model of psychotic experiences (Linscott & van Os, 2013). Continuum models imply a dimensional view of psychotic experiences (Linscott & van Os, 2013), and in line with this, the *Diagnostic and Statistical Manual of Mental Disorders-fifth edition* (DSM-5; American Psychiatric Association, 2013) proposes delusions as one of the eight dimensions to be assessed in psychotic spectrum disorders

(Barch et al., 2013). Thus, it is crucial to develop appropriate scales to assess the whole range of these dimensions (Peralta & Cuesta, 2007).

Both ideas of persecution and social reference are considered within the spectrum of paranoid thoughts (Green et al., 2008). Following Freeman and Garety (2000), individuals holding persecutory beliefs accept that harm is going to occur and that other people have the intention to cause that harm. On the other hand, ideas of reference have been defined by themes of observation and communication. Ideas of reference and persecution are often related, but it has been suggested that there is a hierarchy between them, so arguably it is therefore sensible to assess them separately (Freeman et al., 2005). Until the construction of the Green et al. Paranoid Thought Scales (GPTS; Green et al., 2008), there was no measure of paranoid thinking under these premises.

Before the GPTS, there were some self-reported assessments of paranoia. The most widely used was the Paranoia Scale (PS) (Fenigstein & Vanable, 1992). For the PS, paranoid ideas were considered as all-or-nothing entities, instead of the currently accepted dimensional model including associated conviction, preoccupation and distress (Garety & Hemsley, 1987). The Peters Delusions Inventory (PDI; Peters, Joseph, & Garety, 1999)

included both a categorical and a dimensional assessment of delusions. However, this instrument was not based on the current definitions of paranoia, it included themes other than persecutory and social reference and was only intended to assess healthy populations (Green et al., 2008). The GPTS was developed to fulfill a need for a tool that was adapted to the current and widely accepted definition of paranoia (Freeman, Pugh, Vorontsova, Antley, & Slater, 2010), capable of assessing dimensions of preoccupation, conviction, and distress, valid and reliable for the assessment of both clinical and healthy populations, and precise enough to detect subtle clinical change (Green et al., 2008). At the same time, the GPTS is an easy and self-administered tool to assess both reference and persecutory ideas and the hierarchical relationship between them.

There are very few instruments to assess psychotic-like experiences, including delusions, available in Spanish population (Fonseca-Pedrero et al., 2011). Based on a categorical response system (presence/absence of delusional thoughts) and assessing a broad range of delusional themes, the PDI (López-Ilundain, Pérez-Nievas, Otero, & Mata, 2006) and the Community Assessment of Psychic Experiences (CAPE, Fonseca-Pedrero, Paino, Lemos-Giráldez, & Muñiz, 2012; Ros-Morente, Vilagra-Ruiz, Rodríguez-Hansen, Wigman, & Barrantes-Vidal, 2011; Stefanis et al., 2002) have been recently adapted to Spanish. Additionally, the Magical Ideation Scale, included in the Wisconsin Psychosis-Proneness Scales, is also available in Spanish to assess superstitious and magical thinking and beliefs on the ability to read or transmit thoughts (Chapman, Chapman, & Kwapil, 1995; Fonseca-Pedrero et al., 2009; Ros-Morente, Rodríguez-Hansen, Vilagra-Ruiz, Kwapil, & Barrantes-Vidal, 2010). However, none of the mentioned instruments is specifically focused on assessing persecutory and referential delusions in a dimensional way, so the S-GPTS would meet both clinical and research needs, and could be used in clinical populations as well as in healthy and high-risk individuals (van Os, Kenis, & Rutten, 2010).

The validation sample of the original GPTS included 353 individuals without a history of mental illness, and 50 individuals with current persecutory delusions (Green et al., 2008). The testing of the psychometric properties of GPTS showed adequate internal consistency with Cronbach alpha values ranging from .68 to .95 for the total scores and the subscales. Additionally, test-retest reliability at two weeks follow-up showed highly significant intra-class correlation coefficients (.88 for scale A, .81 for scale B, and .87 for the total scale). Regarding validity evidence, GPTS scores showed moderate but significant correlations with the Paranoia Scale (PS, Fenigstein & Vanable, 1992) and the Peters et al. Delusions Inventory (PDI, Peters et al., 1999), with Spearman's rho values ranging between .71 and .81 for the former, and between .39 and .43 for the latter. Finally, the GPTS also showed good sensitivity to clinical change, with effect sizes ranging from .24 to 1.0.

The original English version of the GPTS has been applied in a large number of studies (i.e., Foster, Startup, Potts, & Freeman, 2010; Freeman & Fowler, 2009). However, it has not yet been adapted to any other language, including Spanish. Thus, the objectives of the present study were (a) to adapt the GPTS for its use in the Spanish population, and (b) to analyse the psychometric properties and obtain validity evidence of the Spanish GPTS (S-GPTS), examining specificity, sensitivity and discriminant validity.

Method

Participants

One-hundred and ninety-one Spanish people voluntarily took part in the present study. Of them, 40 were patients (clinical group) and 151 were healthy participants (non-clinical group). Of the clinical group, 21 (52.5%) were men, and age ranged between 23-78 years. Of the non-clinical participants, 60 (39.7%) were men, and age ranged between 18-69 years.

Instruments

The instruments used for the present study were:

1. Green et al. Paranoid Thoughts Scales - Spanish version (S-GPTS). A "modified" back-translation design was applied to obtain the Spanish version of the GPTS (S-GPTS). Different translators, fluent in the source and target languages, experts in assessment and treatment of psychiatric disorders, and familiar with both GPTS content and the target population, independently carried out direct and back translation. An initial Spanish version was obtained and informally tested in a pilot study with 20 undergraduate students. This pilot study showed that completion time of the S-GPTS was less than five minutes, and participants reported no major difficulties when completing the scales. Minor language difficulties with the S-GPTS (i. e., translations of some technical terms) were corrected and this version was then translated into English. The author of the original version of GPTS not only gave permission to adapt the GPTS (Muñiz, Elosua, & Hambleton, 2013), but also was involved in the translation process as a member of the team which compared both English versions. Some minor discrepancies about languages specificities that did not affect the intended meaning of the items were resolved in joint meetings, obtaining the final S-GPTS (see Appendix). Both the original and the Spanish version of GPTS are composed of a total of 32 items rated on a 5-point Likert scale from 1 (*Not at all*) to 5 (*Totally*). Items are grouped into two 16-item scales. Scale A assesses ideas of social reference relevant to paranoia, while scale B assesses persecutory thoughts. Scores in each scale range from 16 to 80 points, with higher scores reflecting a higher level of paranoid thinking. Each scale can be administered individually, but they can also be totalled for an overall score. Dimensions of conviction, preoccupation and distress can be calculated through specific items both in scale A and B (formula available upon request).
2. Peters et al. Delusions Inventory- Spanish version (PDI, Peters et al., 1999; López-Ilundain et al., 2006). The PDI was designed as a self-evaluation tool to assess delusional ideation in healthy populations. It consists of 21 dichotomous items (yes/no). In case of a positive answer, three subscales assessing conviction, preoccupation and distress related to that item's content are then presented. These subscales are scored on a 5-point Likert scale. The PDI measures have shown adequate psychometric properties and convincing evidence of discriminant validity both in its original version (Peters et al., 1999), as well as the adaptations to

other languages, including Spanish, for which Cronbach's alpha coefficient was .75, and factor analysis revealed the presence of 7 easily interpretable factors (López-Ilundain et al., 2006).

3. Mini International Neuropsychiatric Schedule (M.I.N.I., Sheenan, Lecrubier, Hergueta, Ferrando, & Soto, 1998). The M.I.N.I. is a structured diagnostic interview for DSM-IV and ICD-10 psychiatric disorders. It is a short but accurate tool for multicenter clinical trials and epidemiological studies that provide assessments with adequate reliability and validity in relation with SCID-P and CIDI (Lecrubier et al., 1997; Sheehan et al., 1997).
4. Sociodemographic, biographic and clinical measures. Variables such as gender, age and educational level were included in the S-GPTS and the PDI, and were collected as part of this study.
5. Social support was assessed with the Social Support Index (SSI, Surtees, 1980). This rating scale addresses six different components of social support, with higher scores indicating poorer social support. This index showed a Spearman rank correlation of .66 in test-retest correlations in the original validation study (Surtees, 1980).
6. Depression and anxiety symptoms were measured through the specific M.I.N.I. sections (A and B for depression and E, G, H, I and O for anxiety).

Procedure

Participants in the clinical group (n = 40) were recruited at the Mental Health Hospitalization Unit in the University Hospital "San Cecilio" (Granada, Spain). To avoid a referral bias, all consecutive patients admitted according to standard clinical practice and presenting with manifest delusions were invited to participate in the study. Presence of delusions was confirmed by either their consultant psychiatrists, or the emergency room psychiatrist, or both. Participants in the non-clinical group (n = 151) were recruited in Granada (Spain) while attending a training program for unemployed people organized by the Andalusian Employment Service. Participants in the non-clinical group fulfilling criteria for any Axis I disorder as identified by the M.I.N.I. (Sheenan et al., 1998) were excluded from the study (3 participants excluded). Participants received no incentive for their participation. All instruments except S-GPTS were administered by a trained psychologist. Confidentiality was guaranteed by assigning participants an alphanumeric code only known by the principal investigator. S-GPTS was completed individually. All participants signed an informed consent document prior to the assessment. This study was approved by the Ethic Committee of University Hospital San Cecilio (Granada, Spain). S-GPTS questionnaires were checked for completeness when returned to researchers.

Data analyses

Descriptive statistics for the distributions of gender, age, educational level, and S-GPTS scores were calculated for the clinical and non-clinical groups. Differences in S-GPTS scores related to gender were analysed using *t*-tests. The relationship between age and educational level and S-GPTS scores was explored by Pearson and Spearman correlations respectively. A Principal Component Analyses (PCA) on the polychoric correlation matrix using

oblique rotation was performed to examine the factor structure of S-GPTS in the non-clinical group. Parallel analysis based on minimum rank factor analysis was used to determine the number of dimensions (Timmerman & Lorenzo-Seva, 2011). Cronbach α were computed to examine internal consistency for S-GPTS scores and its subscales in both the clinical and the non-clinical groups. Differences in S-GPTS scores between clinical and non-clinical groups were investigated using the Mann-Whitney *U*-test for independent samples and *r* as a measure of effect size to obtain validity evidence based on relations to other variables. Sensitivity and specificity were examined via ROC analysis to investigate S-GPTS predictive validity. Delta coefficient of agreement (Δ), defined as the proportion of agreements that are not due to chance (Martín Andrés & Femia Marzo, 2004), was calculated between scores on PDI and S-GPTS.

PASW Statistics v. 18 (SPSS Inc.) and FACTOR (Lorenzo-Seva & Ferrando, 2006), were used for the analyses.

Results

Demographic variables

No significant gender or age differences were found between the groups (all $p > .05$). However, the groups were not equivalent with regard to educational level ($p < .05$) (Table 1). There was no significant relationship between gender or age and S-GPTS total score and its subscales in either group (all $p > .05$). However, a small but significant negative correlation was found between educational level and S-GPTS scores in the non-clinical group (Spearman's $\rho = -.210$, $p = .010$ for the total score, $\rho = -.185$, $p = .023$ for S-GPTS reference scale; and $\rho = -.239$, $p = .003$ for the persecution scale). No significant correlation was noted between educational level and S-GPTS scores in the clinical group (all $p > .05$) even after collapsing educational levels into three categories ("primary education", "secondary education", and "university education").

Table 1
Sociodemographic statistics

	Non-clinical Group n = 151		Clinical Group n = 40		Sig.
Gender	n (%)		n (%)		
Men	60 (39.7%)		21 (52.5%)		$p = .155$
Women	91 (60.3%)		19 (47.5%)		
Age	Mean (SD)	Range	Mean (SD)	Range	
Men	41.2 (11.78)	21-69	47.7 (13.36)	23-78	$p = .160$
Women	38.0 (10.60)	18-60	41.7 (11.52)	24-62	
Total	39.2 (11.16)	18-69	42.2 (12.25)	23-78	$p = .143$
Education	n (%)		n (%)		
IP	12 (7.9%)		3 (7.5%)		$p = .019$
CP	49 (32.5%)		22 (55.0%)		
S	19 (12.6%)		8 (20.0%)		
VS	36 (23.8%)		5 (12.5%)		
3-YU	16 (10.6%)		2 (5.0%)		
5-YU	19 (12.6%)		0 (0%)		
Note: I.P.: Incomplete Primary Level; C.P.: Complete Primary Level; S: Secondary Level; V.S.: Vocational School level; 3-YU: 3-year University Level; 5-YU: 5-year University Level					

S-GPTS internal structure

A Principal Component Analysis (PCA) on the psychoric correlation matrix was performed with data from the non-clinical group following the component extraction method applied by the authors of the original GPTS. The Kayser-Meyer-Olkin measure of sampling adequacy was .90 and Bartlett's test of sphericity was highly significant ($p < .001$), indicating the data were suitable for PCA. Parallel analysis results suggest that the data were best described by a two-component solution, explaining 71.0% of the total variance in the sample. Two components were extracted using an oblique rotation. Component 1 comprised the 16 items in the social reference scale, explaining 61.67% of the variance, while component 2 grouped the 16 items of the persecution scale explaining 9.33% of the variance.

Reliability of S-GPTS scores

Cronbach α values for S-GPTS scales and subscales are shown in Table 2. They all show adequate internal consistency for S-GPTS scores across both groups, with Cronbach α values above .90 for both scales and the total score. In addition, the internal consistency for the dimensions of conviction, preoccupation and distress in both scales and total score is also highly significant.

Validity evidence of S-GPTS scores based on relations to other variables

The clinical group obtained significantly higher scores than the non-clinical participants across all S-GPTS scales, subscales, and total score (all $p < 0.01$) (Table 3).

Also, we found that the range of S-GPTS total scores overlapped in the clinical and non-clinical groups. Specifically, 4% of individuals in the non-clinical group scored above the mean of the clinical group on scale A (reference), 2% above the mean on scale B (persecution), and 2% above the mean total score.

Scales	Non-clinical group	Clinical group
S-GPTS Reference (16)	.915	.920
S-GPTS Persecution (16)	.964	.941
S-GPTS Total (32)	.963	.960
Reference ^{CONVIC} (4)	.601	.703
Persecution ^{CONVIC} (4)	.843	.828
S-GPTS (Total) ^{CONVIC} (8)	.841	.859
Reference ^{PREOCC} (4)	.748	.798
Persecution ^{PREOCC} (4)	.863	.797
S-GPTS (Total) ^{PREOCC} (8)	.879	.884
Reference ^{DISTRESS} (4)	.853	.796
Persecution ^{DISTRESS} (4)	.884	.808
S-GPTS (Total) ^{DISTRESS} (8)	.893	.869

Note: Numbers into brackets next to the GPTS scales correspond to the number of item in the scale

Specificity and sensibility of S-GPTS scores

ROC analyses were used to investigate sensitivity and specificity of S-GPTS. As shown in figures 1(a) and 1(b), and Table 4, AUC for S-GPTS are extremely high, especially for the persecution scale. S-GPTS predictive ability showed to be higher than PDI's. A logistic regression model applied to these data showed that a cut-off of 92 points on the S-GPTS total score gives 97.35% specificity and 65% sensitivity. In our sample, S-GPTS had higher sensitivity than the PDI (43.24%). Delta coefficient of agreement (Martín Andrés & Femia Marzo, 2004) showed a value of $\Delta = 88.7\%$ of global agreement between S-GPTS and PDI diagnoses. When PDI is not considered as gold standard, the consistency of both S-GPTS and PDI is higher when rejecting pathology (93.5%) than when accepting it (57.2%) (Martín Andrés & Femia Marzo, 2008).

Convergent validity evidence

To obtain convergent validity evidence, the relationship between S-GPTS scores and theoretically related measures were analysed in both the non-clinical and the clinical group. Correlations between S-GPTS total score and PDI were highly significant both in the clinical and the non-clinical group ($\rho = 0.772$ and $\rho = 0.543$ respectively) (Table 5). In the non-clinical group, a small but significant correlation was found between S-GPTS total score and social support ($\rho = 0.166$). S-GPTS subscales and total score correlated significantly with anxiety and depression measures (all $p < 0.01$).

Subscale	Non-clinical Group	Clinical Group	U-test	z	r
	Median	Median			
S-GPTS reference	22	54.5	865.5*	-6.94	-0.56
Conviction	6	14	1015.5*	-6.5	-0.53
Preoccupation	4	10	1128.5*	-6.35	-0.52
Distress	6	12	1533*	-4.86	-0.40
S-GPTS persecution	16	56.5	505.5*	-8.51	-0.69
Conviction	4	14	896*	-7.51	-0.61
Preoccupation	4	13.5	775.5*	-8.33	-0.68
Distress	4	14	847*	-7.75	-0.63
Total score in conviction	10	28	942.5*	-6.73	-0.55
Total score in preoccupation	9	24.5	695.5*	-7.71	-0.63
Total score in distress	10	26.5	948.5*	-6.74	-0.55
S-GPTS Total	39	107.5	617*	-7.74	-0.63

Note: Significant at the .001 level

Scales	AUC	Lower limit	Upper limit
S-GPTS Scale A	0.857*	0.788	0.926
S-GPTS Scale B	0.917*	0.869	0.965
S-GPTS Total score	0.898*	0.843	0.953
PDI Total score	0.859*	0.788	0.930

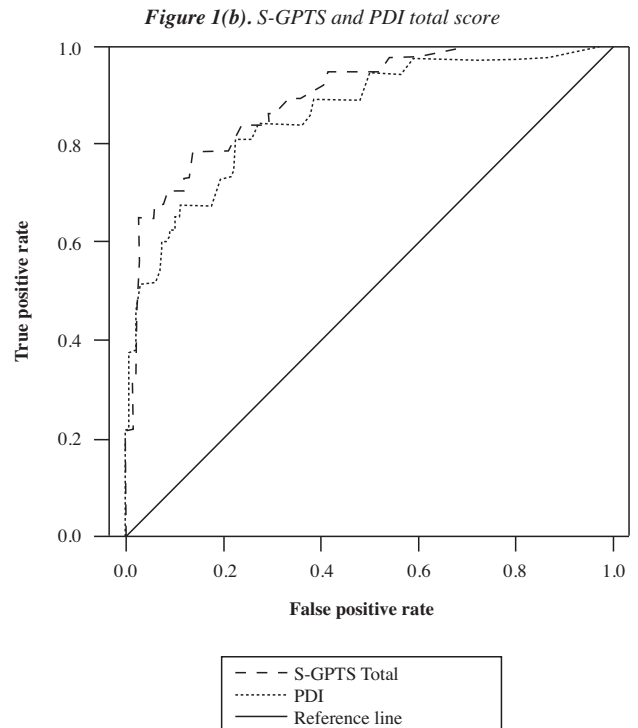
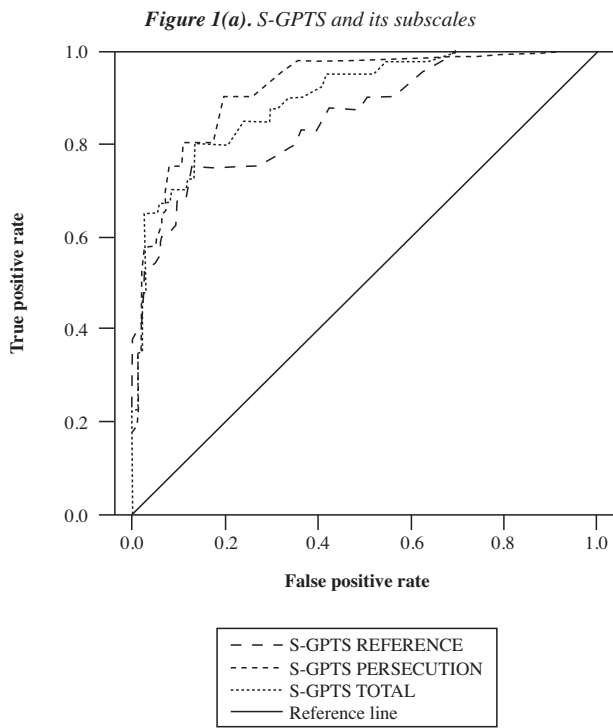
Note: * Significant at the .001 level for the null hypothesis: area = .5

Table 5
Spearman's rho correlations between S-GPTS scores and theoretically related measures

Non-clinical group	S-GPTS Reference	S-GPTS Persecution	S-GPTS Total	PDI	SS	Anxiety
S-GPTS reference						
S-GPTS persecution	0.700**					
S-GPTS total	0.981**	0.802**				
PDI	0.515**	0.538**	0.543**			
SS	0.178*	0.087	0.166*	0.074		
Anxiety	0.281**	0.291**	0.292**	0.386**	0.144	
Depression	0.267**	0.262**	0.274**	0.274**	0.044	0.369

Clinical group	S-GPTS reference	S-GPTS persecution	S-GPTS total
S-GPTS Reference			
S-GPTS Persecution	0.794**		
S-GPTS Total	0.930**	0.953**	
PDI	0.759**	0.736**	0.772**

Note: PDI: Peter et al., Delusion Inventory Total score; SS: Social Support Index; * Spearman's rho is significant at the .05 level; ** Spearman's rho is significant at the .01 level



Key : Logistic model used : $\hat{p}_{GPTS} = \frac{1}{1 + \exp(4.817 - 0.052 \text{ GPTS})}$; $\hat{p}_{PDI} = \frac{1}{1 + \exp(3.217 - 0.039 \text{ PDI})}$

Figure 1. ROC analyses

Discussion

The aim of the present work was to adapt the Green Paranoid thoughts Scale (GPTS) into Spanish and obtain validity evidence of the new Spanish version of the GPTS (S-GPTS). Results showed that our clinical and non-clinical groups were matched in most demographic variables, but not for educational level. Healthy

participants showed a higher educational level than patients. This is reasonable given that onset of psychotic symptoms usually occurs in early adulthood and prevents patients from obtaining university degrees.

In line with the original validation study (Green et al., 2008), we found no statistically significant association between S-GPTS scores and gender or age. However, we found a slight but significant

Table 6 Spanish version of Green et al paranoid thought scales (S-GPTS)					
<p>Por favor, lea detenidamente cada una de las afirmaciones. Estas afirmaciones se refieren a pensamientos y sentimientos que usted ha podido tener con respecto a otras personas en el pasado mes. Piense en el último mes y puntúe el alcance de estos sentimientos, desde 1 (En absoluto), 3 (Un poco), hasta 5 (Totalmente). Por favor, complete tanto la Parte A como la Parte B. Por favor, no puntúe las afirmaciones en función de las experiencias que haya podido tener bajo los efectos de las drogas.</p>					
Parte A					
En el último mes...	1	2	3	4	5
<ol style="list-style-type: none"> 1. He pasado cierto tiempo pensando que mis compañeros chismorrear sobre mí [<i>I spent time thinking about friends gossiping about me</i>] 2. A menudo he oído cómo la gente hablaba de mí [<i>I often heard people referring to me</i>] 3. Me ha molestado que mis amigos o compañeros me critiquen [<i>I have been upset by friends and colleagues judging me critically</i>] 4. Sin duda alguna, la gente se ha estado riendo de mí a mis espaldas [<i>People definitely laughed at me behind my back</i>] 5. He pensado a menudo que la gente me evita [<i>I have been thinking a lot about people avoiding me</i>] 6. La gente ha estado soltándome indirectas [<i>People have been dropping hints for me</i>] 7. He creído que ciertas personas no eran lo que parecían ser [<i>I believed that certain people were not what they seemed</i>] 8. Me ha molestado la gente que habla de mí a mis espaldas [<i>People talking about me behind my back upset me</i>] 9. He estado convencido/a de que me estaban discriminando [<i>I was convinced that people were singling me out</i>] 10. He estado seguro de que alguien me seguía [<i>I was certain that people have followed me</i>] 11. Algunas personas han sido hostiles hacia mí de forma personal [<i>Certain people were hostile towards me personally</i>] 12. La gente me ha estado vigilando [<i>People have been checking up on me</i>] 13. Me ha estresado que la gente me mirara [<i>I was stressed out by people watching me</i>] 14. Me ha frustrado que la gente se ría de mí [<i>I was frustrated by people laughing at me</i>] 15. He estado preocupado/a por el excesivo interés de la gente hacia mí [<i>I was worried by people's undue interest in me</i>] 16. Ha sido difícil dejar de pensar en que la gente hablaba de mí a mis espaldas [<i>It was hard to stop thinking about people talking about me behind my back</i>] 					
Parte B					
En el último mes...	1	2	3	4	5
<ol style="list-style-type: none"> 1. Algunas personas la tienen tomada conmigo [<i>Certain individuals have had it in for me</i>] 2. Sin duda alguna, he sido perseguido [<i>I have definitely been persecuted</i>] 3. Han intentado hacerme daño [<i>People have intended me harm</i>] 4. La gente quería que me sintiera amenazado/a, así que me miraban fijamente [<i>People wanted me to feel threatened, so they stared at me</i>] 5. Estoy seguro de que algunas personas hicieron cosas con la intención de molestarme [<i>I was sure certain people did things in order to annoy me</i>] 6. He estado convencido/a de que había una conspiración en mi contra [<i>I was convinced there was a conspiracy against me</i>] 7. He estado seguro de que alguien quería hacerme daño [<i>I was sure someone wanted to hurt me</i>] 8. Me he angustiado con la idea de que la gente quería hacerme daño de alguna manera [<i>I was distressed by people wanting to harm me in some way</i>] 9. Me preocupo con pensamientos de que alguien intenta molestarme deliberadamente [<i>I was preoccupied with thoughts of people trying to upset me deliberately</i>] 10. No podía parar de pensar en que la gente quería engañarme [<i>I couldn't stop thinking about people wanting to confuse me</i>] 11. Me he angustiado por ser perseguido/a [<i>I was distressed by being persecuted</i>] 12. He estado molesto porque otras personas han intentado molestarme deliberadamente [<i>I was annoyed because others wanted to deliberately upset me</i>] 13. Han estado pasando por mi cabeza pensamientos de que la gente me persigue [<i>The thought that people were persecuting me played on my mind</i>] 14. Me ha costado mucho dejar de pensar que la gente quería hacerme sentir mal [<i>It was difficult to stop thinking about people wanting to make me feel bad</i>] 15. La gente ha sido hostil hacia mí a propósito [<i>People have been hostile towards me on purpose</i>] 16. He estado enfadado/a porque alguien quería hacerme daño [<i>I was angry that someone wanted to hurt me</i>] 					

inverse correlation of S-GPTS scores with educational level in the non-clinical group. As in PDI's Spanish validation study (Lopez-Ilundain et al., 2006), less education was associated with higher scores in S-GTPS. This would complement the previous finding that higher intellectual functioning is associated with less paranoia (Freeman et al., 2011). Not finding this association in the clinical group could be due to the small sample size and the

fact that none of the patients had achieved the higher university level.

Our factor analysis offered similar results to those presented in the original validation study (Green et al., 2008). In both studies, two clear factors were obtained related to themes of reference and persecution respectively. We also found that ideas of reference were more frequent than ideas of persecution in the non-clinical group,

but not in the clinical group. All this points to the importance of assessing ideas of reference and persecution independently and supports the existence of a hierarchical relationship between both types of ideas (Green et al., 2008).

In support of validity of the S-GPTS, and in line with the original findings (Green et al., 2008), we found significantly higher total S-GPTS, subscales and dimensions scores in the clinical group. As mentioned above, S-GPTS total scores in the clinical and non-clinical groups overlapped extensively. This was expected, given that this instrument was originally designed as a continuous measure (Green et al., 2008). Our results are then consistent with the existence of a continuum in psychopathology between general population and deluded individuals and suggest that paranoid thoughts might be more frequent in the general population than traditionally thought (Freeman et al., 2011; Kaymaz & van Os, 2010).

The AUC for S-GPTS in our ROC analyses were extremely high, particularly for the persecution scale. S-GPTS sensitivity was far higher than PDI's (65% vs 43.24%) which points to a very good predictive validity of S-GPTS. Agreement between PDI and S-GPTS scores were high, meaning that both measures are fairly equivalent for the assessment of paranoid content, particularly when the aim is rejecting pathology.

As additional evidence of validity, we found higher correlations between S-GPTS and PDI scores than the original validation study, pointing to a very good convergent validity of the S-GPTS. Moreover, correlations between S-GPTS scores and measures of anxiety, depression and social support were significant. At this point in time, the evidence for a link between anxiety and paranoia is reasonably strong (Ibáñez-Casas & Cervilla, 2012).

The relationship between anxiety, negative affect and delusional thinking has also been found in previous studies in Spain using the PDI (Fonseca-Pedrero, Paino, Santarén-Rosell, Lemos-Giráldez, & Muñiz, 2012). In our study, higher scores on S-GPTS were significantly related to higher levels of both anxiety and depression, which points to an excellent convergent validity. Social support was also significantly related to S-GPTS scores. In our study, as in previous findings (Freeman et al., 2011), higher scores on SSI (indicating poorer social support) were related to higher S-GPTS scores. The fact that correlations of S-GPTS scores with anxiety, depression and social support measures were smaller than the correlations between S-GPTS and PDI offers additional evidence of a good discriminant validity of S-GPTS.

However, there are some limitations to this study mainly due to the use of a self-report measure. For instance, the S-GPTS did not include scales to assess social desirability or response tendency biases. These issues should be taken into account when interpreting S-GPTS scores in future research and clinical settings.

We report here that the S-GPTS is a quick and easy to use instrument to assess specifically ideas of reference and persecution both in clinical and general populations. S-GPTS demonstrated robust psychometric properties in our Spanish sample. In line with the original instrument, which has served both clinical and research functions, it is expected that S-GPTS will be used in Spain in the research of paranoia across healthy and clinical populations, and as a tool to assess the changes in the severity of symptoms in deluded patients. Future research should address the equivalence between the original and the Spanish version of GPTS with an even greater sample of participants.

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