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Psychometric Properties of the Spanish Clance Impostor Scale (S-CIPS)

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Título: Propiedades psicométricas de la adaptación española de la Clance Impostor Phenomenon Scale (S-CIPS).

Resumen: El objetivo del presente estudio fue el de examinar la fiabilidad, validez y estructura factorial de la adaptación española de la Clance Impostor Phenomenon Scale (CIPS). Para ello, un total de 271 estudiantes españoles completaron una versión traducida de la escala original de 20 ítems. En nuestra muestra, el instrumento mostró una alta fiabilidad, medida como consistencia interna, (ω_{Total} =.90) y correlaciones moderadas-altas con medidas de depresión (r =.633), autoestima (r = -.754) y miedo a las evaluaciones negativas (r = .666), lo cual sugiere tanto una validez nomológica como discriminante. Aunque en la validación original se propuso una estructura de tres factores, otros estudios han encontrado ajuste a estructuras de uno y dos factores. Aquí, utilizamos un análisis factorial confirmatorio (AFC) para probar el ajuste de estos tres modelos. Nuestros resultados muestran que, en la adaptación a español, el modelo con dos factores es el preferido. Esta adaptación al español de la CIPS provee a los profesionales clínicos una de una nueva herramienta para poder investigar los mecanismos que subyacen al síndrome del impostor, así como futuros tratamientos.

Palabras clave: Síndrome del impostor. CIPS. Clance Impostor Phenomenon Scale. Impostor Phenomenon. Validación. Fiabilidad. Análisis factorial confirmatorio. Español.

Abstract: The aim of this study was to examine the reliability, validity, and factorial structure of the Spanish version of the Clance Impostor Phenomenon Scale (CIPS). A sample of 271 Spanish students was recruited to complete a translated version of the original 20-item CIPS. In our sample, the instrument showed high internal consistency reliability (ω_{Total} =.90) and a moderate-to-strong correlation with measures of depression (r = .633), self-esteem (r = -.754) and fear of negative evaluation (r = .666), suggesting both nomological and discriminant validity. Although the original validation of the CIPS proposed a factorial structure with three factors, subsequent validations also revealed adjustment to two- and one-factor structures. Here, we used confirmatory factor analysis (CFA) to test the three different models. The results showed that in our adaptation, a 2-factor structure might be preferred. This adaptation of the CIPS to Spanish provides clinicians with a new method to gain insight into the psychological mechanisms behind the Impostor phenomenon and suitable treatments.

Keywords: Impostor Phenomenon. CIPS. Confirmatory Factor Analysis. Validation. Reliability. Spanish.

Introduction

Impostor Syndrome, also called the Impostor Phenomenon, is a psychological phenomenon in which people are unable to internalize their achievements and suffer from a persistent self-doubt and fear of being discovered as fraud despite their objective successes (Clance & Imes, 1978). Although it has not yet been recognized as a psychiatric disorder neither in the American Psychiatric Association (2013) Diagnostic and Statistical Manual nor in International Classification of Diseases 11th Revision World Health Organization (2019) this phenomenon is increasingly common in both the lay literature and peer-reviewed mental health reports (Bravata et al., 2019). It is usually described as a critical factor that impairs professional performance (Bravata et al., 2019; Cader et al., 2021), and it has been widely reported in high-achieving individuals such as people working in academia or physicians, medical residents and medical students (Dickerson, 2019; Price, 2013). Recent studies have indicated that impostor feelings are present in 20%-40% of the population (Bravata et al., 2019), with a higher prevalence in ethnic minority groups (Cokley et al., 2017; Mullangi & Jagsi, 2019). It was initially described as more prevalent in women (Clance, 1985; McGregor et al., 2008), although a recent review of the scientific literature has called this into question (Bravata et al., 2019).

Among the various scales that aim to measure the Impostor Syndrome, the 20-item Clance Impostor Phenomenon Scale (CIPS) stands out because it is short, it can be self-administered and it has been shown to be a psychometrically reliable instrument (Mak et al., 2019), making it a popular choice to measure symptoms of the Impostor Syndrome. The CIPS uses a five-point rating scale, ranging from 1 (*not true at all*) to 5 (*very true*). The scores of each of the items are added up to a total score, with higher scores indicating more severe symptoms of Impostor Syndrome. However, there is some discord regarding how to interpret the scores: some authors indicate that scores from 40-59 denote mild symptoms of Impostor Syndrome, while others suggest a cutoff value of 62 or taking the median of the population (Bravata et al., 2019). Previous studies have found that this instrument was strongly correlated with other psychological measures such as depression, well-being or self-esteem (Brauer & Wolf, 2016). Regarding its factorial structure, in the original validation, Chrisman et al. (1995) found that the scale contained three factors, namely, Fake, Discount, and Luck. The Fake factor refers to the concerns that an individual has about his or her own abilities and attributes. The Discount factor refers to the phenomenon of someone being unable to acknowledge their good performance or receive praise for such performance. The Luck factor refers to the tendency of someone to attribute their own achievements to chance rather than to their own abilities. However,

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other authors have found this factor structure to be problematic since one- and two-factor models also yielded satisfactory results (French et al., 2008; Simon & Choi, 2018). Therefore, there is no consensus about the number of factors.

English, German and Korean versions of the CIPS have been validated (Brauer & Wolf, 2016; Chae et al., 1995; Clance, 1985). However, there is no scale for measuring Impostor Syndrome that has been validated in the Spanish population. The aim of this study was to examine the psychometric properties of the Spanish version of the CIPS (S-CIPS).

Method

Participants

Psychology and speech therapy undergraduate and graduate students from the University of Murcia were recruited to complete an online adaptation in Spanish of the CIPS, the Beck Depression Inventory II (BDI-II; Beck et al., 1996), the Rosenberg Self Esteem Scale (SES; Rosenberg, 1965), the Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983), and the Rotter I-E Scale (I-E; Rotter, 1966) in exchange for course credit (N = 271, 233 female, M = 21.2, SD = 4.735., [17;51] years). The ethics committee of the University of Murcia approved the study, which was conducted in accordance with the ethical standards put forth in the 1964 Declaration of Helsinki.

Instruments

Spanish-Clance Impostor Phenomenon Scale (S-CIPS). This scale is a translated version of the original Clance Impostor Phenomenon Scale (CIPS), which comprises 20 items that use a Likert rating scale ranging from 1 (*never*) to 5 (*always*). The S-CIPS was translated from English into Spanish with the permission of the original authors using the back-translation method described by Hambleton (2005) as follows: first, a bilingual person translated the original version into Spanish. Then, another bilingual person, unfamiliar with the original scale, translated it back to the original language. Afterwards, the original and the back-translated versions were compared, correcting the discordances in the translated version. Finally, the authors assessed the obtained test and prepared it similarly to the original version. The instrument can be found at https://osf.io/yuwqx/

Beck Depression Inventory (BDI-II). The scale consists of 21 items that assess depressive symptomatology present in the last two weeks using a four-point Likert scale and a self-report format. Item scores range from 0 to 3, where 0 indicates the absence of a specific depressive symptom (e.g., I do not feel sad) and 3 indicates severe specific symptoms (e.g., I am so sad and unhappy that I cannot stand it). The BDI-II is a popular measure that has been shown to be valid and reliable across many different applications to different populations (Wang & Gorenstein, 2013). The scores of the Spanish adaptation used here showed strong reliability (α = .87) in a previous psychometric study (Sanz et al., 2003). In our sample, the scores of the BDI-II also showed high reliability (ω_{Total} = .911, CI [95%] = .895; .926).

Rosenberg Self-Esteem Scale (RSES). The RSES comprises 10 items that evaluate positive and negative evaluations of self (e.g., On the whole, I am satisfied with myself), with higher scores indicating higher levels of self-esteem. Psychometric studies showed that the test scores presented strong reliability (α = .91) (Sinclair et al., 2010). The scores of the Spanish version used here also presented satisfactory reliability properties in a previous psychometric study (α = .85) (Martín-Albo et al., 2007). In the present study, the scores of our sample showed high reliability (ω_{Total} = .905, CI [95%] = .888; .922).

Brief Fear of Negative Evaluation Scale (BFNE). This scale consists of 12 items describing worrying thoughts of being evaluated negatively, using a Likert rating ranging from 1 (*not characteristic of me at all*) to 5 (*extremely characteristic of me*). Previous psychometric studies showed that the instrument scores obtained good reliability (Leary, 1983; Duke et al., 2006). A study examining the Spanish adaptation used here showed that the scores (Gallego et al., 2007) also yielded good reliability (α =.90). In our sample, the scores showed high reliability too (ω_{Total} = .928, CI [95%] = .915; .941).

Rotter I-E Scale (I-E). This scale comprises 23 dichotomous items that aim to measure the locus of control of an individual, i.e., whether someone believes that specific events are under his or her control (internal locus of control) or not (external locus of control). Higher scores indicate that an individual has a more of an external locus of control. Previous psychometric studies have found that the scale scores have satisfactory properties (Zerega et al., 1976). The scores of the Spanish adaptation showed adequate reliability too (α = .72) (Ferrando et al., 2011). In our sample, the scores showed acceptable reliability (ω_{Total} = .722, CI [95%] = .674; .769).

Procedure

Once we translated the S-CIPS using the back-translation method (Hambleton, 2005), we created a Google Forms together with the rest of tests. Then, undergraduate, and graduate participants were recruited and linked to the questionnaires via e-mail. There were no age or gender requirements and it took around 45 minutes to complete the questionnaires.

Data analysis

We calculated the mean, standard deviation, and item-total correlation for each item of the Spanish Clance Impos-

tor Phenomenon Scale. Besides, we inspected the normality of the data using the Shapiro-Wilk test. To calculate the reliability of the scores of the tests, we used a measure of internal consistency. Because Cronbach's alpha relies on unrealistic assumptions that are rarely met in practice (McNeish, 2018), we used Omega total (McDonald, 1999). Nonetheless, as a sensitivity analysis, we also used Cronbach's alpha. Analyses were conducted using JASP (JASP Team, 2022). The JASP analysis file can be found at https://osf.io/yuwqx/. We conducted correlational analyses to assess the association between the S-CIPS and measures of depression (BDI-II), fear of negative evaluations (BFNE), self-esteem (RSES) and locus of control (Rotter's I-E). Lastly, given that previous studies have found the scale to have either three (Discount, Fake, Luck), two (Discount, Luck) or one factor, we directly tested these three models in a confirmatory factor analysis (CFA). Akin to previous studies (Brauer & Wolf, 2016; Chrisman et al., 1995), items 1 and 2 were removed prior to the fitting of the models, due to low item-total correlation. All analyses were also conducted using JASP, using the Diagonally Weighted Least Square (DWLS) estimator, which is suitable for ordinal data (Mîndrilă, 2010). We compared three different models. Model 1 contained the three factors (Fake, Discount, Luck) suggested by Chrisman et al. (1995). For Model 2, we merged Fake and Discount, as suggested by French et al. (2008), resulting in a two-factor model. Finally, we also tested a single-factor model (Model 3) collapsing all three factors.

To evaluate the goodness of fit of each model, we inspected the following indices: χ^2 significance test, Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Tucker Lewis Index (TLI, also known as Non-normed Fit Index; NNFI), and Comparative Fit Index (CFI).

Results

Descriptive statistics, item analysis and internal consistency reliability

The data for this study is available at https://osf.io/yuwqx/. Table 1 contains the descriptive statistics of the items of the S-CIPS. The Shapiro–Wilk test indicated that the data were not normally distributed (p =.048). The mean score was 61.018 (SD = 13.494). In our sample, no gender differences were found when comparing total scale scores, as shown by Welch's two-sample t-test (M_{male} = 58.447; M_{female} = 61.438; $t(270)$ = -1.333, p = .188). The omega total was high (ω_{Total} = .902 CI [95%] =.885;.919). Cronbach's alpha yielded a nearly identical value (α = .897, CI [95%] = .878; .913). In line with previous studies (Brauer & Wolf, 2016; Chrisman et al., 1995), items 1 and 2 presented a low item-total correlation. When removed, the reliability remained the same (ω_{Total} = .907 CI [95%] = .891;.919; α = .905, CI [95%] = .88;.921).

Table 1
Descriptive statistics and Item-Total Correlation (ITC) for the Spanish Clance Impostor Phenomenon Scale

Item	*M*	*SD*	ITC
1	3.745	0.797	0.102
2	2.830	0.982	0.118
3	3.258	1.164	0.527
4	3.185	1.260	0.668
5	2.292	1.274	0.339
6	2.967	1.283	0.693
7	3.472	1.273	0.590
8	2.849	1.066	0.496
9	1.731	0.972	0.523
10	2.996	1.261	0.585
11	2.284	1.144	0.533
12	3.037	1.189	0.545
13	3.037	1.217	0.676
14	3.576	0.974	0.539
15	3.004	1.134	0.732
16	3.196	1.272	0.500
17	3.517	1.141	0.611
18	3.856	1.084	0.666
19	3.362	1.334	0.452
20	2.827	1.251	0.434

Note. *M* = Mean, *SD* = Standard Deviation, ITC= Item-Total Correlation,

Correlation with other psychological measures

Correlation coefficients, as well as the means and standard deviations of each of the scales, are shown in table 2. In line with previous studies (Brauer & Wolf, 2016), our instrument showed moderate to strong correlation with measures of depression, self-esteem and fear of negative evaluations. These results suggest both nomological and discriminant validity of the S-CIPS. However, Impostor Syndrome scores did not show to be correlated neither with external nor internal locus of control (r = .032).

Table 2
Pearson's correlation coefficients between the S-CIPS, BDI-II, BFNE, RSES and Rotter's I-E, and mean and standard deviation of each of the instruments.

	(1)	(2)	(3)	(4)	(5)
(1) S-CIPS	-				
(2) BDI-II	.633*	-			
(3) BFNE	.666*	.529*	-		
(4) RSES	-.754*	-.733*	-.581*	-	
(5) I-E	.032	.002	.073	-.008	-
Mean	61.018	13.72	38.565	18.804	12.295
SD	13.494	9.8	9.719	6.127	4.047

Note. *p < .001.

Confirmatory factor analysis (CFA)

Table 3 shows the fitting results for each of the three models. Model 1 achieved good fit: χ^2_{116} = 150.954 (p =.016) RMSEA =.03, CI [90%] =.015–.048, SRMR =.051 TLI =.996 and CFI =.997). The covariance between factors 1 (Fake) and 2 (Discount) was high (0.915). Model 2 achieved a comparably good fit: χ^2_{134} = 184.929 (p =.002), RMSEA =.038, CI [90%] =.023–.050, SRMR =.054 TLI=.992 and

CFI =.994. Model 3, however, achieved a slightly worse fit: χ^2_{135} = 364.263 (p <.001), RMSEA =.079 CI [90%] =.070–.089, SRMR =.070, TLI =.979, and CFI =.976. Factor loadings for models 1 and 2 can be found in Tables 4 and 5.

Table 3
Goodness of fit statistics for confirmatory factor models

Models	χ^2	RMSEA	SRMR	TLI	CFI
Model 1 (3 factors)	χ^2_{116} = 164.209 (p = .002)	.039	.051	.995	.995
Model 2 (2 factors)	χ^2_{134} = 184.929 (p = .002)	.038	.054	.992	.994
Model 3 (1 factor)	χ^2_{135} = 364.263 (p < .001)	.079	.070	.979	.976

Table 4
Factor loadings in model 1 (3 factors)

						95% Confidence Interval	
Factor	Item	Estimate	Std. Error	z-value	p	Lower	Upper
Factor 1 (Fake)	Item 6	0.797	0.019	42.628	< .001	0.760	0.834
	Item 7	0.680	0.020	34.224	< .001	0.641	0.719
	Item 12	0.613	0.022	28.481	< .001	0.571	0.655
	Item 13	0.784	0.019	42.135	< .001	0.748	0.821
	Item 14	0.622	0.020	31.361	< .001	0.584	0.661
	Item 15	0.816	0.018	45.080	< .001	0.781	0.852
	Item 17	0.704	0.020	35.043	< .001	0.664	0.743
	Item 18	0.779	0.020	39.627	< .001	0.740	0.817
	Item 19	0.482	0.022	21.995	< .001	0.439	0.525
	Item 20	0.616	0.022	27.970	< .001	0.573	0.659
Factor 2 (Discount)	Item 3	0.772	0.023	33.674	< .001	0.727	0.817
	Item 4	0.573	0.024	24.084	< .001	0.527	0.620
	Item 8	0.684	0.023	30.199	< .001	0.640	0.729
	Item 10	0.582	0.023	25.138	< .001	0.537	0.628
	Item 16	0.637	0.027	23.516	< .001	0.584	0.690
Factor 3 (Luck)	Item 5	0.854	0.029	29.208	< .001	0.797	0.912
	Item 9	0.843	0.028	30.612	< .001	0.789	0.897
	Item 11	0.843	0.035	23.793	< .001	0.773	0.912

Table 5
Factor loadings in model 2 (2 factors)

						95% Confidence Interval	
Factor	Item	Estimate	Std. Error	z-value	p	Lower	Upper
Factor 1 (Fake + Discount)	Item 3	0.592	0.019	30.806	< .001	0.555	0.630
	Item 4	0.741	0.019	39.920	< .001	0.705	0.778
	Item 6	0.786	0.018	43.413	< .001	0.750	0.821
	Item 7	0.674	0.019	34.856	< .001	0.636	0.712
	Item 8	0.551	0.021	26.117	< .001	0.510	0.593
	Item 10	0.659	0.020	33.385	< .001	0.620	0.698
	Item 12	0.611	0.021	29.230	< .001	0.570	0.652
	Item 13	0.775	0.018	42.755	< .001	0.740	0.811
	Item 14	0.615	0.019	31.817	< .001	0.577	0.653
	Item 15	0.808	0.017	46.168	< .001	0.774	0.842
	Item 16	0.562	0.021	26.590	< .001	0.520	0.603
	Item 17	0.692	0.020	35.450	< .001	0.654	0.730
	Item 18	0.773	0.019	40.563	< .001	0.736	0.810
	Item 19	0.507	0.022	23.549	< .001	0.464	0.549
	Item 20	0.480	0.021	22.518	< .001	0.439	0.522
Factor 2 (Luck)	Item 5	0.636	0.027	23.725	< .001	0.584	0.689
	Item 9	0.855	0.029	29.532	< .001	0.799	0.912
	Item 11	0.843	0.027	30.936	< .001	0.789	0.896

Discussion

Fear feelings of being discovered as a fraud despite clear evidence of competence has been described as the Impostor Phenomenon. Since Clance and Imes (1978) first proposed this psychological pattern, it has been widely reported in both clinical and research contexts, leading to the development of instruments to assess this phenomenon. In this vein, the CIPS has been proven to be a suitable method to evaluate the Impostor phenomenon, with English, German and Korean versions being validated. Nevertheless, no Spanish version has been validated yet. The aim of the present study was to investigate the factorial structure and psychometric properties of CIPS (Clance, 1985) in Spanish population.

Similar to what has been found for the English, German and Korean versions of the CIPS (Brauer & Wolf, 2016; Chae et al., 1995; Chrisman et al., 1995), our scale showed satisfactory overall properties. We found high reliability (ω_{Total} =.90). In addition, correlational analyses yielded similar values to those reported in other validation studies. The correlation between the S-CIPS and measures of depression, self-esteem and fear were moderate to strong in magnitude, which indicates support for nomological and discriminant validity. Importantly, in our sample, the S-CIPS was not correlated with either an external or an internal focus, contrary to previous studies that found an association between the Impostor Syndrome and an external attributional style (Brauer & Wolf, 2016).

In our confirmatory factor analysis (CFA) both models with two and three factors achieved good fit. In line with previous studies (Brauer & Wolf, 2016; Chrisman et al., 1995), the present results suggest that the 3-factor model (Fake, Discount and Luck) is an optimal solution. However, its fit is nearly identical to that achieved by the 2-factor model (Fake + Discount and Luck). Given the high covariance (0.915) between the factors Fake and Discount, the 2-factor solution might be preferred as a more parsimonious solution. As noted by (Brauer & Wolf, 2016), the utility of splitting the CIPS into subscales might be mostly for illustrating theorical aspects of Impostor Phenomenon, given that distinct studies have previously shown that they are not discriminant in relation to external variables such as depression, locus of control, fear of negative evaluation or self-esteem (Brauer & Wolf, 2016; Chrisman et al., 1995; Jöstl et al., 2012). Thus, considering the similarity of the fitting indices in both models (2 and 3 factors) found here and the variety of previous results in terms of how many factors are best fit in CIPS (e.g., Brauer & Wolf, 2016; French et al., 2008; Simon & Choi, 2018; for a review Mak et al., 2019), further study of the distinction between these factors would be necessary to decide whether to accept or discard the 3-factor model definitively.

In line with recent publications analyzing demographic prevalence of Impostor Phenomenon, no gender differences were found in the current sample (Bravata et al., 2019). Nevertheless, the sample showed an imbalanced gender ratio, which should be addressed in future research. In addition, we could not test the prevalence in different age groups, given that participants were undergraduate students mostly under 25. This is especially relevant due to the mixed results in the literature with respect to whether the symptoms of Impostor Syndrome tend to decline with age (Bravata et al., 2019). Thus, the psychometric validation of the CIPS in the Spanish population will enable future research to use this scale in gender-balanced research as well as in different age ranges.

Moreover, although it is well known that Impostor Syndrome impacts different professional environments, such as health care (Arena & Page, 1992) and academia (Jöstl et al., 2012), many other aspects remain unknown. For instance, the concrete effects of Impostor Syndrome on burnout have yet to be examined, and the relevance of the environment to generate or perpetuate Impostor Syndrome have also remained unexamined (Feenstra et al., 2020). Due to this lack of knowledge, Impostor Syndrome is often treated using general evidence-based therapy (e.g., cognitive behavioral therapy) instead of specific treatments aimed at alleviating impostor symptoms (Bravata et al., 2019). Thus, this validation study may help to further improve our understanding of which populations are affected and how they are affected, which may guide the development of specific treatment.

CRediT authorship contribution statement. Alejandro Sandoval-Lentisco: Methodology, Formal analysis, Data Curation, Investigation, Writing - original draft, Writing - review & editing, Visualization. Miriam Tortajada: Investigation, Writing - original draft, Writing - review & editing, Visualization. Lucía B. Palmero: Writing - review & editing. Luis Fuentes: Writing - review & editing, Resources. Víctor Martínez-Pérez: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft, Writing - review & editing, Visualization.

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