OPEN ACCESS

Received: 06/10/24
Accepted: 02/01/25
Online: 08/01/25

ORIGINAL ARTICLE

Validation of the state impulsivity scale in students from a university in Lima, Peru

Daniel Silva-Dominguez[1,a] | Jose Luis Cervera Santiago[1,b]

[1] Universidad Nacional Mayor de San Marcos, Lima, Perú.
[a] Specialist in Cognitive Behavioral Therapy.
[b] Psychologist.

Keywords:
impulsivity; factor analysis; reliability; validity; invariance; students; university (Source: MeSH - NLM).

ABSTRACT

Objective. To analyze the psychometric properties and validate the State Impulsivity Scale (SIS) in university students from Lima, Peru. **Methods.** This was a psychometric, descriptive, and cross-sectional study. The sample consisted of 954 students (361 women and 593 men), who were evaluated with the SIS by Iribarren et al. [18]. A parallel analysis was conducted across three dimensions, along with an exploratory factor analysis. Additionally, several fit indices were used for a more comprehensive evaluation and analysis. **Results.** The results indicate that the three-factor model proposed by the authors presented the best fit indices (CFI = 0.973, TLI = 0.964, SRMR = 0.039, and RMSEA = 0.049), showing evidence of construct validity. Likewise, adequate reliability values were shown (gratification, F1, α = 0.833 and ω = 0.790; automatism, F2, α = 0.854 and ω = 0.810; attentional, F3, α = 0.874 and ω = 0.835; and total scale α = 0.936 and ω = 0.917). Finally, no evidence of invariance was found according to sex (ΔCFI > 0.001). **Conclusions.** The State Impulsivity Scale provides psychometric evidence for its use.

Validación de la escala de impulsividad estado en estudiantes de una universidad de Lima, Perú

Palabras clave:
impulsividad; análisis factorial; confiabilidad; validez; invarianza; estudiantes, universitarios (Fuente: DeCS - BIREME).

RESUMEN

Objetivo. Analizar las propiedades psicométricas y validar la escala de impulsividad estado (EIE) en estudiantes universitarios de Lima, Perú. **Métodos.** El estudio fue psicométrico, descriptivo y transversal. La muestra estuvo conformada por 954 estudiantes (361 mujeres y 593 varones), los cuales fueron evaluados con la EIE de Iribarren et al. [18]. Se realizó el análisis paralelo en 3 dimensiones, además de un análisis factorial exploratorio; así mismo, se usaron varios indicadores de ajuste para una mejor evaluación y análisis. **Resultados.** Los resultados indican que el modelo de tres factores propuesto por los autores fue el que presenta mejores índices de ajuste (CFI = 0,973, TLI = 0,964, SRMR = 0,039 y RMSEA = 0,049), por lo que muestra evidencia de validez de Constructo. De igual modo, se muestran adecuados valores de confiabilidad (gratificación, F1, α = 0,833 y ω = 0,790; automatismo, F2, α = 0,854 y ω = 0,810 y atencional, F3, α = 0,874 y ω = 0,835; y la escala total α = 0,936 y ω = 0,917). Por último, no se encontró evidencia de invarianza según sexo (ΔCFI > 0,001). **Conclusiones.** la escala de impulsividad estado cuenta con evidencias psicométricas para su uso.

Cite as: Silva-Dominguez DS, Cervera-Santiago JL. Validation of the state impulsivity scale in students from a university in Lima, Peru. Rev Peru Cienc Salud. 2025; 7(1):18-25. doi: https://doi.org/10.37711/rpcs.2024.7.1.556

Correspondence:
Daniel Sergio Silva Dominguez
Lima, Perú
+51 940 956 415
daniel.silva2@unmsm.edu.pe

INTRODUCTION

Impulsivity is understood as a predisposition to act immediately [1] in order to obtain rapid responses or rewards [2], without evaluating or analyzing the potential negative consequences of such actions on oneself or others, which leads to problems at both individual and social levels [3]. Therefore, impulsivity has been studied as a symptom or as a predisposing factor related to various mental disorders, including substance use disorders [4], behavioral addictions [5–8], anxiety [9,10], depression [11], and attention deficit hyperactivity disorder [12]. It has also been explored as a personality trait linked to extroversion or emotional stability [13], and in personality disorders such as borderline, histrionic, and antisocial disorders, as observed in clinical literature for decades [14].

Due to its relationship with the aforementioned disorders, a wide range of studies have addressed impulsivity, including psychometric research focused on the development of instruments designed to measure this construct directly or implicitly [4,15–17]. In this regard, Iribarren et al. [18] identify various tools for measuring impulsivity, whether as a state or behavioral reaction to environmental factors (e.g., Barratt Impulsiveness Scale, Plutchik's Impulsivity Scale, Eysenck's EPI Questionnaire), or as a trait reflecting stable personality features (e.g., Continuous Performance Test, Wisconsin Card Sorting Test). The most commonly used instruments include the BIS-11 [15] and Plutchik's Impulsivity Scale [19].

The Barratt Impulsiveness Scale (BIS-11) [15] consists of 30 Likert-type items with four response options (rarely/never, occasionally, often, almost always/always), validated in Spanish [20] with satisfactory reliability indicators (total scale = 0.87; subscales = 0.91 and 0.85) and construct validity (GFI = 0.095; RMSEA = 0.065). It proposes attentional and non-planning impulsivity as key dimensions of the construct.

Similarly, Plutchik's Impulsivity Scale [19], composed of 15 Likert-type items with four response options (never, sometimes, often, almost always/always), was analyzed by Alcázar et al. [21] in 2015 in its Spanish version, showing acceptable reliability (α = 0.713) and construct validity (KMO = 0.814; Bartlett's test: X^2 = 1883.862; df = 105; p < 0.001). The scale theoretically encompasses self-concept, emotions and primary drives, planning, and concentration as dimensions of impulsivity [4, 5–17].

According to Iribarren et al. [18], impulsivity can be assessed as both state and trait. Based on this premise, they developed and validated the EIE Scale in Spain, which aims to capture both components. The EIE consists of 20 items with four response options (almost never, sometimes, quite often, almost always). It was explored in a sample of 310 individuals, including both clinical and non-clinical participants. The authors statistically confirmed the proposed structure (KMO = 0.892; X^2 = 1913.5129; df = 190; p < 0.001), identifying three factors: gratification—referring to the quick search for sensation and reward; automatism—referring to automatic behavior without decision-making; and attentional impulsivity—referring to actions taken without assessing negative consequences. These align with theoretical frameworks proposed by Dickman [3] and Moeller [1], showing adequate reliability (total α = 0.884; subscales α = 0.840, α = 0.809, and α = 0.756) and convergent validity with BIS-11 (r = 0.717; p < 0.001), making it a suitable instrument for evaluating both state and trait impulsivity in clinical settings. However, despite being developed and validated in Spanish, no studies have evaluated its psychometric properties in the Peruvian context. Therefore, it is necessary to conduct such research before applying it in clinical practice or research within this population.

Given the above, this study aims to analyze the psychometric properties and validate the EIE Scale in a sample of university students in Lima, Peru.

METHODS

Type and setting of the study

This was a psychometric, descriptive, and cross-sectional study aimed at validating the Trait-State Impulsivity Scale (EIE) by analyzing its anxiety indicators, validity, and invariance [22]. The research was conducted at the Universidad Nacional Federico Villarreal in Lima, Peru, during the year 2019.

Population and sample

The target population consisted of 1,010 university students. The sample size was calculated using the 99% confidence level formula, resulting in a total of 954 students (361 women and 593 men), selected through intentional non-probability sampling. The inclusion criteria were being enrolled in the 2019-I academic term in the Psychology program of the university. The exclusion criterion was incomplete responses to the instrument items.

Variable and data collection instrument

The study variable was validation. The Trait-State Impulsivity Scale (EIE) was developed by Iribarren et al. in Spain in 2011 [18]. The scale consists of 20 items distributed across three dimensions: gratification (items 1 to 7), automatism (items 8 to 13), and attentional impulsivity (items 14 to 20). The original psychometric properties of the instrument indicated good reliability (α = 0.884), construct validity, and Bartlett's test of sphericity (KMO = 0.892; chi-square = 1913.5129; df = 190; p < 0.001). The authors also reported evidence of convergent validity with the BIS-11 scale (r = 0.717; p < 0.001). It is important to note that this scale has not previously been studied or validated in the Peruvian context.

Data collection procedures

First, permission was obtained from the instructors of each class to administer the instrument. The process began with obtaining informed consent, which included an explanation of the study's objectives and a voluntary signature indicating agreement to participate. The EIE was administered in person and in group settings. Subsequently, the data were entered into SPSS version 23 for statistical analysis.

Data analysis

Initially, item-level descriptive statistics were calculated, including mean, skewness, kurtosis, and item-total correlations. A parallel analysis of principal components was then conducted, which suggested the potential structure of the scale with up to three dimensions. An exploratory factor analysis (EFA) was performed to extract and determine the number of items per factor. The structure of the items was evaluated using both 1-factor and 2-factor solutions via EFA; however, for the 3-factor model, a confirmatory factor analysis (CFA) was carried out, based on the original model proposed by the scale's authors.

In both analyses, the robust weighted least squares estimator (WLSMV) was used, as it is the optimal estimator for ordinal variables [23]. Item distributions and factor loadings were determined using the Oblimin rotation method [24], based on the parallel analysis for 1-, 2-, and 3-factor models.

To identify the model with the best fit, multiple fit indices were applied for more accurate evaluation and comparison [23,25–27]. The indices used included: chi-square (X^2), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), and Comparative Fit Index (CFI). Each index has specific interpretation criteria. The TLI is a multivariate coefficient of determination that indicates the proportion of shared variance among variables [28], with values above .90 considered acceptable and above .95 optimal.

The RMSEA estimates the discrepancy between the population correlation matrix and the model-implied matrix, relative to the degrees of freedom. Values below .05 are considered excellent, whereas values above .08 indicate poor fit [29]. The SRMR indicates the average magnitude of residual correlations, with values under .05 considered good [27]. The CFI compares the estimated model with a null model of variable independence [30], and values above .90 are considered adequate [31]. Lastly, measurement invariance by sex was assessed through model comparisons using progressively constrained configurations [32]: (1) configural invariance model, with no constraints; (2) metric invariance model, with factor loadings constrained; and (3) scalar invariance model, with constrained loadings and intercepts. ΔCFI (< 0.1) was used to compare models and determine group equivalence [32,33].

Ethical considerations

For this study, the international ethical guidelines for health-related research involving humans, developed by the Council for International Organizations of Medical Sciences (CIOMS) [34], were followed, particularly regarding the use and recording of data. Accordingly, permission was requested from the relevant authorities, and participants' approval was obtained through the completion of informed consent forms. Participants were informed about the limited use of the database, in accordance with the study's objectives and the analysis of its results. Anonymity was also preserved to protect data confidentiality through the use of codes.

RESULTS

Descriptive data analysis was first conducted using measures of central tendency and dispersion (M = 17.6; SD = 9.55; N = 954; min = 0; max = 17), assessing the mean, standard deviation, skewness, kurtosis, and each item's correlation with the total scale score. All items showed adequate item-total correlations, with values above 0.30 (min. I4 = 0.491 to max. I19 = 0.681), indicating that no items required removal (see Table 1).

Table 1. Mean, standard deviation, skewness, kurtosis, and item-total correlation of the State Impulsivity Scale items

Item	M	SD	Skewness	Kurtosis	Item-total correlation
I1	0.61	0.701	0.837	0.805	0.504
I2	0.7	0.686	0.716	0.357	0.585
I3	0.95	0.782	0.518	-0.137	0.428
I4	0.69	0.721	0.753	-0.008	0.491
I5	1.07	0.854	0.508	-0.314	0.506
I6	0.56	0.74	0.994	0.471	0.551
I7	0.84	0.828	0.709	-0.192	0.584
I8	0.75	0.76	0.828	0.333	0.656
I9	0.95	0.85	0.597	-0.305	0.598
I10	0.9	0.813	0.575	-0.294	0.538
I11	0.77	0.808	0.830	0.063	0.611
I12	0.69	0.8	0.988	0.361	0.602
I13	0.76	0.805	0.833	0.069	0.651
I14	0.94	0.8	0.642	0.081	0.596
I15	0.84	0.801	0.668	-0.134	0.604
I16	0.88	0.781	0.643	0.028	0.605
I17	0.83	0.732	0.583	0.021	0.596
I18	0.8	0.791	0.773	0.101	0.512
I19	0.9	0.768	0.605	0.068	0.681
I20	0.82	0.806	0.740	-0.002	0.626

The distribution of items according to their factor loadings, as indicated in each proposed model, shows that no item was eliminated and all presented factor loadings greater than 0.30, thus supporting the acceptance of all three models. Additionally, the reliability of each factor in each model was analyzed. It was observed that all factors within the respective models showed acceptable reliability indices, with values greater than 0.70 for both Cronbach's alpha and McDonald's omega: one-factor model ($\alpha = 0.936$ and $\omega = 0.917$), two-factor model (F1 $\alpha = 0.889$ and $\omega = 0.861$; F2 $\alpha = 0.890$ and $\omega = 0.858$), and the original three-factor model (F1 $\alpha = 0.833$ and $\omega = 0.790$; F2 $\alpha = 0.854$ and $\omega = 0.810$; F3 $\alpha = 0.874$ and $\omega = 0.835$). Therefore, it is necessary to conduct a confirmatory factor analysis to determine which of the three models provides the best fit indices (see Table 2).

Table 2. Factor loadings, item distribution, and reliability coefficients for the 1-, 2-, and 3-factor models

	One-Factor Model	Two-Factor Model		Three-Factor Model		
	F1	F1	F2	F1	F2	F3
I1	0.623	0.64		0.659		
I2	0.671	0.691		0.709		
I3	0.534	0.550		0.563		

Continued on the next page

Comes from the previous page

	One-Factor Model	Two-Factor Model		Three-Factor Model		
	F1	F1	F2	F1	F2	F3
I4	0.627		0.644	0.662		
I5	0.523		0.538	0.552		
I6	0.670		0.690	0.709		
I7	0.648		0.668	0.686		
I8	0.688		0.708		0.715	
I9	0.650		0.669		0.675	
I10	0.632		0.651		0.658	
I11	0.689		0.709		0.716	
I12	0.692		0.711		0.718	
I13	0.728		0.749		0.756	
I14	0.658	0.677				0.691
I15	0.723	0.743				0.758
I16	0.663	0.682				0.696
I17	0.684	0.703				0.717
I18	0.594	0.610				0.623
I19	0.722	0.743				0.758
I20	0.695	0.714				0.729
α	0.936	0.889	0.890	0.833	0.854	0.874
ω	0.917	0.861	0.858	0.790	0.810	0.835

* α = Cronbach's alpha; ω = McDonald's omega.

Table 3 presents the goodness-of-fit indices for the three models. The original three-factor model (X^2 = 547.029; df = 167; CFI = 0.973; TLI = 0.964; SRMR = 0.039; RMSEA = 0.049) proposed by Iribarren et al. [18] demonstrated the best and most optimal fit, outperforming the one-factor model (X^2 = 813.525; df = 170; CFI = 0.954; TLI = 0.948; SRMR = 0.048; RMSEA = 0.063) and the two-factor model (X^2 = 640.165; df = 169; CFI = 0.966; TLI = 0.962; SRMR = 0.043; RMSEA = 0.054).

Finally, measurement invariance across sex was evaluated by comparing the three models as shown in Table 4. Although the CFI values were adequate for

Table 3. Goodness-of-fit indices for the State Impulsivity Scale

Model	x2	df	CFI	TLI	SRMR	RMSEA
M1	813.525	170	0.954	0.948	0.048	0.063
M2	640.165	169	0.966	0.962	0.043	0.054
M3	547.029	167	0.973	0.964	0.039	0.049

* M1: one-factor model; M2: two-factor model; M3: three-factor model; X^2: chi-square; df: degrees of freedom; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Square Residual; CFI: Comparative Fit Index.

 https://doi.org/10.37711/rpcs.2024.7.1.556

Table 4. Measurement invariance across sex (males vs. females)

Model	x2	df	CFI	TLI	SRMR	RMSEA	Comparison	ΔCFI
M1 (Configural)	758.369	361	0.970	0.966	0.049	0.052	.....	
M2 (Metric)	785.712	368	0.971	0.97	0.049	0.049	M2 VS M1	0.001
M3 (Scalar)	762.204	385	0.974	0.974	0.049	0.045	M3 VS M2	0.003

* M1 (configural model), M2 (metric model), M3 (scalar model).

all models, ΔCFI values exceeded the 0.001 threshold, indicating a lack of invariance across male and female groups [33] (see Table 4).

DISCUSSION

As previously stated, the objective of this research was to analyze the psychometric properties of the EIE in order to provide evidence of the instrument's reliability and validity in a sample of university students in Lima, by evaluating its factorial structure [23]. This process was carried out through exploratory factor analysis (EFA) and, consequently, confirmatory factor analysis (CFA). These procedures allowed for a comparison between the original model of the scale, developed by the authors, and other models that also presented adequate values and goodness-of-fit indices.

The exploratory factor analysis (EFA), using the parallel analysis criterion, indicated that the instrument could be structured with one to three factors [23]. Therefore, the items were distributed for both the one- and two-factor models, which were then compared with the original three-factor model. The results showed that the original three-factor model yielded the best fit [18], demonstrating a superior alignment of the factor loadings [35]. Consequently, the three-factor model is considered the most suitable for both research and clinical practice. This finding supports the model proposed by Iribarren et al. Currently, there are no similar validation studies for this instrument in other Spanish-speaking countries; likewise, no such studies exist within our local context for comparison. Nevertheless, our findings confirm the theoretical structure of Iribarren et al.'s original model [18].

Regarding the invariance analysis across groups by sex [33], although this assessment was not proposed by the original authors, the results suggest a lack of invariance, consistent with the findings of Barack [15] and Plutchik [19], who argue that biological and emotional differences may underlie gender differences in impulsive responses. However, it is recommended that further comparative studies be conducted with similar samples in other regions, as no previous studies currently exist.

It is important to note that due to the use of non-probabilistic sampling, the generalization of these findings to all university contexts in the country is limited. While the original instrument was validated in both clinical and non-clinical samples (i.e., subjects with a specific disorder diagnosis), the present study was limited to university students, with the aim of providing evidence of validity in this population. Therefore, it is also advisable to carry out studies focused on clinical populations.

Among the limitations identified in this study are the use of a non-clinical sample—similar to the original validation of the scale—the non-random selection of participants, and the lack of comparison with non-university samples. Lastly, it is worth noting that impulsivity is a theoretical construct with multiple explanatory models. In this case, our results support the appropriate use of the scale, conceptualizing impulsivity as both a trait and a state, in contrast to earlier scales.

Conclusions

The Trait-State Impulsivity Scale demonstrates solid psychometric properties, providing strong evidence of validity and reliability in its original three-factor model.

Recommendations

Based on the findings and limitations identified in this study, it is recommended to replicate the analyses

and procedures in clinical samples, including both adult and adolescent populations. Additionally, it is advisable to develop a short-form version of the scale for use in hospital settings, to support clinical evaluation and diagnosis by mental health professionals.

REFERENCES

1. Moeller FG, Barratt ES, Dougherty DM, Schmitz JM, Swann AC. Psychiatric aspects of impulsivity. Am J Psychiatry [Internet]. 2001 [cited 2023 Mar 21];158(11):1783-93. https://doi.org/10.1176/appi.ajp.158.11.1783
2. Barratt ES. Factor analysis of some psychometric measures of impulsiveness and anxiety. Psychological reports [Internet]. 1965 [cited 2023 Mar 21];16(2):547-54. https://doi.org/10.2466/pr0.1965.16.2.547
3. Dickman SJ. Functional and dysfunctional impulsivity: personality and cognitive correlates. J Pers Soc Psychol [Internet]. 1990 [cited 2023 Mar 21];58(1):95-102. https://doi.org/10.1037/0022-3514.58.1.95
4. Solowij N., Jones K. A., Rozman M. E., Davis S. M., Ciarrochi J., Heaven P. C., et al. Reflection impulsivity in adolescent cannabis users: a comparison with alcohol-using and non-substance-using adolescents. Psychopharmacology [Internet]. 2012 [cited 2023 Mar 21];219,575–586. https://doi.org/10.1007/s00213-011-2486-y
5. Griffiths MD, Parke JJIjoam, health. Adolescent gambling on the Internet: A review. 2010;22(1).
6. Griffiths, M. Does Internet and computer" addiction" exist? Some case study evidence. CyberPsychology [Internet]. 2000 [cited 2023 Mar 21];3(2): 211-218. Available from: https://jogoremoto.pt/docs/extra/DPOMNQ.pdf
7. Matute H, Vadillo M. Psicología de las nuevas tecnologías: De la adicción a Internet a la convivencia con robots. Madrid: Editorial Síntesis; 2012.
8. Young K. Internet Addiction: A New Clinical Phenomenon and Its Consequences. American Behavioral Scientist [Internet]. 2004 [cited 2023 Mar 21];48(4):402-15. https://doi.org/10.1177/0002764204270278
9. Corbí B, Pérez-Nieto M. Relación entre impulsividad y ansiedad en los adolescentes. Rev. electrón. motiv. emoc. [Internet]. 2011 [cited 2023 Mar 7];37(14):109-22. Available from: https://reme.uji.es/articulos/numero37/article8/article8.pdf
10. Corbí B. Ansiedad, estrategias de afrontamiento e impulsividad en el consumo de alcohol adolescente [Internet]. Madrid: Universidad Complutense; 2011 [cited 2023 Mar 7]. Available from: https://produccioncientifica.ucm.es/documentos/619c9ffea08dbd1b8f9eea6e
11. Vargas HB, Saavedra JE. Factores asociados con la conducta suicida en adolescentes. Rev Neuropsiquiatr [Internet]. 2013 [cited 2024 Jun 7];75(1):19. Available from: https://revistas.upch.edu.pe/index.php/RNP/article/view/1539
12. Pascual-Castroviejo I. Síndrome de déficit de atención-hiperactividad. Madrid: Ediciones Díaz de Santos; 2009.
13. Eysenck SB, Eysenck HJ. The place of impulsiveness in a dimensional system of personality description. Brit J Soc Clin Psychol [Internet].1977 [cited 2024 Jun 15];16(1):57-68. https://doi.org/10.1111/j.2044-8260.1977.tb01003.x
14. Millon T, Davis RD. Trastornos de la personalidad: más allá del DSM-IV: Madrid: Masson; 1998.
15. Patton JH, Stanford MS, Barratt ES. Factor structure of the Barratt impulsiveness scale. J Clin Psychol [Internet]. 1995 Nov [cited 2024 Jun 15];51(6):768-74. https://doi.org/10.1002/1097-4679(199511)51:6%3C768::aid-jclp2270510607%3E3.0.co;2-1
16. Reise SP, Moore TM, Sabb FW, Brown AK, London ED. The Barratt Impulsiveness Scale-11: reassessment of its structure in a community sample. Psychol Assess [Internet]. 2013 Jun [cited 2024 Jun 15];25(2):631-42. doi: 10.1037/a0032161
17. Urrego Barbosa SC, Valencia Casallas OL, Villalba J. Validación de la escala barrat de impulsividad (bis-11) en población bogotana %J. Divers: Perspect Psicol [Internet]. 2017 Jul 1 [cited 2024 Jun 15];13(2):143–57. https://doi.org/10.15332/s1794-9998.2017.0002.01
18. Iribarren M, Jiménez-Giménez M, García-de Cecilia J, Rubio-Valladolid G. Validación y propiedades psicométricas de la Escala de Impulsividad Estado (EIE). Actas esp. Psiquiatr [Internet]. 2011 [cited 2024 Jun 15];39(1):49-60. Available from: https://actaspsiquiatria.es/index.php/actas/article/view/717
19. Plutchik R, Van Praag H. The measurement of suicidality, aggressivity and impulsivity. Prog Neuropsychopharmacol Biol Psychiatry [Internet]. 1989 [cited 2024 Jun 15]; 13(Supplement 1): S23-S34.
20. Martínez-Loredo V, Fernández-Hermida JR, Fernández-Artamendi S, Carballo JL, García-Cueto E, García-Rodríguez O. The association of both self-reported and behavioral impulsivity with the annual prevalence of substance use among early adolescents. Subst Abuse Treat Prev Policy [Internet]. 2015 [cited 2024 Jun 15];10:23. https://doi.org/10.1186/s13011-015-0019-0
21. Alcázar-Córcoles MÁ, Verdejo AJ, Bouso-Sáiz J. Propiedades psicométricas de la escala de impulsividad de Plutchik en una muestra de jóvenes hispanohablantes. Actas esp. Psiquiatr [Internet]. 2015 [cited 2025 Mar 21];43(5):161-9. Available from: https://dialnet.unirioja.es/servlet/articulo?codigo=5182092
22. Ato M, López-García JJ, Benavente A. Un sistema de clasificación de los diseños de investigación en psicología. Analesps [Internet]. 2013 [cited 2025 Mar 21];29(3):1038–59. https://doi.org/10.6018/analesps.29.3.178511
23. Timmerman ME, Lorenzo-Seva U. Dimensionality assessment of ordered polytomous items with parallel analysis. Psychol. Methods [Internet]. 2011 [cited 2025 Mar 21];16(2):209-20. Available from: https://psycnet.apa.org/doi/10.1037/a0023353
24. Ferrando PJ, Lorenzo-Seva. El análisis factorial exploratorio de los ítems: algunas consideraciones adicionales. Analesps [Internet]. 2014 [cited 2025 Mar 21];30(3):1170-5. Available from: https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S0212-97282014000300041
25. Lorenzo-Seva. Promin: A method for oblique factor rotation. Multivariate Behavioral Research [Internet]. 1999 [cited 2025 Mar 22];34(3):347-65. Available from: https://www.tandfonline.com/doi/abs/10.1207/S15327906MBR3403_3
26. Verdugo Alonso MA, Crespo M, Badía M, Arias B (Coords.). Metodología en la investigación sobre discapacidad. En: Introducción al uso de las ecuaciones estructurales: VI Simposio científico SAID [Internet]. Salamanca: INICO, 2008 [cited 2025 Mar 22]. Available from: http://hdl.handle.net/10366/82465
27. Ferrando PJ, Anguiano-Carrasco CJ. El análisis factorial como técnica de investigación en psicología. Pap. Psicol [Internet]. 2010 [cited 2025 Mar 22];31(1):18-33. Available from: https://www.redalyc.org/articulo.oa?id=77812441003
28. Ruiz MA, Pardo A, San Martín. Modelos de ecuaciones estructurales. Pap. Psicol [Internet]. 2010 [cited 2025 Mar 22];31(1):34-45. https://www.redalyc.org/pdf/778/77812441004.pdf
29. Hair JF, Anderson RE, Tatham RL, Black WC. Análisis multivariante. Madrid: Pearson Prentice Hall; 2004.

30. Lloret-Segura S, Ferreres-Traver A, Hernández-Baeza A, Tomás-Marco. El análisis factorial exploratorio de los ítems: una guía práctica, revisada y actualizada. Analesps [Internet]. 2014 [cited 2025 Mar 22];30(3):1151-69. Available from: https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S0212-97282014000300040
31. Hu L, Bentler PM. Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. Psychol. Methods [Internet]. 1998 [cited 2025 Mar 22];3(4):424-53. doi:10.1037/1082-989X.3.4.424
32. Mellenbergh G. Item bias and item response theory. Int. J. Educ. Res [Internet]. 1989 [cited 2025 Mar 25];13(2):127-43. https://doi.org/10.1016/0883-0355(89)90002-5.
33. Byrne BM. Structural equation modeling with EQS and EQS/Windows: Basic concepts, applications, and programming. London: Sage; 1994.
34. Council for International Organizations of Medical Sciences (CIOMS). International ethical guidelines for health-related research involving humans. 4th ed. Geneva: CIOMS; 2016.
35. Manzano A, Zamora S. Sistema de ecuaciones estructurales: una herramienta de investigación. Mexico City: Centro Nacional de Evaluación para la Educación Superior; 2010.

Authorship contribution

DS-D: Conceptualization, writing, methodology, data analysis, discussion, and final review of the article.

JLCS: Conceptualization, writing, methodology, data collection, discussion, and final review of the article.

Funding sources

This study was conducted using the authors' own resources.

Conflict of interest statement

The authors declare no conflicts of interest.