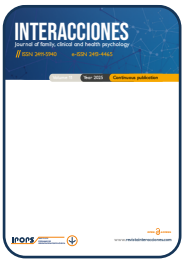
INTERACCIONES
Journal of family, clinical and health psychology
// ISSN 2411-5940 e-ISSN 2413-4465

www.revistainteracciones.com



ORIGINAL ARTICLE

Psychometric Properties of the Test of Mobile Phone Dependence Brief (TMDBrief) in Peruvian College Students

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Received: May 30, 2025 | **Revised:** June 19, 2025 | **Accepted:** July 13, 2025 | **Published Online:** July 26, 2025

CITE IT AS:
Franco-Jimenez, A., Garcia-Rivera M., Campos-Rosas, R. (2025). Psychometric Properties of the Test of Mobile Phone Dependence Brief (TMDBrief) in Peruvian College Students. *Interacciones, 11*, e460. https://dx.doi.org/10.24016/2025.v11.460

ABSTRACT

Background: The increasing use of smartphones has raised concerns about problematic use and its impact on mental health. Assessing smartphone addiction requires valid and reliable instruments, such as the Test of Mobile Phone Dependence Brief (TMDbrief), which has been widely used in various cultural contexts. **Objective:** This study aimed to evaluate the psychometric properties of the TMDbrief, including its factorial structure, internal consistency, measurement invariance across gender, and convergent validity with depression and phubbing behaviors in Peruvian university students. **Method:** In this cross-sectional study, a sample of 954 students completed the TMDbrief, the PHQ-9 to assess depression, and the Phubbing Scale to measure phone-related social disruptions. Confirmatory factor analysis (CFA) tested the four-factor structure, and McDonald's omega assessed internal consistency. Measurement invariance across gender was examined to ensure the instrument's applicability in both male and female students. **Result:** CFA confirmed the four-factor structure ($\chi^2(48) = 320.31$, CFI = .983, TLI = .977, RMSEA = .077, SRMR = .029). Internal consistency was strong, with McDonald's ω between .80 and .85; CR ranged from .80 to .86 and AVE from .57 to .67, indicating adequate convergence. Measurement invariance across gender was confirmed, and convergent validity was supported by moderate correlations with depression and phubbing behaviors. **Conclusion:** The TMDbrief is a valid and reliable instrument for assessing smartphone addiction among Peruvian university students, supporting its use in research, early detection, and intervention development.

Keywords: Psychometrics; Smartphone; Mobile Phone Addiction; College Students; Social Behavior; Peru.

INTRODUCTION

The widespread adoption of mobile phones has revolutionized communication and access to information. However, this surge has also raised concerns about problematic use and its impact on mental health and well-being (Elhai et al., 2017). Smartphone addiction, characterized by compulsive use that disrupts daily life and causes distress when access is restricted (Billieux et al., 2015), resembles behavioral patterns observed in substance addiction and pathological gambling. Chóliz (2012) attributes this dependence to the demand for immediate social interaction, gratification, and entertainment, facilitated by the ubiquity of mobile devices. Symptoms include excessive use, interpersonal conflicts, academic or work interference, tolerance, withdrawal, and loss of control (Chóliz, 2010).

Research indicates that problematic smartphone use is more common in younger individuals (Alhassan et al., 2018). Excessive smartphone use among university students has been linked to higher levels of depression, anxiety, sleep disturbances, and perceived stress (Sohn et al., 2019). In the academic environment, smartphone addiction negatively influences students by

interfering with daily activities, altering interpersonal relationships, and affecting overall health and well-being (Rupert et al., 2016).

Moreover, recent research in Latin America indicates high rates of problematic smartphone use among young people. Among university students, reported prevalence ranges from 19.97 % in Honduras (Hidalgo-Fuentes et al., 2025), to 38.2 % in Mexico (Bueno-Brito et al., 2024), and 48.8 % in the Dominican Republic (Martínez et al., 2025). In Peru, 21.7 % of adolescent girls met criteria for addiction, and 48.7 % were at high risk (Becerra-Canales et al., 2023), highlighting the need for a validated, culturally appropriate tool for the Peruvian context.

Instruments that assess smartphone addiction are critical for understanding the antecedents and consequences of smartphone addiction and for developing effective prevention and intervention strategies (Busch & McCarthy, 2021). Numerous interventions have been implemented to address problematic smartphone use (Wu & Chou, 2023), underscoring the importance of reliable tools for evaluating and refining these approaches over time.

The Test of Mobile Phone Dependence Brief (TMDbrief), originally developed through a multicultural study that included samples from countries such as Pakistan, India, Ireland, Spain, Peru, Mexico, and Guatemala (Chóliz et al., 2016), is a widely used instrument for assessing smartphone addiction. The TMDbrief consists of items that evaluate dimensions representative of the addictive process, such as lack of control, abuse and interference with other activities, withdrawal, and tolerance (Chóliz et al., 2016). The instrument has demonstrated adequate psychometric properties in its adaptations in countries like Italy (Cerutti et al., 2021; Everri et al., 2022), Portugal (Dias et al., 2019), and Argentina (Durao et al., 2021).

Durao et al. (2021) introduced a slightly revised version of the TMDbrief, incorporating minor modifications to better capture contemporary smartphone usage patterns. Specifically, outdated items related to Short Message Service (SMS) communication were replaced with those assessing social media usage, thereby aligning the tool with current trends in mobile technology and user behavior. This update is particularly relevant given the surge in popularity of social media platforms such as TikTok, Snapchat, and Instagram among younger demographics (Ipsos Perú, 2021). Additionally, the integration of advanced functionalities like digital payment systems and AI-driven features including Siri, Google Assistant, and Alexa (Purington et al., 2021) has significantly altered the landscape of smartphone dependency. Consequently, it is essential to evaluate the psychometric properties of the updated TMDbrief within the Peruvian context to ensure its continued validity and reliability in accurately measuring modern patterns of smartphone addiction.

Smartphone penetration in Peru has grown rapidly in recent years (Instituto Nacional de Estadística e Informática, 2023), underscoring the importance of understanding smartphone addiction in this specific cultural context. Although the TMDbrief was initially validated in a Peruvian sample as part of a broader multicultural study (Chóliz et al., 2016), the technological landscape and user behaviors have evolved substantially since then. Reassessing the instrument's validity and reliability in the current context is crucial to ensure it accurately captures contemporary patterns of smartphone dependency among Peruvian university students.

Given documented gender differences in smartphone addiction behaviors (Anshari et al., 2016), assessing the measurement invariance of the TMDbrief across genders is essential to ensure its validity and reliability for both males and females. Research shows that females are more likely to develop addiction through social media and shopping apps, often associated with anxiety (Wei et al., 2023), whereas males are typically driven by gaming and information-seeking behaviors (Chen et al., 2017). While Cerutti et al. (2021) demonstrated the gender invariance of the TMDbrief in an Italian sample of adolescents, no study has yet examined this invariance in a college-aged population within the Peruvian context. Addressing this gap will extend the evidence base for the TMDbrief's applicability across genders in a new demographic and cultural setting.

For these reasons, the present study seeks to evaluate the psychometric properties and measurement invariance across genders of the updated TMDbrief for its application among Peruvian university students. Specifically, four objectives were defined: (1) confirmation of the TMDbrief's four-factor structure via confirmatory factor analysis; (2) assessment of internal consistency using McDonald's ω, composite reliability and average variance extracted; (3) evaluation of convergent validity through correlations with the PHQ-9 and the Phubbing Scale; and (4) testing of measurement invariance across gender. This evaluation will facilitate early detection of potential smartphone addiction and support the instrument's use as a diagnostic and monitoring tool, thereby contributing to more effective preventive and therapeutic interventions tailored to this demographic.

METHODS

Design

The study follows an instrumental design as it aims to analyze the psychometric properties of a self-reported measurement instrument (Ato et al., 2013).

Participants

The sample consisted of 954 students from three public and private universities in the city of Ica, Peru. The questionnaires were completed virtually using Google Forms. The sample included 616 women (64.6%) and 338 men (35.4%), with ages ranging from 18 to 40 years (M = 21.80; SD = 3.54). Certain exclusion criteria were applied, such as being under 18 years of age, failing to complete all required information, and not currently being enrolled at a Peruvian university. Fewer than 2% of cases were excluded for not meeting inclusion criteria. Given this minimal proportion, a sensitivity analysis was not considered necessary. A non-probabilistic convenience sampling method was used, as participants were selected based on the researcher's accessibility and specific needs (Kerlinger & Lee, 2002).

Measures

Test of Mobile Phone Dependence Questionnaire Brief (TMDbrief). The instrument created by Chóliz et al. (2016) has been employed to evaluate mobile phone dependence among uni-

versity students. This study uses an adaptation by Durao et al. (2021), which updates some items by replacing references to SMS with actions like checking social media, reflecting the decline of SMS and the dominance of social media platforms as primary communication tools across Latin America. The scale consists of 12 items with Likert-type response options ranging from one (1) "completely disagree" to five (5) "completely agree." It includes four dimensions: abstinence, which describes the emotions triggered by being without a phone (e.g., "if I don't have my phone, I feel bad"); abuse and interference with other activities, which pertains to challenges in completing tasks due to phone use (e.g., "I spend more time on my phone than I would like"); tolerance, indicating an increased urge to use the phone (e.g., "lately, I use my phone much more"); and lack of control, referring to the difficulty in resisting phone use (e.g., "I would grab my phone right now to check social media or send messages"). This version of the instrument has demonstrated good internal consistency in an Argentinian sample: abuse and interference with other activities (α = .77), tolerance (α = .77), lack of control (α = .76), and abstinence (α = .85) (Durao et al., 2021).

Patient Health Questionnaire- 9 (PHQ – 9). Depression was evaluated using the Patient Health Questionnaire-9 (PHQ-9), a tool consisting of nine items that correspond to the diagnostic criteria for major depression outlined in the Diagnostic and statistical manual of mental disorders, 4th Edition (DSM-IV) (American Psychiatric Association, 1994). The PHQ-9 has been shown to have a unidimensional structure, as confirmed both in its original validation (Kroenke et al., 2001) and in its Peruvian adaptation (Anicama et al., 2023). Responses are recorded on a four-point Likert scale, ranging from "not at all" (0) to "nearly every day" (3), producing a total score between 0 and 27, where higher scores reflect more severe depression. Anicama et al. (2023) found the scale to have satisfactory internal consistency (ω = 0.87) within the Peruvian population. In this study, the PHQ-9 also showed strong internal consistency, with a Cronbach's alpha of α = .85.

Phubbing Scale. The Phubbing Scale (Karadağ et al., 2015) includes 10 items assessed using a five-point Likert scale, where responses range from 1 (never) to 5 (always). For this study, the Spanish version adapted by Blanca and Bendayan (2018) was utilized. The scale consists of two dimensions: Communication Disturbance, which measures how often individuals prioritize using a mobile device over interacting with those around them (e.g., ""I am busy with my mobile phone when I am with my friends"); and Phone Obsession, which captures the urge to use the phone (e.g., "When I wake up in the morning, I first check the messages on my phone"). In a sample from Peru, the scale showed strong internal consistency for both factors, with omega coefficients of ω = .83 for Communication Disturbance and ω = .83 for Phone Obsession (Correa-Rojas et al., 2022). Likewise, in this study, the scale demonstrated adequate internal consistency, with Cronbach's alpha coefficients of α = .84 for Communication Disturbance and α = .78 for Phone Obsession.

Procedures

The study employed online administration of the instruments via Google Forms, ensuring easy and convenient access for participants. Recruitment was conducted through social media, targeting students from two private universities and one public university in Ica, Peru. While all participants completed the TMDbrief, a subsample of 434 students was asked to complete the additional questionnaires required for the convergent validity analysis. The survey was designed to be concise and respectful of participants' time, requiring approximately 10 to 15 minutes to complete. All items were mandatory to prevent missing data, and participants were instructed to complete the survey only once. At the beginning, electronic informed consent was obtained, outlining the study's purpose, voluntary nature, and data protection. Only those who consented could proceed. No personal identifiers were collected, and responses were stored in a password-protected Google Drive folder, accessible only to the research team.

Data Analysis

To ensure adequate power for the confirmatory factor analysis, a sample size calculation was performed using Arifin's (2025) online calculator, based on Kim's (2005) method. Assuming a CFI of .95 and power of .80, the required sample was 229. The final sample (N = 954) exceeded this, indicating sufficient statistical power.

The psychometric evaluation was performed utilizing the R statistical software, version 4.1.2 (R Core Team, 2021), in conjunction with the lavaan package (Rosseel et al., 2012). Item interrelations were examined through polychoric correlations, which account for the ordinal nature of the data, thereby offering more accurate estimations in the context of factor analysis (Pendergast et al., 2017).

Subsequently, confirmatory factor analysis (CFA) was conducted to assess the fit of the proposed factor structure to the data. The weighted least squares mean and variance adjusted (WLSMV) estimator was employed, and fit indices such as RMSEA, SRMR, CFI, and TLI were examined. Model fit was considered acceptable if the CFI and TLI values were ≥ 0.95, the SRMR was ≤ 0.08 (Hu & Bentler, 1999), and the RMSEA was ≤ 0.08 (MacCallum et al., 1996).

To examine measurement invariance across gender groups, the approach recommended by Wu and Estabrook (2016) and Svetina et al. (2020) was followed. Configural and threshold invariance tests (equal thresholds) were conducted using the WLSMV estimator, with model fit changes evaluated based on ΔCFI < .010, ΔRMSEA< .015 or ΔSRMR < .005 to confirm invariance (Chen, 2007).

Reliability was assessed through internal consistency using McDonald's ω (McDonald, 1999), a more robust alternative to Cronbach's alpha when the assumption of tau-equivalence is not met (Cho, 2016; Sijtsma, 2009). Additionally, composite reliability (CR) and average variance extracted (AVE) were computed from standardized CFA loadings, following Fornell and Larcker (1981). Thresholds of CR ≥ .70 and AVE ≥ .50 were used to evaluate adequacy.

Convergent validity was further examined through Pearson correlations between the TMDbrief and scores on the PHQ-9 (depression), as well as the two dimensions of the Phubbing Scale:

Communication Disturbance and Phone Obsession.

Ethical aspects

This study adhered to the ethical principles outlined by the American Psychological Association (2017). At the beginning of the survey, participants were presented with an informed consent form, which clearly stated the voluntary nature of their participation, the anonymity of their responses, and the exclusive academic use of the collected data. Ethical approval was granted by the Ethics Committee of the Universidad Nacional San Luis Gonzaga (CEI-UNICA No016).

RESULTS

A polychoric correlation analysis was conducted on the instrument's items, as displayed in Table 1. The analysis revealed that all correlations exceeded the threshold of .40, indicating a satisfactory level of association among the items.

The original four-dimensional model of the TMDbrief, evaluated through confirmatory factor analysis (CFA), demonstrated good fit to the data $\chi^2(48) = 320.31$, CFI = .983, TLI = .977, RMSEA = .077, SRMR = .029.

Furthermore, Table 2 presents the factor loadings of the items in the TMDbrief. The factor loadings were all satisfactory, exceeding .70, indicating strong relationships between the items and their respective factors.

McDonald's ω, composite reliability (CR), and average variance extracted (AVE) were calculated for each latent factor. As shown in Table 3, internal consistency was high across all factors (ω = .80–.85; CR = .80–.86), and indicator convergence was adequate (AVE = .57–.67), with all values exceeding the recommended thresholds (CR ≥ .70; AVE ≥ .50).

Measurement invariance analysis was conducted across two groups, categorized by gender, as presented in Table 4. Configurational invariance was confirmed, as evidenced by the fit indices: $\chi2(96) = 418.768$, CFI = .981, RMSEA = .084, SRMR = .034. It should be noted, however, that the RMSEA value was marginally high; the other fit indices supported adequate model fit. Further evaluations sought to explore more stringent invariance

Table 1. Polychoric Correlation Matrix of the TMDbrief Items.

	1	2	3	4	5	6	7	8	9	10	11	12
1	-											
2	0.71	-										
3	0.60	0.58	-									
4	0.73	0.67	0.59	-								
5	0.62	0.54	0.55	0.76	-							
6	0.60	0.51	0.55	0.64	0.67	-						
7	0.59	0.60	0.56	0.62	0.56	0.56	-					
8	0.51	0.49	0.51	0.55	0.48	0.48	0.67	-				
9	0.55	0.53	0.56	0.58	0.51	0.53	0.65	0.70	-			
10	0.47	0.43	0.44	0.42	0.47	0.46	0.44	0.41	0.43	-		
11	0.48	0.46	0.45	0.48	0.53	0.54	0.44	0.39	0.48	0.75	-	
12	0.47	0.46	0.42	0.45	0.50	0.51	0.46	0.40	0.42	0.71	0.73	-

Table 2. Factor Loadings of the TMDbrief Items

Item	F1	F2	F3	F4
1. I spend more time on my phone than I would like.	0.85			
2. I have gone to bed later or slept less because I was using my mobile phone.	0.80			
3. I use my mobile phone in situations where, even though not dangerous, it is not appropriate to do so (eating, while other people are talking to me, etc.).	0.75			
4. Lately I use my cell phone a lot more		0.89		
5. I need to use my mobile phone more and more often.		0.83		
6. When I have my mobile phone with me, I can't stop using it.		0.79		
7. As soon as I get up in the morning, the first thing I do is check if I've received any WhatsApp messages and/or browse social media, etc.			0.85	
8. When I feel lonely, I check social media, send a WhatsApp message to someone, etc.			0.79	
9. I would grab my mobile phone and send a message or make a call right now.			0.82	
10. If my mobile phone were broken for an extended period of time and took a long time to fix, I would feel very bad.				0.84
11. If I don't have my mobile phone, I feel bad				0.89
12. I don't think I could stand spending a week without a mobile phone.				0.84

levels, specifically testing for equal threshold and equal loading and threshold across genders. These subsequent analyses met the established benchmarks for acceptable criteria for changes in CFI, RMSEA, and SRMR (Chen, 2007).

Finally, Table 5 presents the correlations between the TMDbrief dimensions, depression (measured using the PHQ-9), and the Phubbing Scale dimensions (Communication Disturbance and Phone Obsession). Moderate to high correlations were observed among the TMDbrief dimensions. Moderate correlations were found between the TMDbrief dimensions and depression, while moderate to high correlations were identified with both Communication Disturbance and Phone Obsession.

DISCUSSION

The present study sought to assess the psychometric properties of the TMDbrief in a sample of Peruvian university students. In response to the evolving patterns of smartphone use—marked by a decline in SMS messaging and a rise in social media engagement—this study utilized a slightly revised version of the scale proposed by Durao et al. (2021). These minor updates, which replaced SMS-related items with ones addressing social media browsing behaviors, ensure that the scale remains relevant and accurately reflects contemporary smartphone usage trends among young adults in Peru while maintaining its original structure and intent.

Confirmatory factor analysis (CFA) supported the originally proposed four-dimensional structure of the TMDbrief, validating its applicability in this new context. Measurement invariance across genders was established through multi-group CFA, demonstrating that the TMDbrief performs consistently for both male and female participants. This finding is significant as it enables unbiased comparisons of smartphone addiction levels across genders, free from measurement-related distortions. This result is particularly important considering the documented differences in smartphone use patterns between genders (Anshari et al., 2016; Wei et al., 2024; Chen et al., 2017). Furthermore, Cerutti et al. (2021) corroborated the invariance of the TMDbrief in an Italian sample of adolescents, reinforcing the scale's robustness across diverse contexts and developmental stages. The consistency of these findings supports the scale's validity for comparative studies within different demographic groups, including college students, as observed in the present Peruvian sample.

Additionally, moderate to high correlations between factors suggest that, while they are related dimensions, they capture distinct aspects of smartphone addiction. The internal consistency of the TMDbrief factors was adequate, with McDonald's omega coefficients ranging between .80 and .85, indicating reliable measurement across the scale's dimensions. Complementing these results, composite reliability values were likewise high (CR =.80–.86), and the average variance extracted for each factor exceeded the .50 benchmark (AVE =.57–.67), showing that each construct explains a substantial share of its items' variance (Fornell & Larcker, 1981).

The TMDbrief demonstrated convergent validity through significant correlations with depression, as measured by the PHQ-9.

Table 3. Internal Consistency and Factor Reliability Indices for the TMDbrief Subscales

Factor	ω	CR	AVE
Abuse and interference in other activities	0.80	0.80	0.57
Tolerance	0.84	0.84	0.63
Loss of Control	0.82	0.82	0.61
Abstinence	0.85	0.86	0.67

Table 4. Measurement invariance of the final model regarding gender

Model invariance	χ^2 (df)	CFI	RMSEA	SRMR	ΔCFI	ΔRMSEA	ΔSRMR
Configural	418.768(96)	0.98	0.08	0.03			
Equal thresholds	428.503(120)	0.98	0.07	0.03	0.00	0.01	0.00
Equal loadings and thresholds	422.735(128)	0.98	0.07	0.03	0.00	0.00	0.00

Table 5. Correlations between the dimensions of the TMDbrief, Depression, Communication disturbance and Phone Obsession.

	1	2	3	4	5	6	7
1. Abuse and interference with other activities	-						
2. Tolerance	0.72	-					
3. Lack of control	0.69	0.62	-				
4. Abstinence	0.55	0.54	0.48	-			
5. Depression	0.35	0.38	0.36	0.36	-		
6. Communication disturbance	0.42	0.48	0.38	0.50	0.41	-	
7. Phone obsession	0.57	0.61	0.58	0.54	0.40	0.59	-

This aligns with existing literature linking excessive smartphone use to mental health challenges. Studies have consistently shown that problematic smartphone use correlates with higher levels of anxiety and depression, particularly among university students. In this population, such usage disrupts sleep and exacerbates stress and depressive symptoms (Li et al., 2020; Kaya et al., 2020). Factors such as academic pressure, a demanding university environment, adverse social relationships, and pre-existing mental health conditions further influence this relationship (Desouky & Abu-zaid, 2020; Višnjić et al., 2018). Moreover, the bidirectional nature of depression and smartphone addiction suggests that depressive symptoms may lead to excessive use as a coping mechanism. In turn, this behavior intensifies emotional distress, creating a self-perpetuating cycle (Elhai et al., 2017; Zhang et al., 2023).

In addition, adequate convergent validity was demonstrated for the two dimensions of the Phubbing Scale: Communication Disturbance, which measures the extent to which individuals prioritize mobile device use over face-to-face interactions, thereby disrupting interpersonal communication, and Phone Obsession, which reflects the compulsive urge to use the phone. This is significant, as phubbing is consistently linked to smartphone addiction in the literature, undermines face-to-face social interactions (Chotpitayasunondh & Douglas, 2016), and negatively impacts well-being (Ivanova et al., 2020). These relationships support the TMDbrief's validity in capturing relevant aspects of smartphone addiction.

These findings align with previous studies conducted in countries such as Italy (Cerutti et al., 2021; Everri et al., 2022), Portugal (Dias et al., 2019), and Argentina (Durao et al., 2021), where the TMDbrief also demonstrated robust psychometric properties. This cross-cultural consistency highlights the instrument's reliability for assessing mobile phone dependence in diverse contexts. Validating the TMDbrief within the Peruvian population further supports its utility as a reliable tool for early detection and monitoring of smartphone addiction among university students.

Practical Implications and Prevention Strategies

Evidence from recent studies and systematic reviews highlights several effective interventions to reduce smartphone addiction among university students. These include aerobic exercise (Liu et al., 2019; Pirwani & Szabo, 2024), cognitive-behavioral therapy (Khalily et al., 2020; Liu et al., 2022), mindfulness-based approaches, group counseling, app restriction tools, and cognitive training (Liu, 2021; Liu et al., 2022). Such interventions have shown promising results in reducing compulsive use, improving emotional regulation, and enhancing concentration and logical thinking (Liu, 2021). Universities could implement multi-component prevention programs based on these approaches, using tools like the TMDbrief for early screening and ongoing evaluation.

Limitations

This study has several limitations that should be considered. First, the sample consisted solely of university students from a specific region of Peru, and non-probabilistic sampling was used, which limits the generalizability of the findings to other populations or educational contexts. Second, the self-reported nature of the data introduces potential biases, such as social desirability or inaccuracies in self-assessment. Third, the cross-sectional design does not allow for causal inferences between mobile phone dependence and variables such as depression or academic performance. Future research should address these issues by including larger and more diverse samples from various regions and educational levels. Longitudinal studies could provide insights into the evolution of mobile phone dependence and its long-term effects on mental health and academic performance. These steps would help to validate and expand the current findings across more diverse populations.

Conclusion

The present study confirms that the TMDbrief is a valid and reliable instrument for assessing mobile phone dependence among Peruvian university students. Its psychometric robustness and ability to function equitably across genders make it a valuable tool for detection, monitoring, and evaluation of interventions in this area. Early identification of smartphone addiction can significantly contribute to promoting healthier technology use and improving the overall well-being of university students.

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AUTHORS' CONTRIBUTION

Andrei Franco-Jimenez: Conceptualization, methodology, formal analysis, review, supervision and writing – original draft.
Melisa Yedit Garcia-Rivera: Investigation, writing – review & editing, visualization and project administration.
Rosa Maria Campos-Rosas: Conceptualization, validation, investigation, writing – review & editing, visualization, project administration.

FUNDING SOURCE

This research was self-funded.

CONFLICT OF INTEREST

The authors declare that there were no conflicts of interest in the collection of data, analysis of information, or writing of the manuscript.

ACKNOWLEDGMENTS

Not applicable.

REVIEW PROCESS

This study has been reviewed by external peers in double-blind mode. The editor in charge was David Villarreal-Zegarra. The review process is included as supplementary material 1.

DATA AVAILABILITY STATEMENT

The database is available as supplementary material 2.

DECLARATION OF THE USE OF GENERATIVE ARTIFICIAL INTELLIGENCE

We used ChatGPT to translate specific sections of the manu-

script. The final version of the manuscript was reviewed and approved by all authors.

DISCLAIMER

The authors are responsible for all statements made in this article.

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Análisis exploratorio de las competencias psicológicas en el ámbito clínico de estudiantes universitarios desde una perspectiva interconductual.

RESUMEN

Antecedentes: El uso creciente de los smarphones ha generado preocupaciones sobre su uso problemático y su impacto en la salud mental. La evaluación de la adicción a los smartphones requiere instrumentos válidos y confiables, como el Test de Dependencia al Móvil Breve (TMDbrief), ampliamente utilizado en diversos contextos culturales. **Objetivo:** Este estudio tuvo como objetivo evaluar las propiedades psicométricas del TMDbrief, incluyendo su estructura factorial, consistencia interna, invarianza de medición según el género y validez convergente con la depresión y el phubbing en estudiantes universitarios peruanos. **Método:** En este estudio transversal, se evaluó a una muestra de 954 estudiantes mediante el TMDbrief, el PHQ-9 para medir la depresión y la Escala de Phubbing para evaluar la interferencia del uso del teléfono en la interacción social. Se realizó un análisis factorial confirmatorio (AFC) para evaluar la estructura de cuatro factores, y la consistencia interna se midió con el coeficiente omega de McDonald. La invarianza de medición según el género fue analizada para garantizar la aplicabilidad del instrumento en hombres y mujeres. **Resultados:** El AFC confirmó la estructura de cuatro factores ($\chi^2(48) = 320.31$, CFI = .983, TLI = .977, RMSEA = .077, SRMR = .029). La consistencia interna fue alta, con el coeficiente ω de McDonald entre .80 y .85; la fiabilidad compuesta (CR) estuvo entre .80 y .86 y la varianza media extraída (AVE) entre .57 y .67, lo que indica una convergencia adecuada. Se confirmó la invarianza de medición según el género, y la validez convergente fue respaldada por correlaciones moderadas con la depresión y el phubbing. **Conclusión:** El TMDbrief es un instrumento válido y confiable para evaluar la adicción a los teléfonos inteligentes en estudiantes universitarios peruanos, lo que respalda su uso en investigación, detección temprana y desarrollo de intervenciones.

Palabras claves: Psicometría; Smartphone; Adicción al Teléfono Móvil; Phubbing; Estudiantes Universitarios; Perú.