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Spanish Validation of the Brief Pornography Screen Within a Clinical Sample of Individuals with Gambling Disorder

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Abstract

Problem Pornography Use (PPU) shares key characteristics with other behavioural addictions, such as Gambling Disorder (GD) and there are suggestions that PPU and GD may be at risk for co-occurrence. In order to fill existing gaps in screening instruments for PPU validated in GD, the study examined the psychometric properties of the Spanish version of the Brief Pornography Screen (BPS) within a clinical sample of individuals with GD. Two hundred individuals seeking treatment for GD were consecutively recruited. The psychometric proprieties of the BPS were addressed by performing confirmatory factorial analysis (CFA) and testing convergent and discriminant validity. The CFA supported a one-factor solution showing high internal consistency (α=0.81). The BPS showed convergent validity and correlated with psychological distress, general psychopathology, impulsive traits and low self-directedness. The BPS demonstrated adequate psychometric properties and is therefore recommended as a brief screening tool for identifying probable PUs in individuals with GD.

Keywords Gambling disorder; Problematic pornography use; Validation; Addictive behaviour;

Introduction

The rapid advancement of technology and the internet has dramatically transformed the accessibility and use of pornography (Lewczuk et al. 2021). Pornography has sparked significant debates regarding its potential effects on individuals, relationships, and society at large. While some argue for the personal and interpersonal benefits of pornography (Goldsmith et al., 2017; Komlenac & Hochleitner, 2022; Sommet & Berent, 2022; Tillman & Wells, 2022), others express concerns about its potentially negative consequences, such as relationship conflicts, desensitization to sexual stimuli, and problematic pornography use (PPU) (Antons & Brand, 2021; Camilleri et al., 2021; Dwulit & Rzymski, 2019; Goh et al., 2023; Park et al., 2018).

PPU refers to patterns of consumption of pornography that lead to negative consequences in various life domains, including psychological well-being, relationships, and social functioning (Ince et al., 2021). Although PPU is not currently recognized as an official diagnostic entity, is has been included in the compulsive sexual behavior disorder (CSBD) (Kraus et al., 2018), exhibiting several parallels with addictive behaviors (Antons & Brand, 2021; Gola et al., 2017; Potenza, 2017). Similar to other addictions, PPU is characterized by an inability to control or regulate one's consumption, preoccupation with pornography, and continued engagement despite negative consequences (Blinka et al., 2022; Mehmood Qadri et al., 2023). However, the novelty of PPU and the ongoing debate on its categorization highlights the need for empirical research to better understand its mechanisms and to develop appropriate measurement tools for assessing its effects (Fernandez & Griffiths, 2021). While behavioral neuroscientific and other features have been pointed out by many authors (Mestre-Bach et al., 2020; Stark et al., 2018), the addictive nature of sexually explicit materials remains debated (Love et al., 2015).

Interestingly, research suggest that PPU shares pivotal features with other, more consolidated behavioral addictions, such as gambling disorder (GD) (Mestre-Bach et al., 2020). Both PPU and GD show impulsivity, craving, and reward-seeking behavior (Gola et al., 2017; Stark et al., 2018). In addition, previous studies have reported a high frequency of co-occurrence between CSBD and GD

(Cowie et al., 2019; Grant & Kim, 2003; Grant & Steinberg, 2005). Given the behavioral resemblance of both disorders, it would be reasonable to hypothesize that both PPU and GD rely on similar brain circuits and processes (Mestre-Bach et al., 2020; Potenza, 2009). Nonetheless, these findings are not consistent across all studies, and the exact nature of the relationship remains unclear. Hence the need for developing and employ valid and reliable measurement tools that capture its multifaceted nature. One such measure is the Brief Pornography Screen (BPS), which is a single-factor structure of five-items to assess possible PPU. The validation of the BPS scale was conducted by multiple studies in independent samples of adults from U.S. and Poland and Bangladesh, showing robust psychometric proprieties (Islam et al., 2022; Kraus et al., 2020). In addition, the BPS was validated in a clinical sample of males seeking treatment for PPU, establishing the recommended clinical cut-off (Kraus et al., 2020). However, the BPS, nor other measures of PPU have not yet been validated among individuals with GD, which is a crucial step for a comprehensive evaluation of co-occurrence and comorbidities and adaptation of effective prevention and intervention strategies. Moreover, cross-cultural validation plays a critical role in advancing the understanding of clinical constructs like PPU. Therefore, the goal of the present study is the validation of BPS on a Spanish sample of individuals seeking treatment for GD. Proving efficacy of verified diagnostic tools in one condition to another would provide remarkable insight on the shared, underlying processes of both disorders.

Methods

Sample and Procedure

Data were collected from 2021 to 2022 by consecutively recruiting adults seeking treatment for GD at the Behavioral Addictions Unit at Bellvitge University Hospital in Barcelona. This public hospital, which serves a catchment area of more than two million people in the southern region of the Barcelona metropolitan area, is recognized for its expertise in the treatment of addictive psychological behaviors. Psychologists and psychiatrists with over 20 years of clinical experience in assessing and treating GD were responsible for diagnosing the patients. Only adult patients (>18 years) of both

sexes with GD as their primary health concern were included in the present validation study. Patients with a history of brain injury or neurological disease and reported an organic or neurodegenerative diseases were not excluded. A total sample of 200 patients with GD (89% men) aged between 18 and 77 years (Mage = 40.48 years; SD = 14.22) were included in the present study (Table 1).

Regarding the translation procedure of the BPS, the scale was first translated from English to Spanish and back to English according to the guidelines for the process of cross-cultural adaptation of self-report measures (Beaton et al., 2000).

Ethics

In accordance with the Declaration of Helsinki, the study procedures received approval from the University Hospital Clinical Research Ethics Committee. All subjects were fully informed about the study and provided their informed consent.

Measures

Brief Pornography Screen (BPS; Kraus et al., 2020)

The BPS is a short screening tool comprising five items designed to assess PPU within the previous six months. Participants provide their responses using a three-point scale, ranging from 0 (never) to 2 (very often). Total scores, calculated by summing the item scores, range from 0 to 10. A suggested clinical cut-off score of 4 or higher has been recommended. The BPS has demonstrated excellent reliability and validity across various independent samples (Kraus et al., 2020).

Pornography Consumption Inventory (PCI; Reid et al., 2011)

The assessment of pornography-use motivations using the PCI involves four factors: sexual pleasure, arousal seeking, sexual curiosity, and emotional avoidance. The scale comprises 13 items in Likert scales (from 1=Never to 5=Many times). Scores on the scale can range from 15 to 75, without a defined cut-off point. Higher scores indicate a stronger inclination to use pornography for specific reasons. The PCI has a factorial structure consisting of three dimensions: emotional avoidance, sexual curiosity, and excitement seeking and sexual pleasure. In this study, the Spanish validation of the

scale was utilized, demonstrating excellent reliability (>0.90) across all factors and an internal consistency of 0.93 (Leon-Larios et al., 2019). Within the study sample, internal consistency was also excellent for the different factor scales and the total score (α = 0.92 for emotional avoidance, α = 0.92 for sexual curiosity, α = 0.94 for excitement-pleasure, and α = 0.92 for the total score).

Symptom Checklist-Revised (SCL-90-R; Derogatis, 1990)

This SCL-90 is a comprehensive measure of psychological distress and psychopathology. The 90 items of the scale evaluate nine symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. In addition, global indexes of psychopathological distress are also scored. The Spanish adapted version of the questionnaire (Derogatis, 2002) that was used in this study showed Cronbach's α between 0.79 and 0.93). In the present sample, internal consistency ranged from good to excellent (Cronbach's α between 0.81 and 0.98).

Impulsive Behavior Scale (UPPS-P; Whiteside et al., 2001)

The UPPS-P is a 59 items questionnaire of impulsive personality traits including five dimensions (negative urgency, positive urgency, lack of premeditation, lack of perseverance, and sensation seeking) and a total score. The Spanish-language adaptation shows good reliability (Cronbach's α between 0.79 and 0.93) and external validity (Verdejo-García et al., 2010). Similarly, good reliability was shown in the present sample (Cronbach's between 0.75 and 0.92).

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)

The DERS is a 36 items questionnaire to assess emotion dysregulation. This include six subscales (1) lack of emotional awareness (i.e., difficulties attending to emotional states), (2) lack of emotional clarity (i.e., impairments related to recognizing emotional experiences), (3) non-acceptance of emotional responses (i.e., the tendency to experience negative secondary emotional responses), (4) difficulties engaging in goal-directed behavior (i.e., difficulties accomplishing tasks in the presence of intense emotional states) (5) limited access to ER strategies (i.e., the belief that there is little that

can be done to effectively regulate emotions when experiencing upset) and (6) impulse control difficulties (i.e., impairment in remaining in control of one's behavior under negative emotional states). The Spanish version of the DERS (Hervás & Jódar, 2008; Wolz et al., 2015) was adopted, showing an internal consistency for the present sample that ranged $\alpha = 0.76$ to $\alpha = 0.92$.

Temperament and Character Inventory-Revised (TCI-R; Cloninger, 1999)

The TCI-R is a 240-item questionnaire to assess personality traits. Response are based on 5-point Likert-type scale. The TCI-R distinguish between seven primary personality dimensions: four temperamental factors (novelty seeking, harm avoidance, reward dependence, and persistence) and three character dimensions (self-directedness, cooperativeness, and self-transcendence). The Spanish revised version showed adequate internal consistency (Cronbach's alpha a mean value of 0.87). This version was used for the present work showing Cronbach's alpha from 0.70 to 0.87.

Sociodemographic and Clinical Variables

Demographic, clinical, and social/family variables related to gambling were collected by a face-to face semi structured interview described elsewhere (S Jiménez-Murcia et al., 2006). The gambling behavior variables assessed included the age of onset and duration of gambling behaviour, and information concerning the type of gambling activity (e.g. strategic vs non-strategic; online vs land based) (See Table 1 for details).

Statistical analysis

Stata18 for Windows was used to carry out a Confirmatory Factor Analysis (CFA) for the BPS (the one-dimensional solution was tested, according to the results obtained in previous studies). The next criteria was defined for considering adequate goodness-of-fit (Barret, 2007): non-significant result in the chi-square test (χ^2), root mean square error of approximation RMSEA lower than 0.08, Bentler's Comparative Fit Index CFI higher than 0.90, Tucker-Lewis Index TLI higher than 0.90, and standardized root mean square residual SRMR lower than 0.10. The convergent-discriminative validity for the BPS factor score (compared to external measures of the clinical state and the personality profile) was measured with Pearson's correlation, assuming mild-moderate effect size for $|R|>0.24$, and large-good for $|R|>0.37$ (Kelly & Preacher, 2012).

Results

Characteristics of the sample

Table 1 shows the distribution of the sociodemographic profile and gambling related measures for the sample. The distribution of sex was 22 female patients (11.0%) versus 178 male (89.0%). Most participants were single (n=99, 49.5%), with primary education (n=96, 48.0%), employed (n=129, 64.5%) and pertained to low socioeconomic position (n=100, 50.0%). Mean age was 49.5 yrs (SD=14.2), mean onset of the gambling problems was 28.9 yrs (SD=12.2), and mean duration of the gambling related harms 6.1 yrs (SD=7.1). The distribution of the gambling preference was 42.0% only non-strategic, 40.0% only strategic and 18.0% mixed. The modality of the gambling activity was 53.0% offline, 24.0% online and 23.0% mixed.

--- Insert Table 1 ---

Psychometric properties of the BPS

Adequate goodness-of-fit was obtained in the CFA: χ^2= 3.14, *p*=.208; RMSEA=0.054; CFI=0.997; TLI=0.983; SRMR=0.015). The internal consistency measured with Cronbach's alpha and Omega coefficients was into the good range (α=0.811 and Omega Ω=0.855). All the items achieved significant standardized coefficients with high values (between 0.587 for "using more than wnat" to 0.708 to "unable stop using"). Table 2 shows the complete results with the results obtained for the factorial study.

--- Insert Table 2 ---

The correlation matrix with the associations between the BPS with external measures showed positive correlations with the psychopathology state (SCL-90R interpersonal, depression, psychosis, GSI and PST scales), impulsivity levels (UPPS-P positive urgency, negative urgency and total), and the PCI scales. A negative association between the PBS and the TCI-R self-directedness was also obtained.

--- Insert Table 3 ---

Discussion

The study aimed to validate the Spanish version of the BPS in a clinical sample of individuals with GD. Overall, the BPS showed adequate psychometric properties in the current sample, suggesting its usefulness as a brief screening tool for identifying probable PPU in individuals with GD.

The CFA supported the one-factor structure composed of five items, as for the original version of the scale (Kraus et al., 2020). The Goodness of fit was in a good range, and the BPS showed good internal consistency and reliability in the sample.

Convergent validity was confirmed by the association between BPS and the PCI, in line with the results from the original validation studies (Kraus et al., 2020). The present findings suggest that the symptoms of pornography addiction assessed by the BPS are associated with higher motivation to use pornography among individuals with GD. In particular, stronger correlations were found with the emotional avoidance subscale of the PCI. This may reflect the use of pornography to regulate emotions as an important dimension of PPU (Kor et al., 2014).

Higher values in the BPS were related to higher severity of general psychopathology. This confirms previous evidence linking PPU to psychopathology or poor mental health (Bibi et al., 2022; Borgogna et al., 2018; Hernandez-Mora & Varescon, 2022; Hernández et al., 2023; Shirk et al., 2021; Whitfield et al., 2018). Correlations between the BPS and measures of depression and anxiety were also reported in the validation study of the BPS in general population (Islam et al., 2022). Similarly, we found positive associations between BPS and depression symptoms in a clinical sample of individuals with GD. Furthermore, a higher presence of psychotic symptoms and a higher degree of discomfort, inadequacy, and inferiority during social interaction were associated with higher BPS scores in the present sample. It is reasonable to assume that individuals with co-occurring GD and PPU may have more complicated clinical profiles with a higher presence of comorbid psychopathology.

As expected, the UPPS-P dimensions of negative and positive urgency were associated with higher BPS scores, confirming the results from the original validation studies (Kraus et al., 2020). The present findings may indicate that the comorbidity or co-occurrence of GD and PPU is more likely in individuals characterized by emotion-driven impulsivity.

However, no significant correlations were present between the BPS and emotion dysregulation measured by the DERS. Although dysfunctional emotion regulation/coping strategies have been linked to GD (Marchica et al., 2019; Neophytou et al., 2023; Velotti et al., 2021) this variable does not appear to be directly related to PPU in individuals with GD. Taken together the present findings may suggest that symptoms of pornography addiction measured by the BPS in individuals with GD are linked to emotional-driven impulsivity rather than to general emotion regulation difficulties.

Finally, BPS correlated with lower self-directedness, which is a personality trait reflecting low flexibility and reduced ability to adapt behaviors to achieve one's goals and values. Low self-directedness has been previously reported in individuals with GD and has been related to higher severity of the GD symptoms (Forbush et al., 2008; Janiri et al., 2007; Susana Jiménez-Murcia et al., 2021; Moragas et al., 2015; Pettorruso et al., 2021). Low self-directedness is also linked to lower willpower and lower self-regulation abilities, which may contribute to the likelihood of developing problematic or addictive behaviors (Hahn et al., 2017).

One of the major strengths of the present study is the lack of validated measures to detect PPU in the GD population. Considering the risk of co-occurrence of addictive behaviors in individuals with GD (Cowie et al., 2019; Grant & Kim, 2003; Grant & Steinberg, 2005; Susana Jiménez-Murcia et al., 2014) the BPS provides a quick and easy assessment of PPU due to its brevity (five-items). This makes it easy to include the BPS in the initial assessment of patients with GD. At the clinical level, this would facilitate the identification of gamblers with multiple addictive behaviors and thus help tailor specific interventions.

The study has some limitations. First, a small sample size of females with GD in the study. Although a higher prevalence of GD and pornography use/PPU has been frequently reported in males than

females (Kürbitz & Briken, 2021), the gender invariance of the BPS could not be tested as recommended (Bőthe et al., 2018). Overall, studies in larger samples of females with GD, if available, are recommended to further extend psychometric proprieties of the BPS to female patients. Another limitation is the self-report nature of the assessment, which may introduce potential biases. For example, it should be considered that individuals seeking gambling treatment may be more likely to disclose other problems, such as those related to pornography use.

5. Conclusions

In conclusion, this study evaluated the psychometric properties of the BPS in patients with GD. The BPS is a reliable and valid scale of PPU that can be used as an initial screening tool to detect the addictive use of pornography in individuals with GD. Therefore, BPS is recommended to be included in the initial assessment of GD to help identify co-occurring disorders and consequently develop appropriate interventions.

Supplementary Information The online version contains supplementary material available at https:// doi. org/ 10. 1007/ s10508- 024- 02986-3.

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Conflicts of interest

Dr. Potenza discloses that he has consulted for and advised Game Day Data, Addiction Policy Forum, AXA, Idorsia, Baria-Tek, and Opiant Therapeutics; been involved in a patent application with Yale University and Novartis; received research support from the Mohegan Sun Casino and the Connecticut Council on Problem Gambling; consulted for or advised legal and gambling entities on issues related to impulse control and addictive behaviors; provided clinical care related to impulse-control and addictive behaviors; performed grant reviews; edited journals/journal sections; given academic lectures in grand rounds, CME events, and other clinical/scientific venues; and generated books or chapters for publishers of mental health texts. Dr. Fernández-Aranda received consultancy honoraria from Novo Nordisk and editorial honoraria as EIC from Wiley. The rest of the authors have no conflicts of interest with the content of this manuscript.

Ethical Approval All procedures followed were in accordance with the ethical standards of the review board of the Bellvitge University Hospital on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000.

Informed Consent All participants provided signed consent prior to being included in the study.

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Table 1 *Descriptive for the sample*

		n	*%*
Sex	Female	22	11.0%
	Male	178	89.0%
Civil status	Single	99	49.5%
	Married – couple	83	41.5%
	Divorced – separated	18	9.0%
Education	Primary	96	48.0%
	Secondary	88	44.0%
	University	16	8.0%
Employment	Unemployed	71	35.5%
	Employed	129	64.5%
Social	High	4	2.0%
	Mean-high	24	12.0%
	Mean	26	13.0%
	Mean-low	46	23.0%
	Low	100	50.0%

		Mean	*SD*
Age (years-old)		40.48	14.22
Onset of addiction (yrs-old)		28.87	12.19
Duration of the addiction (yrs)		6.14	7.07
Gambling activity		*n*	*%*
Preference	Non-strategic	84	42.0%
	Strategic	80	40.0%
	Mixed	36	18.0%
Modality	Land based	106	53.0%
	Online	48	24.0%
	Mixed	46	23.0%

Note. SD: standard deviation.

Table 2 *Results in the SEM (CFA), descriptive, and reliability statistics, for the total sample*

	Results obtained in the CFA						Descriptive				
Item	Std.B	SE	z-stat.	p-value	95%CI (Std.B)		Never	Ocass.	Often	Mean	SD
1. Using more than want	0.587	0.071	8.26	<0.001	0.448	0.726	76.5%	20.5%	3.0%	1.27	0.51
2. Unable stop using	0.708	0.062	11.45	<0.001	0.587	0.830	89.0%	10.0%	1.0%	1.12	0.36
3. Urges to use	0.690	0.065	10.6	<0.001	0.562	0.817	89.0%	7.5%	3.5%	1.15	0.44
4. Use to cope emotions	0.591	0.063	9.44	<0.001	0.468	0.714	76.0%	20.5%	3.5%	1.28	0.52
5. Use even feel guilty	0.643	0.070	9.18	<0.001	0.506	0.780	80.0%	15.5%	4.5%	1.25	0.53
Consistency	Cronbach's alpha: α = .811; Omega: Ω = .855										
Fit statistics	χ^2=3.14 (p=.208), RMSEA=0.054; CFI=0.997; TLI=0.983; SRMR=0.015										
Correlation and reliability		Item-1	Item-2	Item-3	Item-4	Item-5	SM-ID	SV-ID	CI-TC	SMC	CA-ID
	Item-1	---	.437	.592	.313	.643	4.79	2.02	.646	.494	.760
	Item-2		---	.497	.419	.434	4.93	2.45	.567	.333	.790
	Item-3			---	.394	.582	4.91	2.15	.675	.473	.753
	Item-4				---	.414	4.78	2.21	.471	.254	.817
	Item-5					---	4.81	1.93	.686	.504	.746
Summary item statistics			Mean		Min		Max		Variance		
	Item means		1.210		1.120		1.275		0.005		
	Item variances		0.225		0.126		0.276		0.004		
	Inter-item corr.		0.472		0.313		0.643		0.010		

Note. Std.B: standardized coefficient. SE: standard error. 95%CI: 95% confidence interval.

SM-ID: scale mean if item deleted. SV-ID: scale variance if item deleted. CI-TC: corrected item – total correlation.

SMC: squared multiple correlation. CA-ID: Cronbach's alpha if item deleted. Sample size: *n = 200*

Table 3 *Correlation matrix assessing the relationships between the BPS factor score with external measures: convergent/discriminant validity (n=200)*

SCL-90R Somatization	.232	DERS Non acceptance emotions	.139
SCL-90R Obsessive/compulsive	.232	DERS Diff. directed behaviors	.203
SCL-90R Interpersonal sensitivity	**.277†**	DERS Impulse control diff.	.168
SCL-90R Depressive	**.260†**	DERS Lack emotional awareness	.082
SCL-90R Anxiety	.150	DERS Limited access emotions	.214
SCL-90R Hostility	.228	DERS Lack emotional clarity	.224
SCL-90R Phobic anxiety	.240	DERS Total	.235
SCL-90R Paranoid Ideation	.205	TCI-R Novelty seeking	-.031
SCL-90R Psychotic	**.244†**	TCI-R Harm avoidance	.128
SCL-90R GSI	**.266†**	TCI-R Reward dependence	-.098
SCL-90R PST	**.283†**	TCI-R Persistence	-.006
SCL-90R PSDI	.199	TCI-R Self-directedness	**-.282†**
UPPS-P Lack premeditation	.088	TCI-R Cooperativeness	-.146
UPPS-P Lack perseverance	.157	TCI-R Self-transcendence	.198
UPPS-P Sensation seeking	.157	PCI Emotional avoidance	**.536†**
UPPS-P Positive urgency	**.280†**	PCI Sexual curiosity	**.318†**
UPPS-P Negative urgency	**.252†**	PCI Excitement pleasure	**.466†**
UPPS-P Total	**.306†**	PCI Total	**.566†**

Note. Results adjusted by sex and age. †Bold: effect size into the ranges mild to large.