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Why Do People Watch Pornography? Cross-Cultural Validation of the Pornography Use Motivations Scale (PUMS) and Its Short Form (PUMS-8)

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Why Do People Watch Pornography? Cross-Cultural Validation of the Pornography Use Motivations Scale (PUMS) and Its Short Form (PUMS-8)

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ABSTRACT

Motivations for pornography use may vary across gender identities, sexual orientations, and geographical regions, warranting examination to promote individual and public health. The aims of this study were to validate the Pornography Use Motivations Scale (PUMS) in a diverse, multicultural sample, and develop a short form (PUMS-8) that can assess a wide range of pornography use motivations. Using data from 42 countries ($N = 75{,}117$; $M_{age} = 32.07$; $SD_{age} = 12.37$), enabled us to thoroughly evaluate the dimensionality, validity, and reliability of the Pornography Use Motivations Scale (PUMS), leading to the development of the more concise PUMS-8 short scale. Additionally, language-, nationality-, gender-, and sexual-orientation-based measurement invariance tests were conducted to test the comparability across groups. Both the PUMS and the PUMS-8 assess eight pornography use motivations, and both demonstrated excellent psychometric properties. Sexual Pleasure emerged as the most frequent motivation for pornography use across countries, genders, and sexual orientations, while differences were observed concerning other motivations (e.g. self-exploration was more prevalent among gender-diverse individuals than men or women). The motivational background of pornography use showed high similarity in the examined countries. Both the PUMS and the PUMS-8 are reliable and valid measurement tools to assess different types of motivations for pornography use across countries, genders, and sexual orientations. Both scales are recommended for use in research and clinical settings.

Introduction

Pornography Use Motivations

Because of the development of digital technology and the widespread access to the internet, pornography use (PU) has become a common and prevalent activity among both adults and adolescents over the past few decades (A. L. Cooper, 1998; Wright et al., 2023). Nationally representative studies from the USA and Germany showed that almost everybody has seen pornography in their life (Herbenick et al., 2020), and one-third of the population watch pornography regularly (Regnerus et al., 2016; Štulhofer et al., 2022). The fact that online PU has tripled in the general population in just 12 years (between 2004 and 2016) captures these rapid changes in internet use for sexual purposes well (Lewczuk, Wójcik, et al., 2022). Moreover, PU can evolve into a problematic behavior when it becomes excessive and can significantly impact the user's mental health (Bőthe, Tóth-Király, et al., 2021; Camilleri et al., 2020; Turner et al., 2022; World Health Organization, 2022), eventually impacting social, occupational and other important daily functioning. It is crucial to note that this behavior may not only affect the individual involved but may also extend to their partner (Bergner & Bridges, 2002; Daspe et al., 2018). Thus, it is important to better understand this behavior and provide clinicians with effective instruments to gauge why people use pornography.

To understand a behavior to its full extent, especially those that are highly prevalent and can become problematic, research should consider distinct processes that underpin these phenomena, moving beyond a simple "cause-effect" perspective of a given behavior and its consequences (Brand et al., 2016; Campbell & Kohut, 2017). Among these processes, motivations (i.e., having both the desire and willingness to engage in the behavior) may be key contextual predictors (L. V. Brown, 2007). Rooted in one's sets of knowledge, motivations reflect emotional preferences, in terms of desirable or undesirable goals (McClelland, 1985), and can be viewed as driving forces that underlie most of the behaviors (Demetrovics et al., 2011).

For sexual behaviors, underlying motivations may be as or more complex and diverse as the behaviors themselves, extending beyond simple pleasure and reproduction motivations (Grubbs, Wright, et al., 2019; Hill & Preston, 1996; Koós et al., 2022; Lewczuk, Wizła, & Gola, 2022). When examining pornography use, a behavior inherently sexual in nature, past research has identified multiple motives. These include alleviating boredom, managing negative emotions, stimulating fantasies, pursuing sexual pleasure, and seeking new information (Baltazar et al., 2010; Bőthe, Tóth-Király, et al., 2021; A.-S. Chen et al., 2013; Emmers-Sommer et al., 2013; Paul & Shim, 2008; Reid et al., 2011; Wéry & Billieux, 2016). As the context of PU may be decisive, according to the Antecedents-Context-Effects (ACE) model (Campbell & Kohut, 2017), motivations may play a crucial role in clustering different pornography users, or predicting the negative or positive outcomes of PU. For example, results from previous studies suggest that recreational and non-problematic pornography users might differ in their main motivations for PU from problematic users, suggesting that pornography might play a different role in their lives (for systematic review, see Castro-Calvo et al., 2018). Problematic users consistently reported consuming pornography for emotional suppression or to cope with stress to a higher extent, compared to nonproblematic users. At the same time, healthy users were more likely to engage in PU for educational and explorational purposes (Ballester-Arnal et al., 2021; Bőthe, Tóth-Király, et al., 2021; Castro-Calvo et al., 2018; A. Cooper et al., 2001). This differentiation effect is incredibly important when screening for at-risk individuals, considering that self-perceived problematic PU might not be a sufficient indicator for the disorder, due to moral incongruence (Grubbs, Perry, et al., 2019). Moreover, according to previous studies, PU motivations might be one of the contextual factors that moderates the association between PU frequency and sexual satisfaction (Hoagland & Grubbs, 2021). More specifically, in one study those men who consumed pornography to avoid negative emotions reported lower levels of sexual satisfaction (Bőthe, Vaillancourt-Morel, & Bergeron, 2022). In summary, these results highlight the importance of the context of PU when the aim is to understand the

outcomes of the behavior. Therefore, the aims of the current study were to translate, validate and shorten a questionnaire that assesses PU motivations in diverse populations to provide a reliable measurement tool for research and clinical purposes.

The Pornography Use Motivations Scale (PUMS)

The Pornography Use Motivations Scale (PUMS) was developed using a "bottom-up" procedure to identify the most prominent PU motivations in the general population. The PUMS demonstrated excellent reliability and validity in independent samples and measurement invariance across genders (Bőthe, Tóth-Király, et al., 2021). Eight distinct motivations emerged from qualitative and quantitative analyses. Four of them overlapped with motivations found in earlier studies (Baltieri et al., 2016; Alvin; A. Cooper et al., 1999; Franc et al., 2018; Goodson et al., 2001; McKenna et al., 2001). Not surprisingly, the most frequently reported motivation for PU was *Sexual Pleasure* and arousal seeking (i.e., using pornography as a visual aid for masturbation or to increase sexual excitement). *Sexual Curiosity* as a PU motivation, linked to gathering new information and ideas for sex, was commonly reported, particularly among women. Previous research showed that pornography could be used as a tool for information-seeking or as a form of sex education, especially among younger people (Rothman et al., 2015) and minority populations, such as sexual minority youth (Albury, 2014; Bőthe et al., 2019; Charest & Kleinplatz, 2022; Harvey, 2020; Rothman et al., 2018). Furthermore, couples reported that they perceived PU had caused an increase in their sexual experimentation (Kohut et al., 2017). Therefore, gathering new ideas to improve one's own sex life can be a prominent and important motivation for PU. Using pornography to experience imaginary scenarios that would not be possible or would be hard to create in real life, describes the *Fantasy* PU motivation. This was associated weakly but positively with problematic PU, but not PU frequency (Bőthe, Tóth-Király, et al., 2021). Using pornography to pass time when bored has been termed the *Boredom Avoidance* motivation. However, boredom is not the only unpleasant feeling from which people may want to escape. The *Emotional Distraction or Suppression* PU motivation represents a form of coping. As reported in previous studies, this motivation involves using pornography to address existing negative emotions and mood states (Baltazar et al., 2010; Bőthe, Tóth-Király, et al., 2021; Bőthe, Vaillancourt-Morel, Dion, et al., 2022). The *Stress Reduction* PU motivation is similar to the aforementioned PU motivation, focusing on suppressing one specific negative state (i.e., stress) through PU. Furthermore, one may use pornography because their sexual life is not sufficiently satisfactory. This PU motivation has been termed *Lack of Sexual Satisfaction*. Lastly, a *Self-Exploration* PU motivation has been identified, which refers to using pornography as a source to identify what feels good and what does not, and experiment with one's own sexual preferences. It appeared as a distinct dimension from sexual curiosity, since the latter refers to learning new information about sex itself, while the former is about exploring one's sexuality.

Cultural-, Gender-, and Sexual Orientation Differences in PU

PU and its underlying motivations are morally sensitive subjects, and the perceived judgment of them is influenced by cultural norms and beliefs (L. Chen et al., 2021; Hoagland et al., 2023; Montgomery-Graham et al., 2015; Vaillancourt-Morel & Bergeron, 2019). The perception of pornography consumption varies throughout cultures, from product of free speech practices, public health issue or outright a violation of religious laws (Allen, 2007; K. M. Nelson & Rothman, 2020; Perry, 2022; Person et al., 2016). In some of the countries that were included in the data collection of the present study, pornography possession is outright prohibited (e.g., China, Indonesia, Lithuania, Malaysia, and South Korea), or restricted (e.g. Japan, South Africa, Turkey) (World Population Review, 2024). Since personal and cultural morality can impact attitudes toward PU (Grubbs, Perry, et al., 2019), careful cross-cultural adaptation and assessment are important initial steps in examining potential differences among countries (Beaton et al., 2000). Furthermore, gender- and sexual-orientation-related similarities and dissimilarities are also important to examine, as these characteristics may be entangled with sexuality and related cultural norms. For instance, in some cultures it might not be as accepted for women to watch pornography as it is for men (Borgogna et al., 2022; Bőthe et al., 2018). Regarding PU motivations, it is possible that sexual minority individuals are more likely than their non-minority peers to use pornography for educational purposes (Bőthe et al., 2019; L. J. Nelson et al., 2010; Spieldenner, 2019), and to cope with their negative emotions (e.g. psychological distress) resulting from stigmatization and inter- and intrapersonal conflicts related to their sexuality (Parsons et al., 2008). Despite the relevance of exploring cultural, gender, and sexual orientation differences in association with PU, the presence of diverse samples versus WEIRD samples (Western, Educated, Industrialized, Rich, and Democratic) are imbalanced (Grubbs et al., 2020; Klein et al., 2021; McGorray et al., 2023). As motivations may represent key contextual predictors regarding sexual behaviors, exploring motivations for PU in a large, culturally diverse sample can enrich our understanding of this global phenomenon (Rowland & Uribe, 2020). By examining a wide array of motivations across varying cultural contexts, we could gain a more nuanced perspective of the complexities and commonalities of this globally pervasive behavior.

Aims of the Current Study

The aims of the current study were twofold. First, we aimed to validate the PUMS in different countries and explore its psychometric properties in different subgroups based on

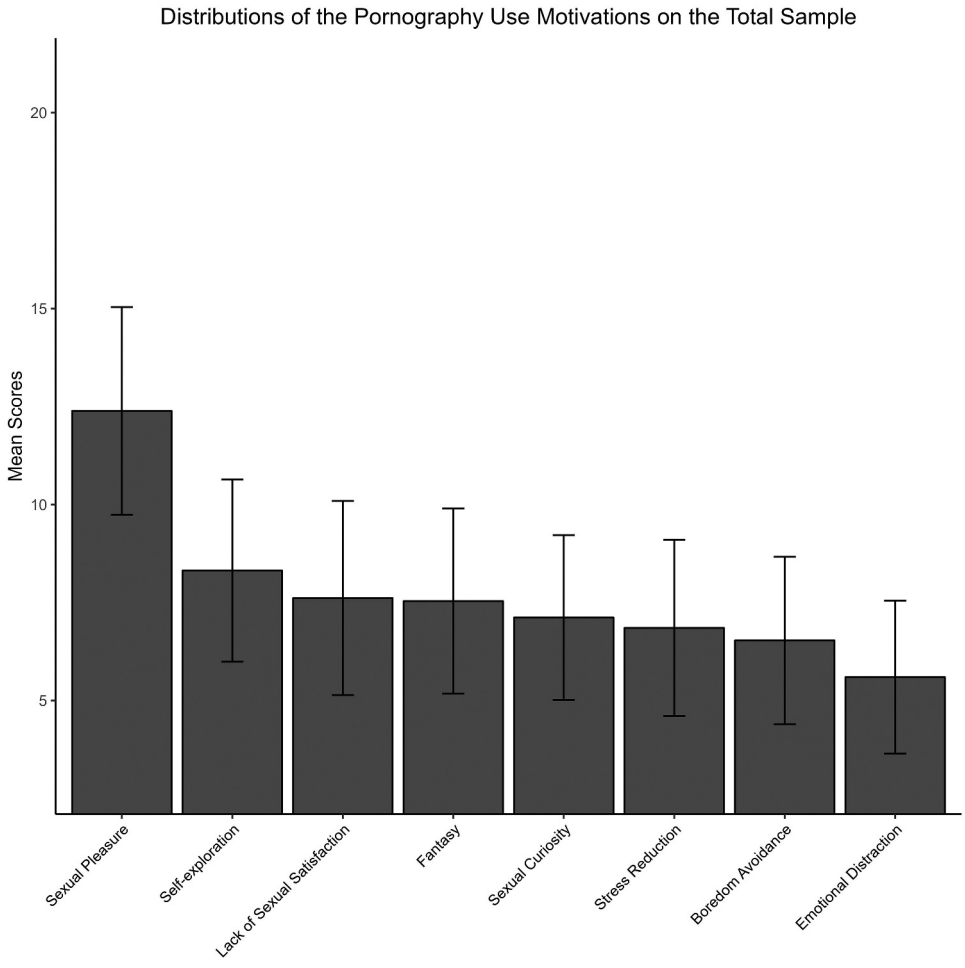

Figure 1. Visual representation of the mean scores (y-axis) of the PUMS factors (x-axis) in the total sample. Error bars represent standard deviations.

countries, genders, and sexual orientations. To this end, the factor structure of the PUMS was examined in the total sample. Additionally, language, country, gender, and sexual orientation-based measurement invariance tests were conducted to ensure meaningful comparisons between these subgroups. Lastly, the scale's reliability and validity were tested with commonly used reliability indices and theoretically relevant correlates (e.g., PU frequency).

While we urge the use of the long form of the PUMS whenever it is possible, one cannot negate the fact in some cases (e.g., for applied researchers, when the time and the resources are limited to use longer questionnaires; for situations when the attention span of the participants are shorter, as in online surveys; or in cases where the construct is measured more than once within a survey), there is a need for shorter solutions, without sacrificing the psychometric properties of the measurement tool. To shorten a questionnaire, there are some issues that need to be addressed prior to the process. First, the theoretical basis of the construct and its measurement needs to be established. Second, the psychometric properties of the original scale need to be further established, meaning consistent and stable factor structure, high degree of reliability of each subscale, consistent results with theoretically driven correlates, securing external validity and the generalizability for special populations (e.g., sexual-, or gender minority individuals in the present study) and its translations into other languages than English. Both criteria concerning the theory (Bőthe, Tóth-Király, et al., 2021; Büsche et al., 2022; Grubbs, Wright, et al., 2019; Kohut et al., 2017; Moynihan et al., 2022) and the specific tool (Bőthe, Tóth-Király, et al., 2021; Bőthe, Vaillancourt-Morel, & Bergeron, 2022) had been met in previous research, and the present study made an attempt to further address both again.

Therefore, the second aim of the present study was to broaden the PUMS's usability for situations where time is scarce and thus, we aimed to develop a short form of the PUMS. We attained this by measuring the eight distinct motivations using a single item per factor, while preserving the psychometric properties characteristic of the comprehensive version. This included maintaining meaningful associations with theoretically relevant correlates.

Method

Procedure and Participants

The present study was part of a large-scale global project, the International Sex Survey (Bőthe, Koós, et al., 2021) ([https://osf.io/uyfra/]). Data collection was conducted between

October 2021 and May 2022, online, with the collaboration of 42[1] countries, advertising the study on several media outlets (e.g., news sites, radio, television, social media, and topic-relevant forums). The complete list of collaborating countries and the description of the translation process can be found in the study protocol (Bőthe, Koós, et al., 2021). It took approximately 30–45 minute to complete the survey. Participants were first informed about the aims of the study, and then informed consent was obtained. Only individuals aged 18 years old or older were invited to participate in the present study. The study was conducted in accordance with the Helsinki Declaration and was approved by the Institutional Ethical Review Board of ELTE Eötvös Loránd University and the collaborators' research institution ([https://osf.io/e93kf]). Participants were not remunerated but were informed that at the end of the survey they could indicate their preference between three international, nonprofit sexual health organizations (World Association for Sexual Health; United Nations Sexual and Reproductive Health Agency and the International Planned Parenthood Federation), among which 1000 USD would be distributed as a donation by the research team.

For eligibility criteria and the complete data cleaning procedure see [https://osf.io/xcgzf]. Participants who quit the survey before the block on PU were excluded ($N = 7{,}126$), resulting in 75,117 individuals in the final sample ($M_{age} = 32.07$; $SD_{age} = 12.37$). Regarding participants' gender 31,454 (41.9%) were men 41,016 (54.6%), were women and 2,612 (3.5%) were gender-diverse individuals. Concerning participants' sexual orientation, 50,527 (67.3%) reported being heterosexual, 4,438 (5.9%) identified as gay or lesbian, 5,791 (7.7%) as heteroflexible, 515 (0.7%) as homoflexible, 7,265 (9.7%) as bisexual, 965 (1.3%) as asexual, 2,765 (3.7%) as queer or pansexual, and 2,812 (3.8%) were unsure or did not feel that any of the aforementioned categories applied to them, or did not want to answer. Detailed demographic characteristics of the sample can be found in the Supplementary Material (Table S1).

Measures

The **Pornography Use Motivations Scale** (PUMS; Bőthe, Tóth-Király, et al., 2021) measures eight distinct motivations for pornography consumption with 24 items. Participants rated their frequency of watching pornography in the past 6 months for each listed reason using a 7-point Likert scale (1 – "*never*;" 7 – "*all the time*") describing how often they watched pornography for the listed reasons in the past 6 months. The scale comprises eight factors, each consisting of three items: Sexual Pleasure factor (SP) (e.g., "*I watch porn because it makes masturbation easier*"), Sexual Curiosity (SC) (e.g., "*I watch porn to become better in bed*"), Fantasy (FA) (e.g., "*I watch porn because I can be a part of things that I cannot experience in real life*"), Boredom Avoidance (BA) (e.g., "*I watch porn because I have nothing better to do*"), Lack of Sexual Satisfaction (LS) (e.g., "*I watch porn because my sexual life is not satisfying*"), Emotional Distraction or Suppression (ED) (e.g., "*I watch porn to distract myself from my negative thoughts*"), Stress Reduction (SR) (e.g., "*I watch porn because it calms me down*"), and Self-exploration (SE) (e.g., "*I watch porn to get to know my own sexual desires better*"). Higher scores on each factor indicate higher levels of the respective motivation. The scale does not provide a total score, as the motivations qualitatively differ from one another, therefore all factors are treated as separate subscales (Bőthe, Tóth-Király, et al., 2021). Prior to displaying pornography-use-related questions, PU itself was defined based on Kohut and colleagues' (Kohut et al., 2020) recommendations: "*Using pornography (porn) means to intentionally look at, read, or listen to: (a) pictures, videos, or films that depict nude individuals or people having sex; or (b) written or audio material that describes nude individuals, or people having sex. Using porn does not involve viewing or interacting with actual, live, nude individuals, or participating in interactive sexual experiences with other human beings in person or online. For example, participating in a live sex chat or a camshow, and getting a 'lapdance' in a strip club are not considered porn use.*" The translated scale in every language that was included in the present investigation can be found at [https://osf.io/hyubd].

Sexuality-, and Pornography-related Questions asked participants about the past-year frequency of their PU and masturbation (0 – "*never*;" 10 – "*more than seven times a week*") and the average duration of their PU. The complete list of the questions and the answer options can be found at: [https://osf.io/wq4yp].

Statistical Analysis

Descriptive Analysis

Data analysis followed the preregistered analysis plan (see: [https://osf.io/xcgzf]). The SPSS 22 software was used for data cleaning, and the *lavaan* package of R (Rosseel, 2012) was used for multivariate analysis. Descriptive statistics were conducted to obtain score ranges, means with standard deviations, and minimum and maximum values. Normality was assessed by the investigation of skewness and kurtosis values. Based on Little's Missing Completely at Random test (MCAR), data regarding the PUMS items and the grouping variables used for measurement invariance testing (i.e. country, language, gender, and sexual orientation) were not missing completely at random ($\chi^2(3135,\ N = 82243) = 3473.113,\ p < .001$) (Little, 1988). However, the amount of missing data was negligible regarding the grouping variables (ranging from 0% to 0.4%) and was relatively small regarding the PUMS items (ranging from 8.7% to 8.8%); therefore we decided to use listwise deletion (Jia & Wu, 2019).

Factor Analysis

Confirmatory factor analysis (CFA) was conducted to test the pre-established factor structure of the PUMS (Bőthe, Tóth-Király, et al., 2021). To evaluate model fit, commonly used goodness-of-fit indices were examined: Comparative Fit Index (CFI; ≥ .95 for good, ≥ .90 for acceptable), the Tucker – Lewis

[1]Egypt, Iran, Pakistan, and Romania were included in the study protocol paper as collaborating countries (Bőthe, Koós, et al., 2021); however, it was not possible to get ethical approval for the study in a timely manner in these countries. Therefore, these countries did not participate in the data collection. Chile was not included in the study protocol paper as a collaborating country (Bőthe, Koós, et al., 2021) as the Chilean research team joined the study after publishing the study protocol.

Index (TLI; ≥ .95 for good, ≥ .90 for acceptable), and the Root-Mean-Square Error of Approximation (RMSEA; ≤ .06 for good, ≤. 08 for acceptable) with its 90% confidence interval (T. A. Brown, 2015; Kline, 2015). All items were treated as categorical indicators, and the diagonally weighted least-squares estimator (DWLS) was used, as it is superior when items are ordered and follow non-normal distribution (DiStefano & Morgan, 2014; Mîndrilă, 2010).

Test of Measurement Invariance

To further evaluate the psychometric properties of the PUMS and ensure that PU motivations were comparable across languages, countries, genders and sexual orientations, a series of measurement invariance tests were conducted. Six levels of invariance were tested and compared: configural, metric, scalar, residual, latent variance-covariance, and latent mean. Comparisons between the increasingly constrained models were made observing the relative change in the following fit indices: decrease in ΔCFI ≤ .010 and increase in ΔRMSEA ≤ .015 (F. F. Chen, 2007; Cheung & Rensvold, 2002). Because of the large number of groups that were compared in some cases (e.g., country, language), more liberal cutoff values for the RMSEA (around .10), and for the ΔRMSEA (.030) and ΔCFI (.020) were applied at the level of metric invariance (Svetina et al., 2020). Furthermore, additional fit indices (ΔTLI) were considered if they might incorporate control for parsimony (Marsh et al., 2004; Marsh, Hau, et al., 2005).

Monte-Carlo simulations were used to determine the minimum adequate sample size for each subgroup in measurement invariance tests. The results indicated that a minimum of 460 participants per group was required (see details: [https://osf.io/xcgzf]). Four separate tests of measurement invariance were conducted, (a) for language, 21 groups were analyzed, since recurring languages in some countries reduced the number of groups; (b) for country, 33 groups; (c) for gender; three groups, and (d) for sexual orientation, eight groups (for the details of the grouping decisions, see the preregistration materials at: [https://osf.io/xcgzf]). The complete list of the groups included in the analysis are presented in the Supplementary Material (Table S2).

Test of Reliability and Validity

Internal consistency was estimated by Cronbach's alpha, using Nunnally's (Goodboy & Martin, 2020; J. C. Nunnally, 1978) guidelines concerning its values (≥0.7 is acceptable, ≥0.8 is good), and McDonald's Omega (Goodboy & Martin, 2020). For the short PUMS-8, where single items represent each PU motivation, the correction for attenuation formula was used (J. Nunnally & Bernstein, 1994; Wanous & Reichers, 1996). Reliability was assessed based on the correlation between the single items and their respective PUMS factors, the estimated "true" correlation between them ($r = 1.00$) and the reliability (Cronbach's alpha) of the PUMS factors (Wanous & Reichers, 1996). In the literature, this formula is frequently used to evaluate the reliability of single-item measurements (Christophersen & Konradt, 2011; Dolbier et al., 2005; Fülöp et al., 2022). To ensure convergent validity of the scale, associations with pornography-related questions were examined (e.g., PU frequency). The complete list of the correlates is presented in Table 4. Spearman's correlations were conducted, as the distribution of the scale was non-normal. Associations around |.10| were considered weak, |.30| moderate, and |.50| strong (Cohen, 1992). Bonferroni correction was applied to reduce the risk of Type I error.

Development of the 8-Item Pornography Use Motivations Scale (PUMS-8)

To shorten the original 24-item PUMS, descriptive statistics and the results of the CFA on the whole scale were examined. We searched for one of the three items in each PUMS factor that would best represent the original eight factor, with the possible smallest loss in information. While selecting these items, several conditions were considered simultaneously, following previously established guidelines (Bőthe, Tóth-Király, et al., 2021; Haynes et al., 1995; Marsh, Ellis, et al., 2005; Orosz et al., 2016): (a) having adequate corrected item-total correlations, (b) having adequate standardized factor loadings, (c) having low skewness and kurtosis values, and (d) best covering the breadth of the content determined by separate subjective evaluations from the authors (i.e., evaluation of experts in pornography research and in scale development). Altogether eight items were selected, one representing each factor, and therefore sum scores could not be calculated. Due to this characteristic of the PUMS-8, neither dimensionality testing (i.e., factor analysis, measurement invariance testing), nor reliability testing were applicable for the PUMS-8.

Results

Descriptive Statistics and Results of the Confirmatory Factor Analysis of the PUMS

In terms of the scale's dimensionality, the original factor structure showed good fit to the data (CFI = .993 TLI = .992, RMSEA = .034. [90% CI = .034 to .035]), and all items loaded adequately on their respective factors (λ = .80–.95). The factor loadings and the corrected item-total correlations of the items to their respective factors can be seen in Table 1. and on Figure 1. In the total sample, the Sexual Pleasure factor had the highest mean scores, although the highest standard deviation as well. The Emotional Distraction or Suppression factor resulted in the lowest mean scores, with the lowest standard deviation. The descriptive results of the PUMS factors can be seen in Table 2. The series of confirmatory factor analyses conducted separately in the subgroups of participants regarding their language, country of residence, gender, and sexual orientation showed good fit to the data in each case (see Supplementary Materials, Table S5).

Results of the Measurement Invariance Tests of the PUMS (Language, Country, Gender, and Sexual Orientation)

To ensure meaningful comparability of the PUMS (Putnick & Bornstein, 2016), language-, country-, gender-, and sexual-orientation-based measurement invariance tests were conducted (Table 3). Detailed results of the invariance tests are in the Supplementary Material (Table S2).

As for language ($N_{group} = 21$), country ($N_{group} = 33$) and gender ($N_{group} = 3$), invariance at the item level was achieved,

Table 1. Items of the Pornography Use Motivations Scale (PUMS) with normality indices and corrected item-total correlations.

Items (number of the item from the original scale)	Factor Loadings	CITC	Skewness (SE)	Kurtosis (SE)
I watch porn to arouse myself sexually. (SP1)	.801	.844	−.461 (.01)	−.911 (.02)
I watch porn because it makes masturbation easier. (SP9)	**.830**	**.882**	**− .553 (.01)**	**− .984 (.02)**
I watch porn to relieve my sexual desires. (SP17)	.914	.903	.074 (.01)	−1.350 (.02)
I watch porn to learn new things. (SC2)	**.835**	**.880**	**.745 (.01)**	**− .483 (.02)**
I watch porn to become better in bed. (SC10)	.866	.904	1.202 (.01)	.480 (.02)
I watch porn to gather new ideas for sex. (SC18)	.932	.895	.813 (.01)	−.441 (.02)
I watch porn because I can be a part of things that I cannot experience in real life. (FA3)	.872	.907	.484 (.01)	−1.143 (.02)
I watch porn because it provides such an experience that would be impossible in real life. (FA11)	**.881**	**.803**	**0.782 (.01)**	**- .716 (.02)**
I watch porn because it is like being in a desired world. (FA19)	.900	.902	1.566 (.01)	1.379 (.02)
I watch porn because I am bored. (BA4)	.876	.909	.723 (.01)	−.711 (.02)
I watch porn because I have nothing better to do. (BA12)	.908	.917	1.430 (.01)	1.073 (.02)
I watch porn because I want to pass time when I am bored. (BA20)	**.953**	**.905**	**1.404 (.01)**	**.947 (.02)**
I watch porn because my sexual life is not satisfying. (LS5)	**.935**	**.920**	**.984 (.01)**	**− .299 (.02)**
I watch porn because I am not content with my sexual life. (LS13)	.953	.845	1.223 (.01)	.288 (.02)
I watch porn because I miss sex. (LS21)	.865	.921	.592 (.01)	−.946 (.02)
I watch porn to suppress my bad mood. (ED6)	.887	.920	1.510 (.01)	1.258 (.02)
I watch porn to distract myself from my negative thoughts (ED14)	.919	.901	1.607 (.01)	1.654 (.02)
I watch porn because it makes me forget my problems. (ED22)	**.933**	**.896**	**1.877 (.01)**	**2.740 (.02)**
I watch porn because it is one of the best ways to relieve stress. (SR7)	.898	.881	.840 (.01)	−.568 (.02)
I watch porn because it calms me down. (SR15)	**.904**	**.914**	**1.493 (.01)**	**1.177 (.02)**
I watch porn because it helps me relax. (SR23)	.896	.904	.864 (.01)	−.519 (.02)
I watch porn because I can find out what turns me on. (SE8)	.868	.918	.275 (.01)	−1.137 (.02)
I watch porn to get to know my own sexual desires better. (SE16)	**.898**	**.898**	**.526 (.01)**	**− .918 (.02)**
I watch porn because I can get to know what I like in sex and what I do not. (SE24)	.897	.893	.739 (.01)	−.583 (.02)

Note. Factor Loadings = Factor loadings assessed by confirmatory factor analysis; CITC = Corrected Item-Total Correlation, where the items were correlated to the factor score, not the total score of the scale; SE = standard error. SP = Sexual Pleasure motivation, SC = Sexual Curiosity motivation, FA = Fantasy motivation, BA = Boredom Avoidance motivation, LS = Lack of Sexual Satisfaction motivation, ED = Emotional Distraction or Suppression motivation, SR = Stress Reduction motivation, SE = Self-Exploration motivation. Bold letters indicate the final items of the short PUMS-8.

but not at the factor level. Namely, residual variance was achieved, according to the changes in fit indices. This means that the PUMS demonstrated not just the same factor structure, but similar loadings as well and each item contributed to the latent construct to the same extent. Furthermore, the mean differences in the latent factors represented the mean differences in the shared variance of the items. Finally, the sum of the unique item-variance and error variance was similar across groups. Therefore, the scale can be used without significant measurement biases in any translation that was included in the analysis and among countries and genders.

Because only residual invariance was achieved, but not latent mean invariance, a series of mean difference testing were conducted between the subgroups of participants (i.e., gender-, and country-based groups) to compare these groups. For genders, latent-mean differences were tested, with constructing latent means of the PUMS-24 factors to zero in one group, using them for reference values, while assessing the deviations in the other two groups (see details in Supplementary Material, Table S6). When the latent means of men's were set to be zero, women's latent means were significantly lower (differences ranging from −0.26 to −0.89) on all motivations. Gender-diverse individuals also demonstrated lower latent means compared to men for most motivations, although these differences were smaller than between women and men (differences ranging from −0.25 to −0.47). Self-exploration PU motivation was the only exception, where the latent means of the gender-diverse group were higher than men's (0.16). When women's means were fixed to zero, both men's and gender-divers individuals (differences ranging from 0.10 to 0.55) demonstrated higher latent means, where the differences of men were higher. In sum, men scored significantly higher than gender-diverse individuals, and even higher than women; and gender-diverse individuals scored higher than women on all of the PU motivations. Self-exploration PU motivation was the only exception from this pattern, where the gender-diverse group scored the highest. All of the differences were significant ($p < .01$).

As for countries, for the sake of simplicity, a series of Kruskal–Wallis tests were conducted on the PUMS-24 factors separately. The tests resulted in significant differences between countries with small-to-medium effect sizes (Cohen's $d = 0.34$ to 0.56).[2] Test statistics and pairwise comparisons are presented at [https://osf.io/8dy43]. Some countries were consistently scoring higher than most of the other countries on all PU motivation domains (e.g., Malaysia, Taiwan, and Turkey), while others scored consistently lower (e.g., Colombia, Spain, Poland). These patterns are visualized in the Supplementary Materials (see Figure S1–S8).

In terms of participants' sexual orientations ($N_{group} = 8$), the highest level of invariance, namely, latent mean invariance was achieved, based on changes in fit indices. This result suggests that there are no mean differences among the sexual-orientation-based groups. In sum, the PUMS can be used without significant measurement biases, and language-, country-, gender-, and sexual-orientation-based comparisons are valid and meaningful.

When examining the descriptive statistics of the PUMS factors separately for countries, genders, and sexual orientations (see details in Supplementary Materials, Tables S2–S4),

[2]Test statistics for the PU motivations are the following: ($H(32) = 5196.986$, $p < .001$) of the Sexual Pleasure (SP), ($H(32) = 4561.88$, $p < .001$) for the Sexual Curiosity (SC), ($H(32) = 2224.746$, $p < .001$) for the Fantasy (FA), ($H(32) = 3938.663$, $p < .001$) for the Boredom Avoidance (BA), ($H(32) = 4478.839$, $p < .001$) for the Lack of Sexual Satisfaction (LS), ($H(32) = 3541.582$, $p < .001$) for the PUMS Emotional Distraction (ED), ($H(32) = 4190.64$, $p < .001$) for the Stress Reduction (SR) and ($H(32) = 2035.924$, $p < .001$) for the Self-Exploration (SE) PU motivations.

Table 2. Descriptive statistics and reliability indices of the long and short versions of the Pornography Use Motivations Scale (PUMS and PUMS-8).

Factors of the PUMS	Range	Mean (SE)	SD	Skewness (SE)	Kurtosis (SE)	∝*	ω
PUMS Sexual Pleasure (SP) factor	3 – 21	12.39 (.02)	5.30	−0.42 (.01)	−0.86 (.02)	.849	.853
PUMS Sexual Curiosity (SC) factor	3 – 21	7.12 (.02)	4.21	0.87 (.01)	−0.10 (.02)	.873	.874
PUMS Fantasy (FA) factor	3 – 21	7.54 (.02)	4.72	0.82 (.01)	−0.32 (.02)	.841	.858
PUMS Boredom Avoidance (BA) factor	3 – 21	6.53 (.02)	4.27	1.14 (.01)	0.41 (.02)	.893	.893
PUMS Lack of Sexual Satisfaction (LS) factor	3 – 21	7.61 (.02)	4.95	0.96 (.01)	−0.07 (.02)	.873	.879
PUMS Emotional Distraction or Suppression (ED) factor	3 – 21	5.60 (.01)	3.90	1.63 (.01)	2.00 (.02)	.890	.891
PUMS Stress Reduction (SR) factor	3 – 21	6.85 (.02)	4.50	1.01 (.01)	0.04 (.02)	.881	.884
PUMS Self-Exploration (SE) factor	3 – 21	8.32 (.02)	4.65	0.47 (.01)	−0.81 (.02)	.886	.887
Items of the PUMS-8							
PUMS-8 SP9 ("*I watch porn because it makes masturbation easier*")	1 – 7	4.49 (.01)	2.06	− .55 (.01)	− .98 (.02)	.92	–
PUMS-8 SC2 ("*I watch porn to learn new things*")	1 – 7	2.53 (.01)	1.59	.75 (.01)	− .48 (.02)	.89	–
PUMS-8 FA11 ("*I watch porn because it provides such an experience that would be impossible in real life*")	1 – 7	2.63 (.01)	1.89	.78 (.01)	− .72 (.02)	.77	–
PUMS-8 BA20 ("*I watch porn because I want to pass time when I am bored*")	1 – 7	1.99 (.01)	1.49	1.40 (.01)	.95 (.02)	.92	–
PUMS-8 LS5 ("*I watch porn because my sexual life is not satisfying*")	1 – 7	2.48 (.01)	1.84	.98 (.01)	− .30 (.02)	.97	–
PUMS-8 ED22 ("*I watch porn because it makes me forget my problems*")	1 – 7	1.77 (.01)	1.38	1.88 (.01)	2.74 (.02)	.90	–
PUMS-8 SR15 ("*I watch porn because it calms me down*")	1 – 7	1.95 (.01)	1.51	1.49 (.01)	1.18 (.02)	.95	–
PUMS-8 SE16 ("*I watch porn to get to know my own sexual desires better*")	1 – 7	2.73 (.01)	1.71	.53 (.01)	− .92 (.02)	.91	–

Inter-Factor Correlation of the PUMS and the PUMS-8

	SP	SC	FA	BA	LS	ED	SR	SE
Sexual Pleasure (SP)	–	.37	.55	.41	.60	.44	.55	.50
Sexual Curiosity (SC)	.24	–	.50	.39	.38	.41	.44	.69
Fantasy (FA)	.40	.36	–	.52	.63	.55	.58	.57
Boredom Avoidance (BA)	.28	.28	.42	–	.51	.67	.65	.41
Lack of Sexual Satisfaction (LS)	.39	.25	.50	.39	–	.56	.57	.44
Emotional Distraction or Suppression (ED)	.28	.29	.45	.63	.43	–	.78	.44
Stress Reduction (SR)	.32	.30	.44	.59	.42	.71	–	.49
Self-Exploration (SE)	.26	.54	.47	.32	.32	.36	.38	–

Notes. All factor loadings and correlations were statistically significant at $p < .001$; α = Cronbach's alpha, ω = McDonald's omega. Correlational coefficients above the diagonal represent the correlations between the PUMS factors, coefficients below the diagonal represent the correlations between the PUMS-8 items. * = For the PUMS-8 single items, reliability was calculated based on the reliability indices of the PUMS factors, the correlation between the factors and the items, and the "true" correlation between the factors and the items (Wanous & Reichers, 1996).

some general patterns emerged. Participants had the highest scores on the Sexual Pleasure PU motivation in all subgroups, and lowest scores on the Emotional Distraction or Suppression PU motivation. In between the highest and lowest, the order of the factors showed great variability among countries. While all gender groups reported Sexual Pleasure motivation, the highest, and the second most frequently reported PU motivations for both women and gender-diverse individuals was Self-exploration, while men reported using pornography because of the Lack of Sexual Satisfaction in their lives second most frequently. As for sexual orientation, participants scored the highest on the Sexual Pleasure motivation in all groups as well, with gay and lesbian individuals scoring the highest among the groups, followed by bisexual, queer or pansexual, homoflexible, or heteroflexible participants as those who are currently questioning their orientation, scoring similarly, followed by heterosexual individuals, and lastly, asexual participants scoring the lowest. For Sexual Curiosity, the order was similar, with asexual individuals scoring the lowest, almost scoring as low as they scored for the Emotional Distraction or Suppression motivation. Self-exploration, as expected, was the most common PU motivation among gay or lesbian, bisexual, queer or pansexual, homoflexible, or heteroflexible individuals, and those who are questioning their sexuality.

Reliability and Validity of the PUMS

The subscales of the PUMS demonstrated excellent reliability measured by both Cronbach's alphas (ranging from .84 to .89) and McDonald's omegas (ranging from .85 to .89). The inter-factor correlations showed moderate-to-high associations (ranging from .37 to .78). The associations with theoretically relevant constructs were diverse, ranging from weak-to-strong effect sizes ($r = .17$ to .57). Frequency of PU showed positive, strong correlations with all PU motivations, of which the association with Sexual Pleasure was the strongest and Sexual Curiosity the weakest ($r = .67$ and .39, respectively). The duration of PU resulted in positive and weak correlations, with the Stress Reduction PU motivation having the strongest association ($r = .17$ to .24). Frequency of masturbation resulted in weak-to-strong, positive associations ($r = .23$ to .50) with all PU motivations. Sexual Pleasure had the strongest, and Sexual Curiosity had the weakest association with masturbation frequency. For all correlations, see Table 4.

Psychometric Properties of the Short Pornography Use Motivations Scale (PUMS-8)

Item selection was conducted based on the factor loadings, the corrected item-total correlations, skewness, kurtosis, and the qualitative evaluation of the items' content (Table 1). Eight items were selected, one from each factor of the PUMS to represent each PU motivation. All selected items displayed adequate factor loadings, corrected item-total correlations, and normality.

Testing the dimensionality of PUMS-8 was not possible, since the eight items represent eight independent factors, and

Table 3. Series of measurement invariance tests on the Pornography Use Motivation Scale (PUMS).

Series of measurement invariance testing	Model	DWLS χ2 (df)	CFI	TLI	RMSEA	90% CI	Comparison	Δχ2 (df)	ΔCFI	ΔTLI	ΔRMSEA
Language	M1. Configural	23374.61* (4480)	0.993	0.992	0.034	0.034–0.035	–	–	–	–	–
	M2. Metric	45667.56 * (4784)	0.986	0.984	0.049	0.048–0.049	M2–M1	22292.949 (304)	−0.007	−0.008	+0.015
	M3. Scalar	55845.42* (5088)	0.982	0.981	0.053	0.052–0.053	M3–M2	10177.859 (304)	−0.004	−0.003	+0.004
	M4. Residual	**63887.24* (5544)**	**0.980**	**0.980**	**0.054**	**0.054–0.055**	**M4–M3**	**8041.816 (456)**	**−0.002**	**−0.001**	**+0.001**
	M5. Latent variance	321990.37* (6228)	0.890	0.902	0.119	0.118–0.119	M5–M4	258103.134 (684)	−0.090	−0.078	+0.065
	M6. Latent means	393553.05* (6380)	0.865	0.883	0.130	0.130–0.130	M6–M5	71562.678 (152)	−0.025	−0.019	+0.011
Country	M1. Configural	23170.81* (7392)	0.99	0.99	0.03	0.03–0.03	–	–	–	–	–
	M2. Metric	47953.35* (7904)	0.99	0.98	0.05	0.05–0.05	M2–M1	24782.546 (512)	−0.009	−0.010	0.017
	M3. Scalar	58872.18* (8416)	0.98	0.98	0.05	0.05–0.05	M3–M2	10918.829 (512)	−0.004	−0.003	0.004
	M4. Residual	67703.48* (9184)	0.98	0.98	0.06	0.06–0.06	M4–M3	8831.300 (768)	−0.003	−0.001	0.002
	M5. Latent variance	**324665.73* (10336)**	**0.88**	**0.90**	**0.12**	**0.12–0.12**	**M5–M4**	**256962.245 (1152)**	**−0.096**	**−0.082**	**0.066**
	M6. Latent means	399633.81* (10592)	0.85	0.87	0.13	0.13–0.13	M6–M5	74968.080 (256)	−0.028	−0.022	0.012
Gender	M1. Configural	19877.95* (672)	0.992	0.990	0.034	0.034–0.034	–	–	–	–	–
	M2. Metric	37824.16* (704)	0.985	0.982	0.046	0.046–0.046	M2–M1	17946.209 (32)	−0.007	−0.008	+0.012
	M3. Scalar	38422.27* (736)	0.985	0.983	0.045	0.045–0.046	M3–M2	598.109 (32)	+0.000	+0.001	−0.001
	M4. Residual	**46561.22* (784)**	**0.981**	**0.980**	**0.048**	**0.048–0.048**	**M4–M3**	**8138.948 (48)**	**−0.004**	**−0.003**	**+0.003**
	M5. Latent variance	175181.69* (856)	0.929	0.931	0.091	0.090–0.091	M5–M4	128620.471 (72)	−0.052	−0.049	+0.043
	M6. Latent means	313328.74* (872)	0.872	0.879	0.120	0.120–0.120	M6–M5	138147.045 (16)	−0.057	−0.052	+0.029
Sexual orientation	M1. Configural	20158.40* (1792)	0.994	0.992	0.033	0.033–0.034	–	–	–	–	–
	M2. Metric	23490.06* (1904)	0.993	0.991	0.035	0.035–0.035	M2–M1	3331.659 (112)	−0.001	−0.001	+0.002
	M3. Scalar	24490.49* (2016)	0.992	0.991	0.035	0.034–0.035	M3–M2	1000.430 (112)	−0.001	+0.000	+0.000
	M4. Residual	26177.71* (2184)	0.992	0.992	0.034	0.034–0.035	M4–M3	1687.226 (168)	+0.000	+0.001	−0.001
	M5. Latent variance	52554.51* (2436)	0.983	0.984	0.047	0.047–0.047	M5–M4	26376.795 (252)	−0.009	−0.008	+0.013
	M6. Latent means	**74645.48* (2492)**	**0.975**	**0.978**	**0.056**	**0.056–0.056**	**M6–M5**	**22090.970 (56)**	**−0.008**	**− 0.006**	**+0.009**

Notes. WLSMV = weighted least squares mean- and variance-adjusted estimator; χ 2 = Chi-square; df = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis Index; RMSEA = root-mean-square error of approximation; 90% CI = 90% confidence interval of the RMSEA; ΔCFI = change in CFI value compared to the preceding model; ΔTLI = change in the TLI value compared to the preceding model; ΔRMSEA = change in the RMSEA value compared to the preceding model; Bold letters indicate the final levels of invariance that were achieved. *$p < .01$.

Table 4. Associations between the subscales of the Pornography Use Motivations Scale (PUMS) and its short form (PUMS-8) and theoretically relevant correlates.

	Range	*M*	*SD*	Sexual Pleasure (SP)	Sexual Curiosity (SC)	Fantasy (FA)	Boredom Avoidance (BA)	Lack of Sexual Satisfaction (LS)	Emotional Distraction or Suppression (ED)	Stress Reduction (SR)	Self-Exploration (SE)
PUMS											
1. Past-year frequency of pornography use[a]	0–10	4.22	3.02	.670*	.388*	.538*	.515*	.539*	.477*	.572*	.436*
2. Average duration of pornography use per session (in minutes)	1–1200	23.19	24.28	.190*	.171*	.270*	.223*	.205*	.217*	.242*	.193*
3. Past-year frequency of masturbation[a]	0–10	5.36	2.61	.496*	.232*	.360*	.334*	.380*	.317*	.389*	.300*
PUMS-8											
1. Past-year frequency of pornography use[a]				.640*	.318*	.452*	.433*	.439*	.391*	.430*	.372*
2. Average duration of pornography use per session (in minutes)				.064*	.116*	.184*	.174*	.140*	.179*	.154*	.123*
3. Past-year frequency of masturbation[a]				.516*	.196*	.299*	.275*	.319*	.262*	.293*	.270*

Notes. a = 0: never, 1: once in the past year, 2: 2–6 times in the past year, 3: 7–11 times in the past year, 4: monthly, 5: 2–3 times a month, 6: weekly, 7: 2–3 times a week, 8: 4–5 times a week, 9: 6–7 times a week, 10: more than 7 times a week; *Bonferroni-corrected $p < .00125$.

not one underlying latent construct. However, construct validity was examined similarly to the PUMS. The associations with the theoretically relevant correlates are detailed in Table 4. The results resembled the correlations of the PUMS. Specifically, the highest and positive associations were consistent with the frequency of PU ($r = .32$ to $.64$), in the case of all PUMS-8 motivations. The average duration of PU had positive, small but significant associations with the items ($r = .06$ to $.18$). Frequency of masturbation resulted in positive, small to high associations, where the item representing Sexual Pleasure motivation had the highest correlation ($r = .52$), and Sexual Curiosity Motivation the lowest ($r = .20$).

Discussion

PU is a global and common behavior, which is a subject of intensive ethical, sociological, psychological, and philosophical discourse (Ashton et al., 2019; Grubbs & Kraus, 2021; Short et al., 2012; Watson, 2010; Wright et al., 2023). To inform such discourses, it is important to examine the potential reasons why people consume pornography. Assessing a wide range of PU motivations with a tool that was developed using a "bottom-up" research design is an inductive and thorough method to understand a phenomenon in depth, without being influenced by predisposing ideas, drawing a more complete and inclusive picture of the construct (Boateng et al., 2018). Responding to calls for more standardized and well-validated PU-related measurement tools that are based on accurate and up-to-date working definitions (Kohut et al., 2020), and for more inclusive data collection strategies (Grubbs et al., 2020; Klein et al., 2021; McGorray et al., 2023; Reyes et al., 2023), the present study examined PU motivations with well-validated measures (i.e., PUMS and PUMS-8) in cross-cultural settings across 33 countries. To assist the work of practitioners and researchers, we developed a shorter, eight-item form of the measure (PUMS-8). Our analysis demonstrated that the PUMS-8 is also a valid and reliable tool that can assess motivations for pornography use in a rapid fashion, with the least possible information loss compared to the original, 24-item measure.

In line with previous findings (Bőthe, Tóth-Király, et al., 2021; Bőthe, Vaillancourt-Morel, Dion, et al., 2022), the PUMS resulted in the pre-established eight-factor structure and demonstrated great fit to the data. The factor structure exhibited stability across the examined languages, countries, genders, and sexual orientations. Furthermore, all subscales showed good reliability and construct validity, when their associations were assessed with theoretically relevant constructs (e.g., PU frequency, average duration of PU). As for the short version, the PUMS-8 had similar associations with the behavioral indicators of PU, as did the PUMS, demonstrating good construct validity as well. Namely, frequency of PU and masturbation consistently showed the strongest positive correlations with all motivations, while the average duration of PU resulted in small-to-moderate, positive correlations. Based on these results, those who use pornography for self-pleasure, use it the most frequently, but how long they are watching pornography in one sitting is more related to how much they use it for escaping into a fantasy, from the negative state of

stress, or boredom (Bőthe, Tóth-Király, et al., 2021; Grubbs, Wright, et al., 2019). These coping-related motivations are in association with problematic PU (Bőthe, Tóth-Király, et al., 2021; Bőthe, Vaillancourt-Morel, Dion, et al., 2022; Koós et al., 2022). While problematic PU is a great risk for negative sexual outcomes (e.g. sexual functioning problems), PU frequency (even after controlled for masturbation frequency) is not (Bőthe, Tóth-Király & Griffiths et al., 2021).

To ensure meaningful adaptation of the scale and comparisons between translations (Putnick & Bornstein, 2016), subsamples based on countries of origin, gender, and sexual minority groups, a series of measurement invariance tests was conducted. Findings showed configural invariance for all translations, meaning that participants conceptualized the motivations and responded to the items in the same way in each language. This finding implies that the scale can be used in all examined languages safely and without substantial measurement biases. The country- and gender-based measurement invariance tests showed comparable results, achieving residual-level invariance, while the sexual-orientation-based measurement invariance test showed the highest level latent mean invariance. Based on these findings, the PUMS can assess PU motivations in culturally, gender, and sexually diverse samples.

When examining PU motivation scores in subgroups of participants based on their nationality, gender, or sexual orientation, some consistent patterns emerged. In the total sample, and consistently across these subgroups, participants scored the highest on the Sexual Pleasure PU motivation, and the lowest on the Emotional Distraction or Suppression PU motivation. In most countries, participants scored low on the Boredom Avoidance PU motivation and the Stress Reduction PU motivation as well, leaving the emotional coping type of reasons to use pornography at the bottom of the list. Furthermore, participants from most countries reported high levels of Fantasy and Lack of Sexual Satisfaction PU motivations, although there were significant gaps between the highest scored Self-Pleasure PU motivation, and the aforementioned second highest ones. These results are in line with previous findings concerning self-pleasure as the leading motivation behind PU, and motivations that could be characterized as coping or escaping from reality, are more prevalent in cases where PU has become problematic (Bőthe, Tóth-Király, et al., 2021). While the motivational patterns within countries were similar (i.e., Sexual Pleasure as the leading motivation for PU, and Emotional Distraction and Suppression, Stress Reduction and Boredom Avoidance as the least frequently reported domains), there are significant differences between countries. The residents of some countries consistently reported higher motivations throughout all, or almost all PU motivation domains (e.g., Malaysia, Taiwan, and Turkey), while others reported consistently lower motivations (e.g., Colombia, Spain, and Poland).

As for gender differences, men tended to score higher on almost all motivations than gender-diverse individuals, who scored consistently higher than women, with only the Self-exploration PU motivation as an exception. For Self-exploration PU motivation, gender-diverse participants scored the highest among all genders. These results are in line with previous studies, showing that men use pornography more frequently and for longer durations than the other genders; therefore, they may be more motivated to use pornography (Bőthe, Tóth-Király, et al., 2021). Another possible explanation for the gender differences might be that most pornography available online is targeted toward men (French & Hamilton, 2018).

To broaden the PUMS's usability, the scale's length was reduced to eight items (i.e., PUMS-8). The items were selected carefully considering the psychometric properties, as well as the content and meaning of the items, representing their factors to the highest extent, and with the least possibility for interpretation biases. While we encourage the use of the long form of the PUMS whenever possible, we acknowledge that in some cases, when the time and the resources are limited, a short scale is more feasible. These include online surveys where the attention span of the participants should be spared, or clinical consultations for patients presenting with problematic pornography use.

The present findings support the notion that PU is a widespread phenomenon worldwide. Despite attitudes toward pornography being deeply embedded in cultural norms (Litsou et al., 2021; Wright et al., 2013), we found that the motivational background of PU was rather similar in the examined countries. These patterns can be interpreted in the context of the general population, as the study involved a large, community sample, and group comparisons revealed no significant differences between subsamples. This pattern, contrasting with the cultural determination of motivations behind PU, rather hints at the globalization of the adult industry, which had been detected two decades ago (Zook, 2003). Based on the present findings, examining certain motivations in specific subpopulations (e.g., Self-exploration PU motivations in a gender minority sample) might deepen our understanding of the motivational background of PU and the potential utilization of pornography by different minority groups.

Limitations and Future Directions

The present study demonstrated a wide variety of strengths regarding diverse and large sampling, the use of rigorous methodology, and open-science practices. In addition to the general limitations of the ISS project (see general limitations: [https://osf.io/6kscb]), it is important to mention that the PUMS (Bőthe, Tóth-Király, et al., 2021) was shortened on the same dataset the original version of the scale was assessed. This methodological choice, though practical for efficiency, introduces limitations, and potentially could result in over-optimistic psychometric properties (J. Nunnally & Bernstein, 1994). Therefore, further studies are warranted to examine the psychometric properties of the PUMS-8 using independent samples. Furthermore, since sum scores of the scale cannot be calculated, choosing one item per factor for the short form limits testing the dimensionality of the questionnaire (Smith et al., 2000). However, we believe that the extended usability of the PUMS-8 in situations where there is no time or attention span for a 24-item long measurement tool, outweighs these limitations. Another potential limitation of the study is the use of a broad definition for pornography (Kohut et al., 2020), which might confuse some participants.

Exploring reasons for PU may contribute to the research on sexual health issues, like problematic PU (Bőthe, Tóth-Király, et al., 2021; Laier & Brand, 2017) or sexual functioning (Bőthe,

Vaillancourt-Morel, & Bergeron, 2022), as previous research showed that certain motivations may differentiate between types (i.e., problematic or non-problematic) and the amount (i.e., frequency) of problematic sexual behaviors, like compulsive sexual behavior (Koós et al., 2022; Tóth-Király et al., 2019). Furthermore, PU motivations might play a key role for differentiating between symptoms of problematic PU or healthy variants of sexual behavior. For example, watching an increasing amount of pornography over time, or consuming more and more diverse and stimulating content might be a symptom of tolerance, a potential symptom of problematic PU, or a sign of sexual curiosity and self-exploration (Lewczuk, Wizła, Glica, et al., 2022). Therefore, examining motivational pathways that might differentiate between problematic PU and non-problematic PU could be a fruitful direction for future studies aiming to identify at-risk populations for prevention or intervention programs (Bőthe, Baumgartner, et al., 2021), or evaluating novel treatments for help seeking populations (Antons et al., 2022; Markert et al., 2023; Turner et al., 2022). That is, assessing motivations for PU might help identifying personal gains deriving from the problematic behavior (Jiang et al., 2022).

Conclusion

Both the PUMS and the PUMS-8 are reliable and valid measurement tools to assess different types of PU motivations in general populations. Their psychometric properties were tested throughout a wide range of languages, countries, genders, and sexual orientations within the ISS project. Responding to the latest critiques toward research practices in the field of sexuality (Klein et al., 2021), both versions of the scale were examined in underrepresented groups regarding sexuality (i.e., sexual and gender minority groups). The motivational background of PU showed high similarity in the examined countries, despite cultural differences in PU acceptance and attitudes (L. Chen et al., 2021; Hoagland et al., 2023; Montgomery-Graham et al., 2015; Vaillancourt-Morel & Bergeron, 2019). Our study demonstrated that the PUMS and PUMS-8 scales are valid and reliable scales among a range of diverse populations and are free to use for research and clinical purposes.

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Ethics

The authors assert that all procedures contributing to this work comply with the relevant national and institutional committees' ethical standards on human experimentation and the Helsinki Declaration. The study received approval either from the national/institutional ethics review boards of all participating countries or from the local ethics committees, which determined that the study was exempt and did not require additional assessment since it had already been approved by the ethics committees of the principal investigators' institutions:
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