

FULL-LENGTH REPORT



†Members of the International Sex Survey Consortium, along with their affiliations, contact information, funding information, and ORCID ID, are listed in the [Appendix](#).

*Corresponding author.
E-mail: beata.bothe@umontreal.ca;
beaboth@gmail.com

A global investigation of the Moral Incongruence Model of Pornography Use across genders, religions, and cultures

BEÁTA BÓTHE^{1,2*} , AURÉLIE MICHAUD¹ ,
VANESSA BEAULIEU¹ , SIMON HOULE^{3,4} ,
LÉNA NAGY^{5,6} , MÓNIKA KOÓS⁷ , SHANE W. KRAUS⁸ ,
MARC N. POTENZA^{9,10,11} , ZSOLT DEMETROVICS^{6,12,13} ,
ANDRÁS KÖLTŐ¹⁴ , INTERNATIONAL SEX SURVEY
CONSORTIUM[†], JOSHUA B. GRUBBS^{15,16}

¹ Département de Psychologie, Université de Montréal, Montréal, Canada

² Centre de recherche interdisciplinaire sur les problèmes conjugaux et les agressions sexuelles (CRIPCAS), Université de Montréal, Montréal, Canada

³ HEC Montreal, Montreal, Canada

⁴ Université du Québec à Trois-Rivières, Trois-Rivières, Canada

⁵ Doctoral School of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary

⁶ Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary

⁷ Institute of Forensic Psychiatry and Sex Research, Center for Translational Neuro-and Behavioral Science, University of Duisburg-Essen, Essen, Germany

⁸ Department of Psychology, University of Nevada, Las Vegas, Las Vegas, NV, USA

⁹ Yale University School of Medicine, New Haven, CT, USA

¹⁰ Connecticut Council on Problem Gambling, Wethersfield, CT, USA

¹¹ Connecticut Mental Health Center, New Haven, CT, USA

¹² Flinders University, College of Education, Psychology and Social Work, Institute for Mental Health and Wellbeing, Adelaide, South Australia

¹³ Centre of Excellence in Responsible Gaming, University of Gibraltar, Gibraltar, Gibraltar

¹⁴ Health Promotion Research Centre, University of Galway, Ireland

¹⁵ Center on Alcohol, Substance use, and Addictions University of New Mexico, Albuquerque, USA

¹⁶ Department of Psychology, University of New Mexico, Albuquerque, USA

Received: December 3, 2025 • Revised manuscript received: February 16, 2026 • Accepted: February 22, 2026
Published online: April 21, 2026

ABSTRACT

Background and aims: Millions of people struggle with compulsive/problematic pornography use (i.e., PPU) or self-perceived addiction (i.e., SPA) to pornography. Despite pornography's global availability and PPU's recent official recognition as a manifestation of compulsive sexual behavior disorder, these problems remain poorly understood, primarily due to a lack of rigorous research beyond small, homogeneous samples. To address this gap and provide evidence that is both robust and generalizable, we tested the applicability of the Moral Incongruence Model of Pornography Use across diverse populations. This model posits that individuals develop problems with their pornography use due to behavioral dysregulation (i.e., PPU) and/or when their use conflicts with their moral values (i.e., moral incongruence), often influenced by religious beliefs, resulting in SPA. **Methods:** Using data from the International Sex Survey ($N = 66,994$; 50.8% women), we examined the associations between religiosity, pornography use frequency, PPU, and SPA, considering moral incongruence as a moderator. We employed multi-group structural equation models across 34 countries, three genders, and seven religious affiliations. **Results:** Results indicated that the model was invariant across all countries, genders, and religious affiliations, with weak and positive associations between religiosity and PPU/SPA,

and moderate-to-strong associations between pornography use frequency and PPU/SPA. Moral incongruence moderated the relationship between pornography use frequency and PPU/SPA, with stronger associations at higher levels of moral disapproval. *Conclusions:* These findings suggest that, regardless of cultural background, gender, or religion, the same mechanisms may underlie PPU/SPA, supporting the generalizability of the Moral Incongruence Model and its relevance to current international diagnostic guidelines.

KEYWORDS

compulsive sexual behavior, moral disapproval, moral incongruence, pornography, self-perceived addiction

PORNOGRAPHY USE AND COMPULSIVE SEXUAL BEHAVIOR DISORDER

Pornography use is common in many individuals' sexual repertoires. Self-report surveys suggest that 70–95% of adults report lifetime pornography use in large-scale and nationally representative studies, with men using pornography more frequently than other genders (Böthe, Nagy, et al., 2024; Grubbs, Kraus, & Perry, 2019; Ince et al., 2025). A small but significant proportion of people develop problems with their pornography use and may experience adverse consequences, including mental and physical health and interpersonal and social issues (e.g., suicide risk) (McGraw et al., 2024; Sniewski & Farvid, 2019). Studies have shown that 1–11% of adults report pornography-use-related problems, and men seem to be more affected than women and gender-diverse individuals (Böthe, Nagy, et al., 2024; Grubbs, Kraus, et al., 2019). Pornography use is considered a common manifestation of compulsive sexual behavior disorder (CSBD), characterized by persistent, poorly controlled sexual behaviors accompanied by distress and functional impairment. However, not all individuals who experience problems with their pornography use meet the diagnostic guidelines for CSBD (World Health Organization, 2022). Some people experience a conflict between their pornography use and their moral values. A unique feature of the CSBD diagnosis in the 11th revision of the International Classification of Diseases (ICD-11) is its consideration of moral values about sexuality in the diagnostic process (World Health Organization, 2022). Specifically, individuals whose distress *entirely* derives from the moral disapproval of their sexual behaviors should *not* be diagnosed with CSBD (see diagnostic guidelines provided in Table 1). This exclusion criterion also corresponds with a theoretical model, the Moral Incongruence Model of Pornography Use, and related empirical evidence (Grubbs, Perry, Wilt, & Reid, 2019). This model is an integrative framework with a central argument that two different pathways or their combination may lead individuals to experience pornography-use-related problems (Grubbs & Floyd, 2025; Grubbs, Perry, et al., 2019).

MORAL INCONGRUENCE MODEL OF PORNOGRAPHY USE

This model suggests that a minority of vulnerable individuals experience distress due to compulsive/dysregulated use (i.e., problematic pornography use, PPU, *pathway 1*). Higher pornography use frequency may be a behavioral indicator of PPU. Others may report problems due to their pornography use conflicting with their moral values and experience self-perceived addiction (SPA) to pornography (i.e., pornography problems due to moral incongruence, PPMI, *pathway 2*). The latest iterations of the model, based on emerging scientific evidence (Grubbs, Floyd, Griffin, Jennings, & Kraus, 2022), suggested that PPMI may be best conceptualized by the interaction of pornography use frequency and moral disapproval of pornography use. Those individuals whose behavior (i.e., pornography use frequency) and moral values (i.e., moral disapproval of pornography) are in greater conflict (i.e., greater moral incongruence) report higher levels of problems with or SPA to pornography. Finally, some people may experience both PPU and PPMI at the same time (Böthe et al., 2025; Kraus & Sweeney, 2019). Figure 1 presents a visual summary of the model (Grubbs & Floyd, 2025).

A crucial component of the model is religiosity (Grubbs, Perry, et al., 2019). Religious beliefs about sexuality in general, and pornography use in particular, have been considered important correlates of both pornography-use habits and moral values concerning its use (Jennings, Lyng, Gleason, Finotelli, & Coleman, 2021). Findings of recent systematic reviews and meta-analyses have shown that individuals with higher levels of religiosity may watch pornography less frequently than their less religious or non-religious peers and may hold stronger moral values against such use (Grubbs, Perry, et al., 2019; Jennings et al., 2021). Still, some religious individuals watch pornography to some extent. When they do so, they may experience higher levels of problems with or SPA to pornography due to the discrepancy between their use and moral values (Grubbs, Perry, et al., 2019; Jennings et al., 2021; Lewczuk, Glica, Nowakowska, Gola, & Grubbs, 2020).

Although findings to date are important, most studies conducted in this field used culturally homogenous male samples, mainly from Western and predominantly Christian countries (Grubbs, Hoagland, et al., 2020; Jennings et al., 2021), which raises the question of whether their findings are generalizable to other cultures, especially given that revisions of the ICD are used worldwide. Both sexual behaviors (e.g., pornography use) and moral values are shaped by gender-related, cultural, and religious values and norms and their interplay (Parker, 2009; World Health Organization, 2022). Thus, considering one's cultural background, religious affiliation, and gender is essential when aiming to examine and understand a global phenomenon like pornography use and related problems. Another critical shortcoming of previous work pertains to the use of diverse, often low-quality assessments of religiosity (e.g., one item)

Table 1. Diagnostic guidelines for compulsive sexual behavior disorder based on the 11th revision of the International Classification of Diseases as of January 2025

Parent category	Impulse control disorders
Code	6C72
Description	Compulsive sexual behaviour disorder is characterised by a persistent pattern of failure to control intense, repetitive sexual impulses or urges resulting in repetitive sexual behaviour. Symptoms may include repetitive sexual activities becoming a central focus of the person’s life to the point of neglecting health and personal care or other interests, activities and responsibilities; numerous unsuccessful efforts to significantly reduce repetitive sexual behaviour; and continued repetitive sexual behaviour despite adverse consequences or deriving little or no satisfaction from it. The pattern of failure to control intense, sexual impulses or urges and resulting repetitive sexual behaviour is manifested over an extended period of time (e.g., 6 months or more), and causes marked distress or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning. Distress that is entirely related to moral judgments and disapproval about sexual impulses, urges, or behaviours is not sufficient to meet this requirement
Diagnostic requirements: essential (required) features	• A persistent pattern of failure to control intense, repetitive sexual impulses or urges resulting in repetitive sexual behaviour, manifested in one or more of the following: • Engaging in repetitive sexual behaviour has become a central focus of the individual’s life to the point of neglecting health and personal care or other interests, activities and responsibilities • The individual has made numerous unsuccessful efforts to control or significantly reduce repetitive sexual behaviour • The individual continues to engage in repetitive sexual behaviour despite adverse consequences (e.g., marital conflict due to sexual behaviour, financial or legal consequences, negative impact on health) • The person continues to engage in repetitive sexual behaviour even when the individual derives little or no satisfaction from it • The pattern of failure to control intense, repetitive sexual impulses or urges and resulting repetitive sexual behaviour is manifested over an extended period of time (e.g., 6 months or more) • The pattern of failure to control intense, repetitive sexual impulses or urges and resulting repetitive sexual behaviour is not better accounted for by another mental disorder (e.g., Manic Episode) or other medical condition and is not due to the effects of a substance or medication • The pattern of repetitive sexual behaviour results in marked distress or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning. Distress that is entirely related to moral judgments and disapproval about sexual impulses, urges, or behaviours is not sufficient to meet this requirement
Exclusions	Paraphilic disorders (6D30-6D3Z)

and pornography-use-related variables in PPU and/or PPMI studies (Fernandez & Griffiths, 2021; Jennings et al., 2021). This inconsistent use of assessment tools between studies makes comparisons across different populations or studies difficult or impossible. In addition, the conflation of religious affiliation (i.e., following the teaching of a specific religion) with religiosity (e.g., level of commitment to religious beliefs), as well as the conflation of PPU (i.e., dysregulated behavior) with SPA to pornography (i.e., feelings of being addicted to pornography with or without behavioral dysregulation), might have introduced biases in previous studies (Jennings et al., 2021; Lewczuk et al., 2020).

STUDY AIMS AND HYPOTHESES

In conclusion, even at the lowest ends of available prevalence estimates about pornography-use-related problems, such results suggest that millions of individuals may struggle with PPU and/or PPMI worldwide (Bóthe, Nagy, et al., 2024;

Grubbs, Kraus, et al., 2019; Lewczuk et al., 2020). Yet, these problems are poorly understood due in large part to an absence of theoretical considerations and limited methodologically sound research that extends beyond relatively small, homogeneous samples (Grubbs, Hoagland, et al., 2020). Examining the applicability of an empirically based theoretical model of pornography-use-related problems (i.e., Moral Incongruence Model of Pornography Use) (Grubbs, Perry, et al., 2019) across diverse samples is an important next step to substantially move the field forward and lay the groundwork for future culturally informed prevention and intervention strategies. To address global challenges, it is imperative to rigorously test scientific theories among diverse and inclusive samples that can provide evidence that is both robust and generalizable.

This study aimed to examine the applicability of the Moral Incongruence Model of Pornography Use (Grubbs, Perry, et al., 2019) across genders, religious affiliations, and cultures. Based on the notions of this model and previous empirical evidence, we formed eight hypotheses (see Figure S1 for a

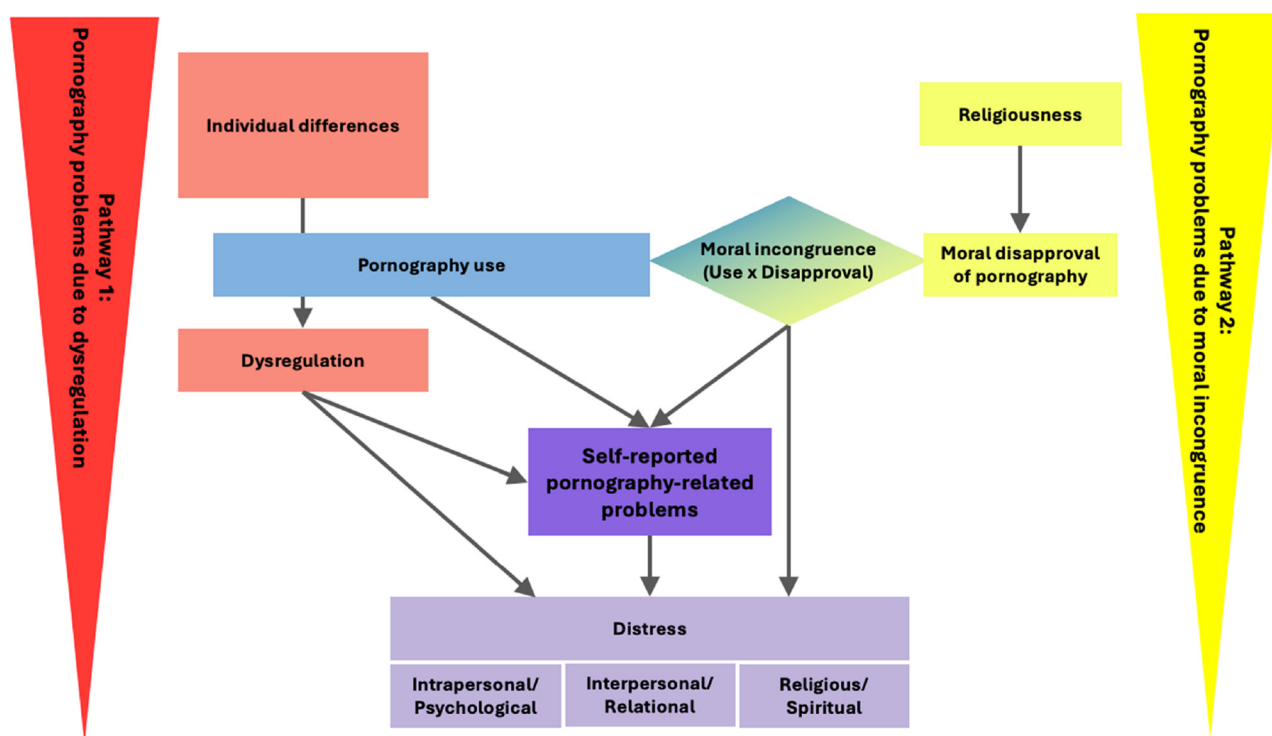


Fig. 1. Visual summary of the Moral Incongruence Model of Pornography Use

Note. Figure is adapted from Grubbs & Floyd, 2025. The model was originally published in Grubbs, Perry, et al., 2019; and then updated with findings on the interaction of moral disapproval and pornography use in Grubbs et al., 2022.

visual presentation of the hypotheses). The association between religiosity and pornography use frequency would be negative and weak (H1). The association between religiosity and PPU would be positive and weak-to-moderate (H2), while the association between religiosity and SPA to pornography would be positive and moderate (H3). The association between pornography use frequency and PPU would be positive and moderate to strong (H4), while the association between pornography use frequency and SPA to pornography would be positive and moderate (H5). The association between pornography use frequency and PPU would be moderated by moral disapproval (moral disapproval $\times$ pornography use frequency), with this interaction representing moral incongruence. At higher levels of moral disapproval, the association between pornography use frequency and PPU would be slightly stronger (H6). The association between pornography use frequency and SPA to pornography would be moderated by moral disapproval (moral disapproval $\times$ pornography use frequency), with this interaction representing moral incongruence. At higher levels of moral disapproval, the association between SPA to pornography would be stronger (H7). Finally, the association between PPU and SPA to pornography would be positive and moderate to strong (H8). Due to insufficient prior empirical evidence, we tested whether the associations between the aforementioned variables differed by countries (RQ1), genders (RQ2), and religious affiliations (RQ3) in an exploratory manner. All research questions and hypotheses of the study were preregistered: <https://doi.org/10.17605/OSF.IO/3H4ZN>.

METHOD

Procedure

This study used data from the *International Sex Survey* (ISS) (Böthe et al., 2021), a multi-language, cross-sectional, self-report survey study among a community sample of adults with a preregistered study design (<https://doi.org/10.17605/OSF.IO/FHT8P>). Recruitment was conducted in 42 countries¹ between October 2021 and May 2022, using different advertisement strategies. Participants were eligible if they reached the minimum age for participation in their country. Eligible participants completed an anonymous survey, which took approximately 25–45 min. The list of collaborating countries, a detailed description of the translation and data collection procedures, and more details about the eligibility criteria are described in the study protocol (Böthe et al., 2021). For complete transparency of data use, all published papers and conference presentations are listed on the project's related Open Science Framework (OSF) pages (publications: https://osf.io/jb6ey/?view_only=0014d87bb2b546f7a26935433

¹Egypt, Iran, Pakistan, and Romania were included in the study protocol paper as collaborating countries (Böthe et al., 2021); however, it was not possible to get ethical approval for the study in a timely manner in these countries. Chile was not included in the study protocol paper as a collaborating country (Böthe et al., 2021) as it joined the study after publishing the study protocol. Therefore, instead of the planned 45 countries (Böthe et al., 2021), only 42 individual countries are considered in the present study, see details at <https://osf.io/n3k2c/files/osfstorage/6489fd20bee36d024f0e650b>.

89b934d; conference presentations: https://osf.io/c695n/?view_only=7cae32e642b54d049e600ceb8971053e). Due to the data's sensitive nature (e.g., information about pornography use, religiosity) and related ethical considerations, the dataset is not publicly available. The corresponding author will provide data to academics and professionals upon justified request.

Participants

After thorough data cleaning (see data cleaning procedure in the first table of the document: https://osf.io/csyjq/?view_only=dadcf82666140a6ab5a1c3f63b679be), a total of 82,243 participants ($M_{age} = 32.39$ years, $SD = 12.52$) were included in the final ISS dataset (see detailed sociodemographic characteristics by country: <https://osf.io/n3k2c/files/osfstorage/6352e69c6e71e8121a9cb66d>). In the present study, we included data from all participants who used pornography in the past year as we wanted to examine pornography-use-related behaviors, resulting in a sample of 66,994 participants (45.6% men, 50.8% women, and 3.6% gender-diverse individuals; $M_{age} = 32.16$ years, $SD = 12.27$). Approximately half of the participants were religious (50.4%), see details in Table S1.

Measures

A detailed description of all items and scales included in the ISS can be found in the study protocol (Böthe et al., 2021). Each scale's psychometric properties have been examined in the first phase of the ISS publications, and the validation studies have already been published or are in the process of being published (https://osf.io/jb6ey/?view_only=0014d87b62b546f7a2693543389b934d).

Sociodemographic characteristics. Besides basic sociodemographic characteristics to describe the sample, participants' gender, religious affiliation, and country of residence (Table S1) were used as grouping variables in the analyses.

Religious affiliation. Participants answered one question about their religious affiliation. Thirteen categories were provided as answer options (Table S1). Given the non-specificity of the "Other, please specify" answer option, we did not include it as a category among the grouping variables.

Religiosity. We used three pre-established items to assess participants' religiosity (Grubbs, Kraus, et al., 2019). Participants indicated their answers on a seven-point scale (1 = "strongly disagree"; 7 = "strongly agree"). Scores can range between 3 and 21, with higher scores indicating higher levels of religiosity ($\alpha = .90$).

Past-year pornography-use frequency. Before answering any pornography-related questions, participants were provided with a definition of pornography based on prior recommendations (Kohut et al., 2020).² They reported their

frequency of pornography use in the past year. Answers were reported on an 11-point scale (0 = "never"; 10 = "more than 7 times a week").

Moral disapproval of pornography use. Following previous studies' methodology (Grubbs, Exline, Pargament, Hook, & Carlisle, 2015, 2022; Grubbs, Kraus, et al., 2019), participants reported their agreement with one item: "I believe that porn use is morally wrong." Answers were reported on a seven-point scale (1 = "strongly disagree"; 7 = "strongly agree"). Moral incongruence was calculated as the interaction of past-year pornography-use frequency and moral disapproval of pornography use.

Self-perceived addiction to pornography. Similarly to moral disapproval of pornography use, participants reported their agreement with one item about feeling addicted to pornography: "I am addicted to porn." Answers were reported on a seven-point scale (1 = "strongly disagree"; 7 = "strongly agree") (Grubbs, Kraus, et al., 2019).

Problematic pornography use. Participants completed the 18-item Problematic Pornography Consumption Scale (PPCS) (Böthe et al., 2018; Böthe, Nagy, et al., 2024) to report on their PPU. The scale includes six factors, and each is measured via three items. Answers were reported on a seven-point scale (1 = "never"; 7 = "all the time"). Scores can range between 18 and 126, with higher scores indicating higher levels of PPU ($\alpha = .95$). The scale's psychometric properties have been examined in the ISS, and the findings suggest that the PPCS is a valid and reliable scale across diverse groups (Böthe, Nagy, et al., 2024).

Statistical analyses

Following the preregistered analytic plans (<https://doi.org/10.17605/OSF.IO/3H4ZN>), descriptive statistics and Spearman correlations between the study variables were computed in SPSS 29 (IBM Corp, 2021). See details of the preliminary statistical analyses in the Supplemental Materials. The weighted least squares mean- and variance-adjusted estimator (WLSMV) was used for estimating all models (Finney & DiStefano, 2013). The models were evaluated using standard goodness-of-fit indices: Comparative Fit Index (CFI; $\geq .95$ good; $\geq .90$ adequate), Tucker-Lewis Index (TLI; $\geq .95$ good; $\geq .90$ adequate), and Root-Mean-Square Error of Approximation with its 90% confidence interval (RMSEA; $\leq .05$ good; $\leq .08$ adequate; $\leq .10$ acceptable) (Schermelleh-Engel, Moosbrugger, & Müller, 2003). The primary analyses were conducted in the structural equation modeling (SEM) framework using MPlus 8.11 (Muthén & Muthén, 2022). To investigate the invariance of the SEM model (Figure S1) across countries (Model 1),³ genders (Model 2), and religious

²"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 live sex chat or a cam show, and getting a "lapdance" in a strip club are not considered porn use."

³We proposed to use multilevel SEM instead of multi-group SEM in the preregistered analysis plan to compare country-based groups, given the number of countries (i.e., 34 countries). However, it was possible to use the same multi-group SEM analytical framework in the case of the country-based models as in the gender- and religious-affiliation-based models. Therefore, to remain consistent across our analyses and benefit from the more comprehensive nature of invariance testing as opposed to multi-level analyses, we used the same analytical framework for all models.

affiliations (Model 3), we relied on multi-group SEMs. We used traditional guidelines for model fit interpretation (i.e., ΔCFI or $\text{TLI} \leq .010$; $\Delta\text{RMSEA} < .015$) (Chen, 2007; Cheung & Rensvold, 2002) and evaluated the extent to which the parameter estimates associated with the SEM model differed across our different grouping variables. Specifically, we investigated whether the regression i) slopes, ii) intercepts, and iii) residual variances and covariances were equivalent across the groups. These analyses provided the opportunity to examine the associations between religiosity and pornography use frequency (H1), religiosity and PPU (H2), religiosity and SPA to pornography (H3), pornography use frequency and PPU (H4), pornography use frequency and SPA to pornography (H5), and PPU and SPA to pornography (H8). Given the multi-group nature of the models, these analyses also tested whether the associations between the aforementioned variables differed by countries (RQ1, Model 1), genders (RQ2, Model 2), and religious affiliations (RQ3, Model 3), responding to the exploratory research questions. When an interaction term (moral disapproval $\times$ pornography use frequency, representing moral incongruence) was significant in the models, simple slope tests were used to report the association at the different levels of the moderator. These analyses tested the moderating role of moral incongruence in the association between pornography use frequency and PPU (H6) and pornography use frequency and SPA to pornography (H7). The full information maximum likelihood method was used to handle missing data that ranged between 0.00 and 0.59% at the item level (Newman, 2014). Associations around 0.1 were considered weak, 0.3 moderate, and 0.5 strong (Cohen, 1992).

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 was approved by all collaborating countries' national/institutional ethics review boards, or the local ethics committees considered the study exempt and did not further assess the study as it had already been approved by the ethics committees of the principal investigators' institutions: <https://osf.io/n3k2c/files/osfstorage/636974c6f490ee001cfe45fe>.

RESULTS

Descriptive statistics, correlations, and preliminary measurement models

Descriptive statistics for all study variables and correlations are reported in Table S2. Descriptive statistics by countries, genders, and religious affiliations are reported in the Supplemental Materials (Tables S3–5). Parameter estimates from the most invariant models across countries, genders, and religious affiliations are available in Tables S6–8. Model fit indices for the preliminary measurement models are reported in Tables S9–11.

Testing the Moral Incongruence Model of Pornography Use across countries, genders, and religious affiliations

The model fit indices of the SEMs across countries (Model 1), genders (Model 2), and religious affiliations (Model 3) are reported in the bottom section of Tables S9–11. The final models (Models 1–3), where all parameters were constrained to be equal across groups, were fully invariant across all countries, genders, and religious affiliations. These findings suggested that the associations between religiosity, pornography use frequency, PPU, SPA to pornography, and the moderating role of moral incongruence did not differ significantly across countries, genders, and religious affiliations.

The parameter estimates from Models 1–3 are reported in Table 2 and visually presented in Fig. 2. All associations in the model were significant at $p < .01$. The correlations between religiosity and pornography use frequency (H1) were negative and weak in Models 1–2 and positive and negligible in Model 3. The associations between religiosity and PPU (H2) as well as between religiosity and SPA to pornography (H3) were positive and weak. The association between pornography use frequency and PPU was positive and strong (H4), while the association between pornography use frequency and SPA to pornography was positive and moderate to strong (H5). As hypothesized (H6 and H7), the association between pornography use frequency and PPU, and that between pornography use frequency and SPA to pornography were moderated by moral incongruence. At higher levels of moral disapproval, the associations were stronger (Table 2). Finally, the correlation in the model between PPU and SPA to pornography (H8) was positive and moderate. Predictors explained 30–45% of PPU and 20–34% of SPA to pornography's variance in Models 1–3 (Fig. 2).

DISCUSSION

The global availability of pornography, combined with specific risk factors (Bóthe, Vaillancourt-Morel, et al., 2024), contributes to clinically significant distress for many individuals (Bóthe, Nagy, et al., 2024; Grubbs, Kraus, et al., 2019). Yet, significant knowledge gaps regarding PPU and/or PPMI persist (Grubbs, Hoagland, et al., 2020), hindering the development of evidence-based, inclusive, and culturally sensitive prevention and intervention strategies. To address one such gap, we investigated whether the empirically supported Moral Incongruence Model of Pornography Use (Grubbs, Perry, et al., 2019) might be generalizable across cultures, genders, and religious affiliations. Findings extend current Western-centric conceptualizations of pornography-use-related problems (Grubbs, Perry, et al., 2019; Jennings et al., 2021), by demonstrating the robustness of this model's core tenets and supporting its potential global applicability across diverse populations, a key step in responding to the need for globally relevant approaches to addressing pornography-use-related challenges.

Table 2. Regression coefficients from the final models and simple slopes (models 1–3)

	Model across countries (Model 1, $n = 64,642$)				Model across genders (Model 2, $n = 66,963$)				Model across religious affiliations (Model 3, $n = 64,604$)			
	PPU (PPCS)		SPA to pornography		PPU (PPCS)		SPA to pornography		PPU (PPCS)		SPA to pornography	
	b (SE)	β (SE)	b (SE)	β (SE)	b (SE)	β (SE)	b (SE)	β (SE)	b (SE)	β (SE)	b (SE)	β (SE)
Religiosity	.110 (.005)*	.085 (.004)*	.052 (.004)*	.052 (.004)*	.160 (.005)*	.134 (.004)*	.083 (.004)*	.083 (.004)*	.062 (.006)*	.046 (.004)*	.021 (.004)*	.021 (.004)*
Pornography use frequency (PUF)	.819 (.006)*	.627 (.003)*	.507 (.004)*	.507 (.003)*	.608 (.005)*	.510 (.004)*	.386 (.003)*	.386 (.003)*	.899 (.009)*	.650 (.004)*	.562 (.005)*	.548 (.004)*
Moral disapproval	.254 (.005)*	.195 (.004)*	.217 (.003)*	.217 (.003)*	.234 (.005)*	.196 (.004)*	.219 (.003)*	.219 (.003)*	.337 (.008)*	.243 (.005)*	.265 (.005)*	.257 (.004)*
Moral incongruence (moral dis. $\times$ PUF)	.117 (.004)*	.091 (.003)*	.112 (.002)*	.114 (.002)*	.083 (.004)*	.073 (.003)*	.097 (.002)*	.101 (.002)*	.133 (.004)*	.101 (.003)*	.113 (.003)*	.115 (.003)*
Simple slopes analysis: Relationship between PUF and PPU (PPCS)/SPA to pornography at low, moderate, and high levels of moral disapproval												
	PPU (PPCS)		SPA to pornography		PPU (PPCS)		SPA to pornography		PPU (PPCS)		SPA to pornography	
	b (SE)		b (SE)		b (SE)		b (SE)		b (SE)		b (SE)	
Moral disapproval – 1SD	.137 (.004)*		.106 (.003)*		.151 (.005)*		.122 (.003)*		.204 (.007)*		.152 (.004)*	
Moral disapproval 0 SD	.254 (.005)*		.217 (.003)*		.234 (.005)*		.219 (.003)*		.337 (.008)*		.265 (.005)*	
Moral disapproval + 1SD	.371 (.008)*		.329 (.005)*		.318 (.007)*		.316 (.005)*		.469 (.011)*		.377 (.007)*	

Note: PPU (PPCS): Problematic pornography use measured by the Problematic Pornography Consumption Scale, SPA to pornography: Self-perceived addiction to pornography; PUF: pornography use frequency; moral dis.: moral disapproval of pornography; b : Unstandardized regression coefficient; β : Standardized regression coefficient; SE: Standard error of the coefficient. * $p < .01$.

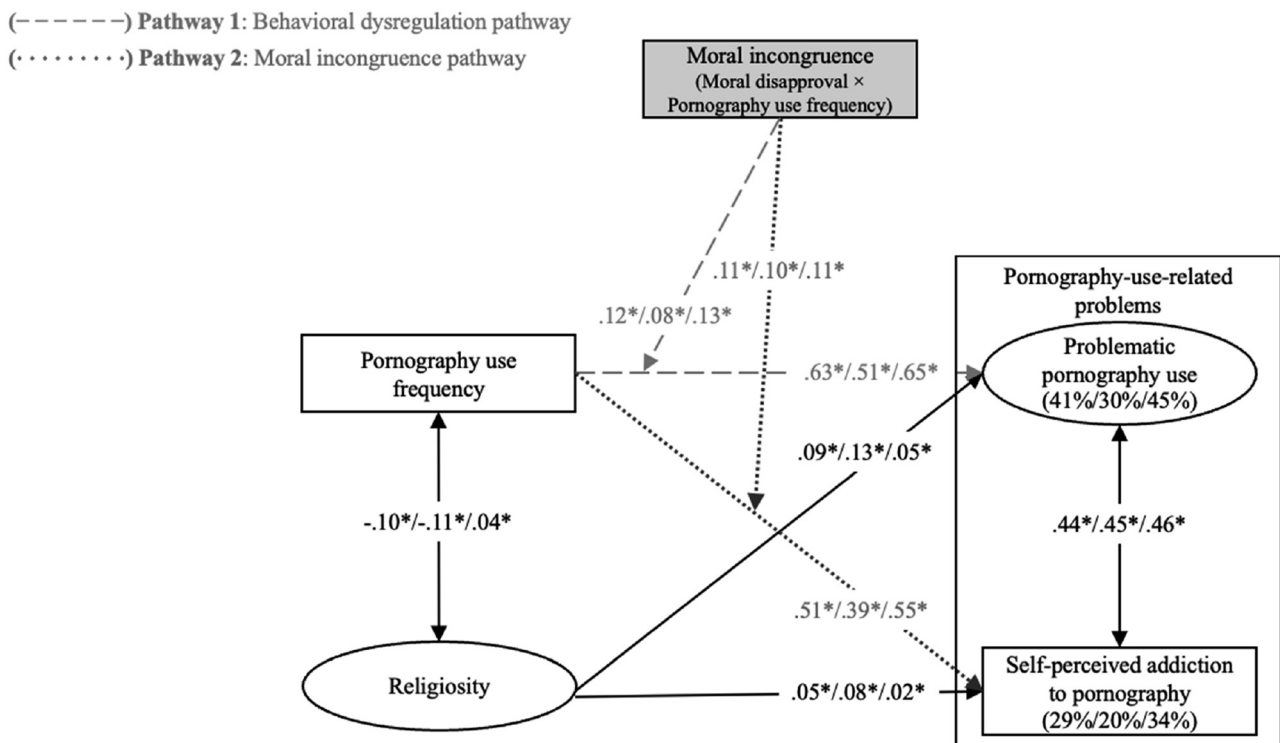


Fig. 2. Visual presentation of the results from the main models across countries, genders, and religious affiliations (Models 1–3)

Note. Rectangles represent observed variables, while ellipses represent latent variables. Numbers on the one-sided arrows are standardized regression coefficients and numbers on the two-sided arrows are standardized correlations. Numbers representing the moderating role of moral incongruence are unstandardized regression coefficients. Percentages under the outcomes are explained variances. From left to right, the first numbers represent findings from Model 1 (34 countries, $n = 64,642$), the second ones represent findings from Model 2 (three genders, $n = 66,963$), and the third ones represent findings from Model 3 (seven religious affiliations, $n = 64,604$). * $p < .01$. Grey arrows represent the behavioral dysregulation and moral incongruence pathways based on the Moral Incongruence Model of Pornography Use.

As hypothesized (H1), the association between religiosity and pornography use frequency was negative and weak across countries and genders, but negligible and positive across different religious affiliations. These results align with previous studies, indicating that individuals with higher levels of religiosity tend to use pornography less frequently, regardless of their gender or cultural background (Grubbs, Kraus, et al., 2019; Grubbs, Perry, et al., 2019; Jennings et al., 2021; Lewczuk et al., 2020). Additionally, religiosity showed a positive and weak association with both PPU and SPA to pornography (H2–H3). However, contrary to our expectations, the association was slightly weaker for SPA compared to PPU. This observed difference may stem from the characteristics of the current and previous samples as well as the methods used to assess PPU (Jennings et al., 2021). These findings highlight the importance of sample diversity in empirically testing theoretical models and underscore the need for theoretically and psychometrically sound, well-validated, and unified scales to assess PPU (Böthe, Nagy, et al., 2024; Grubbs, Hoagland, et al., 2020; Jennings et al., 2021).

Considering the behavioral dysregulation pathway in the Moral Incongruence Model of Pornography Use (Grubbs, Perry, et al., 2019), the association between pornography use frequency and PPU was positive and moderate to

strong (H4), while it was positive and moderate between pornography use frequency and SPA to pornography (H5). These findings corroborate previous notions that indicators of behavioral dysregulation may be more strongly associated with PPU (assessed by a multi-item, comprehensive scale), while they may play a somewhat weaker role in the perception of being addicted to pornography (operationalized in a more subjective way, by single-item assessment), without significant variation across countries, genders, and religious affiliations. Finally, concerning the PPMI pathway, the associations between pornography use frequency and PPU as well as the association between pornography use frequency and SPA to pornography were moderated by moral disapproval (moral disapproval × pornography use frequency), with this interaction representing moral incongruence (H6–H7). At higher levels of moral disapproval, the association between pornography use frequency and PPU/SPA was stronger, mirroring previous empirical findings (Grubbs, Lee, Hoagland, Kraus, & Perry, 2020). Individuals whose behavior conflicted more with their moral values reported higher levels of PPU/SPA, suggesting that moral disapproval of pornography use may exacerbate the association between one's behavior and related problems. Considering that moral incongruence did not predict SPA more strongly than PPU, and noting that PPU was

better explained by the variables in the model than SPA, these findings suggest that other factors (e.g., minority stress) may better explain or play a more unique role in the development of feelings of SPA to pornography than moral incongruence among certain populations (e.g., sexually diverse individuals), warranting further investigation (Jennings, Gleason, & Kraus, 2022).

Concerning key clinical and research implications, findings suggested that regardless of an individual's cultural background, gender identity, or religion, the same mechanisms seem to underlie PPU/SPA to pornography. These results are important as previous research has heavily relied on culturally homogeneous, predominantly Christian, and male samples (Grubbs, Hoagland, et al., 2020; Jennings et al., 2021). With the present study's robust findings, we may have greater confidence that the current international diagnostic guidelines, including the use of moral disapproval/incongruence as a possible rule-out criterion, may be relevant to diverse international populations (World Health Organization, 2022).

Nevertheless, our findings should be discussed and interpreted through a critical lens. First, the explained variances of PPU and SPA to pornography in the models ranged between 30 to 45% and 20 to 34%, respectively. Different predictors contributed to these outcomes to varying degrees. As expected, the frequency of pornography use contributed the most to the outcomes. However, notably, religiosity only explained approximately 1% of PPU/SPA's variance or even less, regardless of an individual's religious affiliation or other examined characteristics. These findings raise important questions concerning the emphasis placed on religiosity in PPU/PPMI studies and highlight the need to delve deeper into other potential individual risk factors that may play a more crucial role in the development and maintenance of PPU/SPA (e.g., sexual shame, difficulties in emotion regulation, minority stress) (Böthe, Vaillancourt-Morel, et al., 2024; Jennings, Gleason, Grubbs, & Kraus, 2024; Lew-Starowicz, Lewczuk, Nowakowska, Kraus, & Gola, 2020; Rahm-Knigge, Gleason, Mark, & Coleman, 2023).

Limitations and future directions

The ISS as a whole has some general limitations detailed on the study's OSF page (<https://osf.io/n3k2c/files/osfstorage/6447d34b40b2c14d31e8f9f6>), such as the self-reported, cross-sectional nature of the data, limiting the conclusions that can be drawn. Despite the study's strengths, specific limitations pertaining to the present study include the non-representativeness of the data (e.g., in terms of age distribution, religiosity, or cultural context), even though explicit efforts were made to increase diversity. Thus, our findings should be interpreted with caution, and replication in future studies among even more diverse (including clinical samples) and nationally representative samples is encouraged. Country-level variables (e.g., different norms, authoritarian versus democratic contexts) and their associations with individual-level characteristics were not accounted for in the present study, requiring future investigation. Nationally

representative samples may allow for a more stringent test of religiosity's effect or other macro social factors on PPU and SPA across different countries.

Individuals in the study reported relatively low levels of religiosity ($M = 7.8$ [$SD = 1.7$] on a scale ranging between 3 and 21) and moral disapproval of pornography use in general ($M = 2.5$ [$SD = 1.7$] on a scale ranging between 1 and 7), with approximately 3% of individuals being at risk of experiencing PPU (Böthe, Nagy, et al., 2024), suggesting potential self-selection bias (e.g., individuals with more liberal values around sexuality might have been more open to participate in the study) and limiting the generalizability of findings. Future studies are also recommended to corroborate our findings among individuals with high/higher religiosity and moral disapproval levels, who might be more affected by moral incongruence. Significant differences across cultures, genders, and religious affiliations may also emerge in such samples. Moral disapproval, pornography use frequency, and SPA to pornography were assessed with single-item measures, potentially limiting construct validity. While in this analysis we separated the role of religious affiliation and the importance of being religious, we acknowledge that religion, as a predictor of pornography use, could have been measured in a more nuanced way. A concept that may deserve special attention from researchers and practitioners in relation to PPU and SPA to pornography is post-critical religiosity (Hutsebaut, 1996).

People may report moral disapproval of pornography use for different reasons other than religiosity (e.g., feminist values, the legality of pornography in their country, the violence depicted in pornography, the unrealistic nature of sexual acts and bodies), and moral values, religiosity, and pornography use habits may change over time (Grubbs, Kraus, Perry, Lewczuk, & Gola, 2020; Hoagland, Rotruck, Moore, & Grubbs, 2023). Future studies are warranted to explore different sources of moral concerns with pornography (e.g., in qualitative studies with open-ended questions), examine whether different sources of such moral issues with pornography may result in varying levels of moral incongruence, and assess whether these associations remain stable over time. Finally, in light of the robustness and potential universality of the Moral Incongruence Model of Pornography Use (Grubbs, Perry, et al., 2019), and findings of previous studies suggesting that moral values may play a role in other potentially addictive behaviors (e.g., gambling disorder) as well (Grubbs et al., 2022), the role of morality in relation to potentially addictive behaviors should be better understood and the exclusive use of moral incongruence as a possible rule-out criterion for PPU/CSBD might be challenged. Future studies are encouraged to further explore these avenues.

Conclusions

Millions of people worldwide experience suffering and mental health adversities in relation to their pornography use (Böthe, Nagy, et al., 2024; Grubbs, Kraus, et al., 2019; Lewczuk et al., 2020; McGraw et al., 2024; World Health Organization,

2022). Yet, significant knowledge gaps regarding PPU and/or PPMI persist (Grubbs, Hoagland, et al., 2020), hindering efforts to effectively address these issues. The present study addressed one of these key gaps by examining and demonstrating the generalizability of the Moral Incongruence Model of Pornography Use (Grubbs, Perry, et al., 2019) across various cultures, genders, and religious affiliations. Our findings suggested that regardless of an individual's cultural background, gender identity, or religion, the same mechanisms (i.e., behavioral dysregulation and PPMI pathway) may underlie their PPU/SPA to pornography. These robust findings provide us with greater confidence that the current international diagnostic guidelines for PPU are applicable to diverse global populations (World Health Organization, 2022) and may lay the groundwork for the development of evidence-based, inclusive, and culturally sensitive prevention and intervention strategies that are currently missing from both scientific literature and clinical practice (Grubbs, Hoagland, et al., 2020).

Funding sources: BB was supported by the FRQSC – Research Support for New Academics (NP) Program (<https://doi.org/10.69777/343918>) and is a researcher at the Centre de Recherche Interdisciplinaire sur les Problèmes Conjugaux et les Agressions Sexuelles, supported by the FRQSC - Regroupements stratégiques/Centre - fonctionnement (<https://doi.org/10.69777/281155>); JBG was supported by grants from the Kindbridge Research Institute, the International Center for Responsible Gaming, and the Problem Gambling Network of Ohio; LN was supported by the ÚNKP-22-3 and ÚNKP-23-4 New National Excellence Program of the Ministry for Culture and Innovation from the source of the National Research, Development and Innovation Fund.; SWK was supported by the Kindbridge Research Institute; ZD was supported by the Hungarian National Research, Development, and Innovation Office (KKP126835).

Authors' contribution: Conceptualization: BB, LN, MK, SWK, MNP, and ZD. Data curation: BB, AM, VB, SH, LN, MK, SWK, MNP, ZD, AK, ISSC, and JBG. Formal analysis: BB, AM, and SH. Funding acquisition: BB, LN, SWK, ZD, and ISSC. Investigation: BB, AM, VB, SH, LN, MK, SWK, MNP, ZD, AK, ISSC, and JBG. Methodology: BB, SH, LN, MK, SWK, MNP, ZD, and JBG.

Project administration: BB, LN, MK, SWK, and ZD. **Resources:** BB, LN, MK, SWK, ZD, AK, ISSC, and JBG. **Supervision:** BB, SWK, MNP, ZD, AK, and JBG. **Validation:** BB, AM, VB, SH, LN, MK, SWK, MNP, and ZD. **Visualization:** BB, AM, and VB. **Writing - original draft:** BB. **Writing - review & editing:** BB, AM, VB, SH, LN, MK, SWK, MNP, ZD, AK, ISSC, and JBG.

Conflict of interest: The authors declare no conflict of interest with the content of this manuscript. SWK discloses that he has received funding from the International Center for Responsible Gaming, M.G.M Resorts International, Center for the Application of Substance Abuse Technologies,

Taylor Francis, Springer Nature, The Nevada Problem Gambling Project, Sports Betting Alliance, and Kindbridge Research Institute. MNP discloses that he has consulted for and advised Baria-Tek and Boehringer Ingelheim; 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, non-profit, healthcare and gambling entities on issues related to impulse control, internet use, 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. BB and MNP are associate editors, while ZD is the editor-in-Chief of the Journal of Behavioral Addictions.

Acknowledgements: The authors would like to thank Anastasia Lucic and Natasha Zippan for their help with project administration and data collection, and Abu Bakkar Siddique, Anne-Marie Menard, Clara Marincowitz, Club Sexu, Critica, Digital Ethics Center (Skaitmeninės etikos centras), Día a Día, Ed Carty, El Siglo, Jakia Akter, Jayma Jannat Juma, Kamrun Nahar Momo, Kevin Zavaleta, Laraine Murray, L'Avenir de l'Artois, La Estrella de Panamá, La Voix du Nord, Le Parisien, Lithuanian National Radio and Television (Lietuvos nacionalinis radijas ir televizija), Mahfuzul Islam, Marjia Khan Trisha, Md. Rabiul Islam, Md. Shahariar Emon, Miriam Goodridge, Most. Mariam Jamila, Nahida Binte Mostofa, Nargees Akter, Niamh Connolly, Rafael Goyoneche, Raiyaan Tabassum Imita, Raquel Savage, Ricardo Mendoza, Saima Fariha, SOS Orienta and Colegio de Psicólogos del Perú, Stephanie Kewley, Sumaiya Hassan, Susanne Bründl, Tamim Ikram, Telex.hu, Trisha Mallick, Tushar Ahmed Emon, Wéo, and Yasmin Benoit for their help with recruitment and data collection.

SUPPLEMENTARY MATERIAL

Supplementary data to this article can be found online at <https://doi.org/10.1556/2006.2025.00540>.

REFERENCES

- Bóthe, B., Koós, M., Nagy, L., Kraus, S. W., Potenza, M. N., & Demetrovics, Z. (2021). International sex survey: Study protocol of a large, cross-cultural collaborative study in 45 countries. *Journal of Behavioral Addictions*, 10(3), 632–645. <https://doi.org/10.1556/2006.2021.00063>
- Bóthe, B., Nagy, L., Koós, M., Demetrovics, Z., Potenza, M. N., International Sex Survey Consortium, & Kraus, S. W. (2024). Problematic pornography use across countries, genders, and sexual orientations: Insights from the international sex survey and comparison of different assessment tools. *Addiction*, 119(5), 928–950. <https://doi.org/10.1111/ADD.16431>

- Böthe, B., Tóth-Király, I., Popova, N., Nagy, L., Koós, M., Demetrovics, Z., ... Grubbs, J. B. (2025). Identification and comprehensive characterization of moral disapproval and behavioral dysregulation-based pornography-use profiles across 42 countries. *Journal of Behavioral Addictions*, 14(1), 131–154. <https://doi.org/10.1556/2006.2024.00054>
- Böthe, B., Tóth-Király, I., Zsila, Á., Griffiths, M. D., Demetrovics, Z., & Orosz, G. (2018). The development of the problematic pornography consumption scale (PPCS). *Journal of Sex Research*, 55(3), 395–406. <https://doi.org/10.1080/00224499.2017.1291798>
- Böthe, B., Vaillancourt-Morel, M.-P., Bergeron, S., Hermann, Z., Ivaskevics, K., Kraus, S. W., Grubbs, J. B., & The Problematic Pornography Use Machine Learning Consortium (2024). Uncovering the most robust predictors of problematic pornography use: A large-scale machine learning study across 16 countries. *Journal of Psychopathology and Clinical Science*, 133(6), 489–502. <https://doi.org/10.1037/abn0000913>
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, 14(3), 464–504. <https://doi.org/10.1080/10705510701301834>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, 9(2), 233–255. https://doi.org/10.1207/S15328007SEM0902_5
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Fernandez, D. P., & Griffiths, M. D. (2021). Psychometric instruments for problematic pornography use: A systematic review. *Evaluation and the Health Professions*, 44(2), 111–141. <https://doi.org/10.1177/0163278719861688>
- Finney, S. J., & DiStefano, C. (2013). Non-normal and categorical data in structural equation modeling. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling: A second course* (2nd ed., pp. 439–492). Information Age Publishing.
- Grubbs, J. B., Exline, J. J., Pargament, K. I., Hook, J. N., & Carlisle, R. D. (2015). Transgression as addiction: Religiosity and moral disapproval as predictors of perceived addiction to pornography. *Archives of Sexual Behavior*, 44(1), 125–136. <https://doi.org/10.1007/s10508-013-0257-z>
- Grubbs, J. B., & Floyd, C. G. (2025). Moral incongruence after 10 years: A developmental and narrative review. *Current Addiction Reports* 2025 12:1, 12(1), 1–9. <https://doi.org/10.1007/S40429-025-00675-2>
- Grubbs, J. B., Floyd, C. G., Griffin, K. R., Jennings, T. L., & Kraus, S. W. (2022). Moral incongruence and addiction: A registered report. *Psychology of Addictive Behaviors*, 36(7), 749–761. <https://doi.org/10.1037/ADB0000876>
- Grubbs, J. B., Hoagland, C., Lee, B., Grant, J., Davison, P. M., Reid, R., & Kraus, S. W. (2020). Sexual addiction 25 years on: A systematic and methodological review of empirical literature and an agenda for future research. *Clinical Psychology Review*, 82(101925), 1–15. <https://doi.org/10.1016/j.cpr.2020.101925>
- Grubbs, J. B., Kraus, S. W., & Perry, S. L. (2019). Self-reported addiction to pornography in a nationally representative sample: The roles of use habits, religiousness, and moral incongruence. *Journal of Behavioral Addictions*, 8(1), 88–93. <https://doi.org/10.1556/2006.7.2018.134>
- Grubbs, J. B., Kraus, S. W., Perry, S. L., Lewczuk, K., & Gola, M. (2020). Moral incongruence and compulsive sexual behavior: Results from cross-sectional interactions and parallel growth curve analyses. *Journal of Abnormal Psychology*, 129(3), 266–278. <https://doi.org/10.1037/abn0000501>
- Grubbs, J. B., Lee, B. N., Hoagland, K. C., Kraus, S. W., & Perry, S. L. (2020). Addiction or transgression? Moral incongruence and self-reported problematic pornography use in a nationally representative sample. *Clinical Psychological Science*, 8(5), 936–946. <https://doi.org/10.1177/2167702620922966>
- Grubbs, J. B., Perry, S. L., Wilt, J. A., & Reid, R. C. (2019). Pornography problems due to moral incongruence: An integrative model with a systematic review and meta-analysis. *Archives of Sexual Behavior*, 48(2), 397–415. <https://doi.org/10.1007/s10508-018-1248-x>
- Hoagland, K. C., Rotruck, H. L., Moore, J. N., & Grubbs, J. B. (2023). Reasons for moral-based opposition to pornography in a U.S. nationally representative sample. *Journal of Sex & Marital Therapy*, 49(7), 717–738. <https://doi.org/10.1080/0092623X.2023.2186992>
- Hutsebaut, D. (1996). Post-critical belief a new approach to the religious attitude Problem1. *Journal of Empirical Theology*, 9(2), 48–66. <https://doi.org/10.1163/157092596X00132>
- IBM Corp. (2021). *IBM SPSS statistics for windows, version 28.0*. IBM Corp.
- Ince, C., Antons, S., Ashton, S., Borgogna, N. C., Brand, M., Briken, P. ... Böthe, B. (2026). Compulsive sexual behavior disorder (CSBD) and problematic pornography use (PPU): A comprehensive, interdisciplinary, and expert-informed narrative review with suggested future directions. *Journal of Behavioral Addictions* (published online ahead of print), <https://doi.org/10.1556/2006.2025.00337>
- Jennings, T. L., Gleason, N., Grubbs, J. B., & Kraus, S. W. (2024). Compulsive sexual behavior in LGBTQ individuals and minority stress theory: A literature review and theoretical integration. *Current Addiction Reports*, 11(2), 256–264. <https://doi.org/10.1007/S40429-024-00546-2>
- Jennings, T. L., Gleason, N., & Kraus, S. W. (2022). Assessment of compulsive sexual behavior disorder among lesbian, gay, bisexual, transgender, and queer clients: Commentary to the debate: “Behavioral addictions in the ICD-11”. *Journal of Behavioral Addictions*, 11(2), 216–221. <https://doi.org/10.1556/2006.2022.00028>
- Jennings, T. L., Lyng, T., Gleason, N., Finotelli, I., & Coleman, E. L. I. (2021). Compulsive sexual behavior, religiosity, and spirituality: A systematic review. *Journal of Behavioral Addictions*, 10(4), 854–878. <https://doi.org/10.1556/2006.2021.00084>
- Kohut, T., Balzarini, R. N., Fisher, W. A., Grubbs, J. B., Campbell, L., & Prause, N. (2020). Surveying pornography use: A shaky science resting on poor measurement foundations. *Journal of Sex Research*, 57(6), 722–742. <https://doi.org/10.1080/00224499.2019.1695244>
- Kraus, S. W., & Sweeney, P. J. (2019). Hitting the target: Considerations for differential diagnosis when treating individuals for problematic use of pornography. *Archives of Sexual Behavior*, 48(2), 431–435. <https://doi.org/10.1007/s10508-018-1301-9>
- Lew-Starowicz, M., Lewczuk, K., Nowakowska, I., Kraus, S. W., & Gola, M. (2020). Compulsive sexual behavior and dysregulation of emotion. *Journal of Sexual Medicine*, 8(2), 191–205. <https://doi.org/10.1016/j.sxmr.2019.10.003>

- Lewczuk, K., Glica, A., Nowakowska, I., Gola, M., & Grubbs, J. B. (2020). Evaluating pornography problems due to moral incongruence model. *Journal of Sexual Medicine*, 17(2), 300–311. <https://doi.org/10.1016/j.jsxm.2019.11.259>
- McGraw, J. S., Weinandy, J. T. G., Floyd, C. G., Hoagland, C., Kraus, S. W., & Grubbs, J. B. (2024). Problematic pornography use and suicidal thoughts: Results from cross-sectional and longitudinal analyses. *Psychology of Addictive Behaviors*, 38(6), 728–738. <https://doi.org/10.1037/ADB0000996>
- Muthén, L. K., & Muthén, B. O. (2022). *MPlus user's guide* (8th ed.).
- Newman, D. A. (2014). Missing data: Five practical guidelines. *Organizational Research Methods*, 17(4), 372–411. <https://doi.org/10.1177/1094428114548590>
- Parker, R. (2009). Sexuality, culture and society: Shifting paradigms in sexuality research. *Culture, Health, & Sexuality*, 11, 251–266. <https://doi.org/10.1080/13691050701606941>
- Rahm-Knigge, R. L., Gleason, N., Mark, K., & Coleman, E. (2023). Identifying relationships between difficulties with emotion regulation and compulsive sexual behavior. *Archives of Sexual Behavior*, 1, 1–13. <https://doi.org/10.1007/S10508-023-02690-8>
- Schermerle-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research*, 8(2), 23–74.
- Sniewski, L., & Farvid, P. (2019). Abstinence or acceptance? A case series of men's experiences with an intervention addressing self-perceived problematic pornography use. *Sexual Addiction and Compulsivity*, 26(3–4), 191–210. <https://doi.org/10.1080/10720162.2019.1645058>
- World Health Organization. (2022). *International statistical classification of diseases and related health problems* (11th ed.). <https://icd.who.int/>.

APPENDIX

International Sex Survey Consortium

Consortium members:

Rafael Ballester-Arnal¹, Dominik Batthyány², Sophie Bergeron^{3,4}, Joël Billieux⁵, Peer Briken⁶, Julius Burkauskas⁷, Georgina Cárdenas-López⁸, Joana Carvalho⁹, Jesús Castro-Calvo¹⁰, Lijun Chen¹¹, Giacomo Ciocca¹², Ornella Corazza^{13,14}, Rita I. Csako¹⁵, Andrea Czako^{16,17}, David P. Fernandez¹⁸, Elaine F. Fernandez¹⁹, Hironobu Fujiwara^{20,21,22}, Johannes Fuss²³, Roman Gabrhelik^{24,25}, Ateret Gewirtz-Meydan²⁶, Biljana Gjoneska²⁷, Mateusz Gola^{28,29}, Md. Saiful Islam^{30,31}, Mustafa Ismail³², Martha C. Jiménez-Martínez^{33,34}, Tanja Jurin³⁵, Ondrej Kalina³⁶, Verena Klein³⁷, Chih-Ting Lee³⁸, Sang-Kyu Lee^{39,40}, Karol Lewczuk^{41,42}, Chung-Ying Lin^{43,44}, Christine Lochner⁴⁵, Silvia López-Alvarado^{46,47}, Kateřina Lukavská⁴⁸, Percy Mayta-Tristán⁴⁹, Dan J. Miller⁵⁰, Oľga Orosóva³⁶, Gábor Orosz⁵¹, Sungkyunkwan University's research team⁵², Fernando P. Ponce^{53,54}, Gonzalo R. Quintana⁵⁵, Gabriel C. Quintero Garzola^{56,57}, Jano Ramos-Díaz⁵⁸, Kévin Rigaud⁵⁹, Ann Rousseau⁶⁰, Marco De Tubino Scanavino^{61,62,63}, Marion K. Schulmeyer⁶⁴, Pratap Sharan⁶⁵, Mami Shibata⁶⁶, Sheikh Shoib^{67,68,69}, Vera Sigre-Leirós⁵, Luke Sniewski⁷⁰, Ognen

Spasovski⁷¹, Vesta Steibliene⁷², Dan J. Stein⁷³, Julian Strizek⁷⁴, Banu C. Ünsal^{75,76,16}, Marie-Pier Vaillancourt-Morel^{77,4}, Marie Claire Van Hout⁷⁸

※ The Sungkyunkwan University research team includes Dr. Hyein Chang and Dr. Kyeongwoo Park.

¹Departamento de Psicología Básica, Clínica y Psicobiología, University Jaume I of Castellón, Spain, ²Institute for Behavioural Addictions, Sigmund Freud University Vienna, Austria, ³Département de psychologie, Université de Montréal, Montréal, Canada, ⁴Centre de recherche interdisciplinaire sur les problèmes conjugaux et les agressions sexuelles (CRIPCAS), ⁵Institute of Psychology, University of Lausanne, Lausanne, Switzerland, ⁶Institute for Sex Research, Sexual Medicine, and Forensic Psychiatry; University Medical Centre Hamburg-Eppendorf; Hamburg, Germany, ⁷Laboratory of Behavioral Medicine, Neuroscience Institute, Lithuanian University of Health Sciences, Palanga, Lithuania, ⁸Virtual Teaching and Cyberpsychology Laboratory, School of Psychology, National Autonomous University of Mexico, Mexico, ⁹William James Center for Research, Departamento de Educação e Psicologia, Universidade de Aveiro, Aveiro, Portugal, ¹⁰Department of Personality, Assessment, and Psychological Treatments, University of Valencia, Spain, ¹¹Department of Psychology, College of Humanity and Social Science, Fuzhou University, China, ¹²Section of Sexual Psychopathology, Department of Dynamic and Clinical Psychology, and Health Studies, Sapienza University of Rome, Rome, Italy, ¹³Department of Clinical, Pharmaceutical and Biological Sciences, University of Hertfordshire, United Kingdom, ¹⁴Department of Psychology and Cognitive Science, University of Trento, Italy, ¹⁵Department of Psychology and Neuroscience, Auckland University of Technology, Auckland, New Zealand, ¹⁶Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary, ¹⁷Centre of Excellence in Responsible Gaming, University of Gibraltar, Gibraltar, Gibraltar, ¹⁸Department of Psychology, Nottingham Trent University, United Kingdom, ¹⁹HELP University, Malaysia, ²⁰Department of Psychiatry, Graduate School of Medicine, Kyoto University, Kyoto, Japan, ²¹Decentralized Big Data Team, RIKEN Center for Advanced Intelligence Project, Tokyo, Japan, ²²The General Research Division, Osaka University Research Center on Ethical, Legal and Social Issues, Osaka, Japan, ²³Institute of Forensic Psychiatry and Sex Research, Center for Translational Neuro- and Behavioral Sciences, University of Duisburg-Essen, Essen, Germany, ²⁴Charles University, First Faculty of Medicine, Department of Addictology, Prague, Czech Republic, ²⁵General University Hospital in Prague, Department of Addictology, Czech Republic, ²⁶School of Social Work, Faculty of Social Welfare and Health Sciences, University of Haifa, Israel, ²⁷Macedonian Academy of Sciences and Arts, Republic of North Macedonia, ²⁸Institute of Psychology, Polish Academy of Sciences, Poland, ²⁹Institute for Neural Computations, University of California San Diego, USA, ³⁰Department of Public Health and Informatics, Jahangirnagar University, Savar, Dhaka 1342, Bangladesh, ³¹Department of International Health, Johns Hopkins Bloomberg School of Public

Health, Baltimore, Maryland 21205, USA, ³²University of Baghdad, College of Medicine, Iraq, ³³Universidad Pedagógica y Tecnológica de Colombia, Colombia, ³⁴Escuela de Psicología, ³⁵Department of Psychology, Humanities and Social Sciences, University of Zagreb, Croatia, ³⁶Department of Educational Psychology and Psychology of Health, Pavol Jozef Safarik University in Kosice, Slovakia, ³⁷School of Psychology, University of Southampton, United Kingdom, ³⁸Department of Family Medicine, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University, Tainan, Taiwan, ³⁹Department of Psychiatry, Hallym University Chuncheon Sacred Heart Hospital, South Korea, ⁴⁰Chuncheon Addiction Management Center, South Korea, ⁴¹Centre of Excellence in Responsible Gaming, University of Gibraltar, Gibraltar, ⁴²Institute of Psychology, Cardinal Stefan Wyszyński University, Warsaw, Poland, ⁴³Institute of Allied Health Sciences, College of Medicine, National Cheng Kung University, Tainan, Taiwan, ⁴⁴Biostatistics Consulting Center, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University, Tainan, Taiwan, ⁴⁵SAMRC Unit on Risk & Resilience in Mental Disorders, Department of Psychiatry, Stellenbosch University, South Africa, ⁴⁶Faculty of Psychology, University of Cuenca, Ecuador, ⁴⁷Department of Education, University of Cuenca, Ecuador, ⁴⁸Charles University, Faculty of Education, Department of Psychology, Prague, Czech Republic, ⁴⁹Facultad de Medicina, Universidad Científica del Sur, Lima, Perú, ⁵⁰College of Healthcare Sciences, James Cook University, Australia, ⁵¹Artois University, France, ⁵²Department of Psychology, Sungkyunkwan University, South Korea, ⁵³Departamento de Psicología, Universidad Católica del Maule, ⁵⁴Núcleo Milenio sobre Movilidad Intergeneracional: del Modelamiento a la Política Pública (MOVI), ⁵⁵Departamento de Psicología y Filosofía, Facultad de Ciencias Sociales, Universidad de Tarapacá, Arica, Arica y Parinacota, Chile, ⁵⁶Florida State University, Republic of Panama, ⁵⁷Sistema Nacional de Investigación (SNI), SENACYT, Panama, ⁵⁸Facultad de Ciencias de la Salud, Universidad Privada del Norte, Lima, Perú, ⁵⁹Picardie Jules Verne University, France, ⁶⁰Leuven School For Mass Communication, KU Leuven, Leuven, Belgium, ⁶¹Department of Psychiatry, Schulich School of Medicine & Dentistry, Western University, London Health Sciences Centre and St. Joseph's Health Care London. London, ON, Canada. Lawson Health Research Institute, London, Ontario, Canada., ⁶²Department of Psychiatry, Faculdade de Medicina, Universidade de São Paulo, Hospital das Clínicas, Instituto de Psiquiatria, Excessive Sexual Drive and Prevention of Negative Outcomes associated to Sexual Behavior Outpatient Unit (AISEP), Brazil, ⁶³Experimental Pathophysiology Post Graduation Program, Faculdade de Medicina, Universidade de São Paulo, Brazil, ⁶⁴Universidad Privada de Santa Cruz de la Sierra, Bolivia, ⁶⁵Department of Psychiatry, All India Institute of Medical Sciences, New Delhi -110029, India, ⁶⁶Department of Neuropsychiatry, Graduate School of Medicine, Kyoto University, Kyoto, Japan, ⁶⁷Department of Psychology, Sharda University, India, ⁶⁸Department of Health Services, Srinagar, 190001

India, ⁶⁹Psychosis Research Centre, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran, ⁷⁰Compassionate Inquiry, Canada, ⁷¹Faculty of Philosophy, Ss. Cyril and Methodius University in Skopje, Republic of North Macedonia, ⁷²Laboratory of Behavioral Medicine, Neuroscience Institute, Lithuanian University of Health sciences, Palanga, Lithuania, ⁷³SAMRC Unit on Risk & Resilience in Mental Disorders, Dept of Psychiatry & Neuroscience Institute, University of Cape Town, ⁷⁴Austrian Public Health Institute, Austria, ⁷⁵Amsterdam University Medical Centers, Center of Expertise on Gender Dysphoria, Amsterdam, The Netherlands, ⁷⁶Doctoral School of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary, ⁷⁷Département de Psychologie, Université du Québec à Trois-Rivières, Trois-Rivières, Canada, ⁷⁸Office of the VP Research, Innovation and Impact, South East Technological University, Ireland.

Author contributions

Data curation: R.B.-A., D.B., S.B., J. Billieux, P.B., J. Burkauskas, G.C.-L., J.C., J.C.-C., L.C., G.C., O.C., R.I.C., A.C., D.P.F., E.F.F., H.F., J.F., R.G., A.G.-M., B.G., M.G., M.S.I., M.I., M.C.J.-M., T.J., O.K., V.K., C.-T.L., S.-K.L., K. Lewczuk, C.-Y.L., C.L., S.L.-A., K. Lukavská, P.M.-T., D.J.M., O.O., G.O., Sungkyunkwan University's research team, F.P.P., G.R.Q., G.C.Q.G., J.R.-D., K.R., A.R., M.D.T.S., M.K.S., P.S., M.S., S.S., V.S.-L., L.S., O.S., V.S., D.J.S., J.S., B.C.Ü., M.-P.V.-M., and M.C.V.H.

Funding acquisition: S.B., H.F., R.G., M.G., K. Lewczuk, C.-Y.L., C.L., Sungkyunkwan University's research team, K.R., and D.J.S.

Investigation: R.B.-A., D.B., S.B., J. Billieux, P.B., J. Burkauskas, G.C.-L., J.C., J.C.-C., L.C., G.C., O.C., R.I.C., A.C., D.P.F., E.F.F., H.F., J.F., R.G., A.G.-M., B.G., M.G., M.S.I., M.I., M.C.J.-M., T.J., O.K., V.K., C.-T.L., S.-K.L., K. Lewczuk, C.-Y.L., C.L., S.L.-A., K. Lukavská, P.M.-T., D.J.M., O.O., G.O., S Sungkyunkwan University's research team., F.P.P., G.R.Q., G.C.Q.G., J.R.-D., K.R., A.R., M.D.T.S., M.K.S., P.S., M.S., S.S., V.S.-L., L.S., O.S., V.S., D.J.S., J.S., B.C.Ü., M.-P.V.-M., and M.C.V.H.

Resources: R.B.-A., D.B., S.B., J. Billieux, P.B., J. Burkauskas, G.C.-L., J.C., J.C.-C., L.C., G.C., O.C., R.I.C., A.C., D.P.F., E.F.F., H.F., J.F., R.G., A.G.-M., B.G., M.G., M.S.I., M.I., M.C.J.-M., T.J., O.K., V.K., C.-T.L., S.-K.L., K. Lewczuk, C.-Y.L., C.L., S.L.-A., K. Lukavská, P.M.-T., D.J.M., O.O., G.O., Sungkyunkwan University's research team, F.P.P., G.R.Q., G.C.Q.G., J.R.-D., K.R., A.R., M.D.T.S., M.K.S., P.S., M.S., S.S., V.S.-L., L.S., O.S., V.S., D.J.S., J.S., B.C.Ü., M.-P.V.-M., and M.C.V.H.

Writing - review & editing: R.B.-A., D.B., S.B., J. Billieux, P.B., J. Burkauskas, G.C.-L., J.C., J.C.-C., L.C., G.C., O.C., R.I.C., A.C., D.P.F., E.F.F., H.F., J.F., R.G., A.G.-M., B.G., M.G., M.S.I., M.I., M.C.J.-M., T.J., O.K., V.K., C.-T.L., S.-K.L., K. Lewczuk, C.-Y.L., C.L., S.L.-A., K. Lukavská, P.M.-T., D.J.M., O.O., G.O., Sungkyunkwan University's research team., F.P.P., G.R.Q., G.C.Q.G., J.R.-D., K.R., A.R., M.D.T.S., M.K.S., P.S., M.S., S.S., V.S.-L., L.S., O.S., V.S., D.J.S., J.S., B.C.Ü., M.-P.V.-M., and M.C.V.H.

Conflict of interest

The authors declare no conflict of interest with the content of this manuscript.

Funding sources

C.-Y.L. was supported by C-YL was supported by the WUN Research Development Fund (RDF) 2021 and the Higher Education Sprout Project, the Ministry of Education at the Headquarters of University Advancement at the National Cheng Kung University (NCKU); C.L. was supported by CL received support from the WUN Research Development Fund (RDF) 2021; G.C. was supported by GC was partially supported by PRIN project 2022 (number 20224SX547); G.O. was supported by GO was supported by the ANR grant of the Chaire Professeur Junior of Artois University and by the Strategic Dialogue and Management Scholarship (Phase 1 and 2); G.C.Q.G. was supported by GQG was supported by the SNI #073–2022 (SENACYT, Rep. of Panama); H.F. was supported by HF was supported by Grant-in-Aid for Transformative Research Areas (A) (Japan Society for The Promotion of Science, JP21H05173), Grant-in-Aid for Scientific Research (B) (Japan Society for The Promotion of Science, 21H02849), Grant-in-Aid for Scientific Research

(C) (Japan Society for The Promotion of Science, 23K07013), The Telecommunications Advancement Foundation, and The Smoking Research Foundation.; J. Billieux was supported by JB received support from the WUN Research Development Fund (RDF) 2021; K. Lewczuk was supported by KLe was supported by Sonatina grant awarded by National Science Centre, Poland, grant number: 2020/36/C/HS6/00005.; K. Lukavská was supported by KLu was supported by Charles University institutional support programme Cooperatio-Health Sciences; K.R. was supported by KR was supported by a funding from the Hauts-de-France region (France) called “Dialogue Stratégique de Gestion 2 (DSG2)”; L.C. was supported by LJC was supported by the National Social Science Foundation of China (Grant No. 19BSH117); P.M.-T. was supported by PMT was supported by Universidad Científica del Sur; R.I.C. was supported by RC was supported by Auckland University of technology, 2021 Faculty Research Development Fund; R.G. was supported by RG was supported by Charles University institutional support programme Cooperatio-Health Sciences; S.B. was supported by SB was supported by a Tier 1 Canada Research Chair; Sungkyunkwan University’s research team was supported by SURT was supported by Brain Korea 21 (BK21) program of National Research Foundation of Korea.