



Pornography Craving Questionnaire: Adaptation and Psychometric Properties in Turkish Men

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Abstract

Researchers face challenges in identifying culturally appropriate tools to measure sex-related constructs, including pornography use. Therefore, it is essential for both practitioners and researchers to have access to a reliable and valid instrument that can measure individual cravings related to pornography in the context of Turkish culture. The present study aimed to adapt the Pornography Craving Questionnaire (PCQ) for use in Turkish culture and evaluate its psychometric properties among Turkish men. We conducted confirmatory factor analysis (CFA) to assess item characteristics, construct validity, and internal consistency in a sample of 426 Turkish men. The CFA results indicated that the Turkish version of the PCQ had excellent internal reliability ($\alpha=.95$). The test–retest reliability, as measured by the intraclass correlation coefficient (ICC), was .96, indicating excellent stability over time. The adapted instrument exhibited a unidimensional structure with 12 items. The scale demonstrated acceptable levels of content coverage, discriminative capacity, test–retest reliability, factor structure, and internal consistency (Cronbach’s alpha). This scale can help clinicians and researchers measure the degree of pornography craving among Turkish men, thereby facilitating the development of more personalized treatment plans. Additionally, it offers researchers a culturally appropriate tool to examine the pornography craving within the Turkish population.

Keywords Pornography craving · Impulsivity · Sensation seeking · Sexual compulsion

Introduction

In recent years, there has been growing interest in behavioral addictions, such as Internet, gambling, shopping, and pornography addiction, in addition to traditional addictions, such as alcohol and substance abuse. According to large-scale, nationally representative studies, approximately 70–94% of adults in Australia,

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North America, and Europe have lifetime exposure to pornography (Grubbs et al., 2019; Træen et al., 2004). Approximately half of men aged 25 years or younger engage in weekly pornography use (Miller et al., 2020). In addition to increased prevalence of non-problematic pornography use, problematic pornography use has also been the focus of scholars because of the addictive features of pornography. According to a global study conducted across 42 countries, problematic pornography use has been reported to be between 3.2 and 16.6%, with men reporting greater problematic pornography use than women (Böthe et al., 2024). In contrast to its traditional and conservative nature, Turkey ranked among the top three countries in problematic pornography use, highlighting the necessity for further research and development of effective treatment plans. Although the increased use of pornography has been attributed to technological advancements over the past two decades (Cooper et al., 1999), the first study examining its prevalence rate using a reliable and valid instrument was conducted in 2022 (Böthe et al., 2024).

Despite the limited availability of studies and measurement tools adapted to Turkish culture, statistics and findings underscore the severity of this issue. In recent years, various measurement tools have been developed and adapted to the Turkish culture to measure pornography related issues. Among the various instruments used, many have been designed to measure problematic pornography use and its consequences (Fernandez et al., 2017). For example, Hald (2008) developed the Pornography Consumption Effect Scale (PCES) to measure both the positive and negative aspects of pornography use. The scale measures the negative effects directly associated with problematic pornography use, as well as the positive effects directly related to the benefits of using pornography. The PCES's adapted version's factor associated with positive effects yielded five concepts: sex life, general life, perception of the opposite sex and attitudes, attitudes towards sex, and general knowledge about sex (Aktuğ, 2018). Another adopted scale is the Cyber Pornography Use Inventory-9 (CPUI-9) (Grubbs et al., 2010a, 2010b). The CPUI-9 was developed based on addiction-related features of behavior, including significant impairments resulting from repetitive behavior (Grubbs et al., 2010a, 2010b). The adaptation of the CPUI-9 yielded three factors similar to its original form: perceived difficulty, emotional distress, and access efforts (Ünübol et al., 2023). The most recently developed and validated instrument in Turkish culture is the Problematic Pornography Consumption Scale (PPCS), which is specifically designed to measure problematic forms of pornography using the Griffiths addiction model (Böthe et al., 2018, 2024). Additionally, among the existing instruments used to measure problematic pornography use, the PPCS has been recognized as one of the most reliable and robust instruments (Fernandez et al., 2017), because of its strong theoretical foundation and well-established psychometric properties, including high reliability and validity (e.g., the PPCS is the only instrument that measures the various components of addiction) (Böthe et al., 2023; Demirgöl et al., 2024; Fernandez & Griffiths, 2021). Even though the PPCS is one of the most robust instruments available, the scarcity of tools measuring problematic pornography use within Turkish culture especially prior to its adaptation into Turkish, has led researchers to develop their own measures. These instruments are the Pornography

Moral Disapproval Scale (PMDS) (Dinçer,) and the Online Pornography Addiction Scale (OPAS) (Ergün, 2023).

Despite the availability of literature on various instruments used to measure pornography use in Turkish culture, most studies have focused primarily on the motivational, problematic, positive, and negative aspects of pornography use. Therefore, researchers have often attempted to determine the frequency or intensity of pornography use using single-item measurements, which has led to decreased reliability, accuracy, and construct validity (Davidov et al., 2018). As a result, existing literature on pornography use has relied heavily on such limited measures. However, it is recommended that validated and comprehensive instruments be used to measure pornography-related constructs (e.g., problematic vs. non-problematic use) (Kohut et al., 2020). Given that problematic pornography use may not necessarily correlate with the pornography use frequency (Böthe et al., 2020), many existing instruments fail to adequately address the cultural and conceptual needs within the Turkish context. Furthermore, previous research has linked craving to the frequency of pornography use without necessarily focusing on problematic aspects (Kraus & Rosenberg, 2014). Therefore, craving may serve as a useful construct for identifying the intensity and pornography use frequency (Chen et al., 2018), in contrast to existing instruments that primarily emphasize the problematic aspects of pornography use in Turkish culture (Aktuğ, 2018; Dinçer, 2024; Ergün, 2023; Ünübol et al., 2023; Böthe et al., 2024).

The concept of craving has traditionally been associated with alcohol and substance use disorders; however, the parallels between behavioral and chemical addictions suggest that craving is also applicable to behavioral addictions (APA, 2013). In recent years, craving has gained increased attention in the assessment of behavioral addiction, as it is considered a core component of addictive behavior (Griffiths, 1997; Rogers & Smit, 2000; Young & Wohl, 2009). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), craving is defined as “an intense desire or urge to use a substance” (APA, 2013). The intensity of craving for pornography reflects a strong desire to engage with such content and may signify substantial psychological and emotional consequences. Craving is regarded as a key component of addiction, yet it remains conceptually distinct from behavioral addiction as a concrete diagnostic category (Kraus & Rosenberg, 2014). Moreover, craving may play a critical role in understanding the onset of problematic pornography use. Although various criteria exist for identifying such behavior (i.e., problematic pornography use), there is currently no standardized criterion that specifies the frequency or intensity of craving in Turkish culture (Chen et al., 2018). The need for accessible, evidence-based treatment approaches has been underscored by Böthe (2024). Given that craving is associated with symptom severity and may contribute to relapse (Hormes, 2017), the development of a reliable instrument to measure pornography craving is crucial for identifying at-risk individuals before problematic behavior occurs.

The Pornography Craving Questionnaire (PCQ) is a widely used instrument for measuring pornography craving in the literature (Kraus & Rosenberg, 2014). It measures craving through a unidimensional structure comprising 12 items rated on a seven-point Likert scale. Individuals who score five or

higher on this scale are generally considered to exhibit significant levels of pornography craving. The PCQ was originally developed with a sample of male undergraduate students, with women intentionally excluded due to the higher prevalence of pornography use among men (Carroll et al., 2008). The instrument is based on a reflective measurement model, in which the items are conceptualized as indicators of an underlying latent construct namely, pornography craving (Coltman et al., 2008). In the original validation study, higher levels of weekly pornography use were positively associated with pornography craving. Furthermore, the PCQ scores demonstrated significant associations with measures of sexual compulsivity, passionate attachment to pornography, and compulsive Internet use, thereby providing evidence for the instrument's criterion and convergent validity.

To the best of our knowledge, there is currently no valid and reliable instrument specifically designed to measure pornography craving in Turkish culture. Therefore, unlike other existing measures, the PCQ may serve as a suitable tool to facilitate a comprehensive understanding of this significant and sensitive issue, thereby informing future research and intervention efforts. Accordingly, the present study aimed to adapt the PCQ (Kraus & Rosenberg, 2014) for use in Turkish culture and to examine its psychometric properties. Considering previous studies indicating that men report higher levels of pornography use than women across both problematic and non-problematic domains (Bóthe et al., 2024; Grubbs et al., 2019; Træen et al., 2004) and given that the original validation study excluded women participants (Kraus & Rosenberg, 2014), the current study included only men participants. To evaluate the psychometric properties of the Turkish version of the PCQ, we assessed related constructs such as sexual compulsivity, impulsivity, and excitement. Drawing on prior literature and theoretical assumptions, we hypothesized that PCQ scores would show significant positive correlations with the measures of compulsivity, impulsivity, and excitement.

Method

Participants

A total of 426 men participated in the study by completing the questionnaires. The sample consisted of individuals in the emerging adulthood stage, defined as ages 18–26, although this range may vary across cultural contexts. All participants reported having consumed pornography within the past six months. No compensation was provided for the participation. To ensure consistency between the pre and post-test data, participants were instructed to use pseudonyms. Informed consent was obtained prior to data collection to ensure voluntary participation. Additionally, the scales used in the study were pilot tested online with five participants; these individuals were subsequently excluded from the final sample.

Procedure

Prior to conducting the study, formal permission to adapt and validate the PCQ for use in Turkish was obtained from Dr. Kraus one of the original developers of the scale on March 15, 2022. To ensure that culturally specific expressions were appropriately represented in the Turkish context, all the 12 items of the PCQ were translated into Turkish. A multidisciplinary team comprising three experts in linguistics, psychology, and psychometrics collaboratively prepared and refined the translation to ensure alignment with the cultural and linguistic nuances of Turkish language. The initial translation was conducted by a bilingual expert, after which two independent specialists in construct validity and psychometrics reviewed the translated items and revised them accordingly. The translation process followed a committee-based approach, as recommended by Harkness et al. (2003), wherein the team collectively discussed and evaluated each item from the psychological, cultural, and linguistic perspectives to determine the most appropriate wording. An expert appraisal method was used to establish content validity and minimize construct-related bias. A group of five experts with backgrounds in addiction psychology and psychometrics evaluated the translated items for technical adequacy, focusing on accuracy, clarity, comprehensibility, and the extent to which each item reflected the construct of pornography craving.

Participants who were women, under the age of 18 years, or reported psychiatric disorders were excluded from the study. Data were collected using the following instruments: (a) a 9-item Personal Information Form developed by the researchers; (b) the 12-item PCQ (Kraus & Rosenberg, 2014); (c) the 8-item Brief Sensation Seeking Scale (BSSS) (Çelik & Turan, 2016); (d) the 10-item Sexual Compulsivity Scale (SCS) (Akın & Çelik, 2015); and (e) the 11-item short form of the Barratt Impulsiveness Scale (BIS-11) (Tamam et al., 2013). The online survey, created using Google Forms, included 54 items and took approximately 15–20 min to complete. Approximately 30 responses with missing data were excluded from analysis. All analyses were pre-planned and conducted according to the predetermined research design. Ethical approval for the PCQ adaptation protocol was obtained from the ethics committee of Medipol university (Approval No. 156/2022).

Measures

Sociodemographic Information

Data on participants' average daily Internet use, relationship status, age at first exposure to pornography, most recent pornography viewing, pornography use frequency, and duration of pornography use were collected via a researcher-developed questionnaire. The sociodemographic characteristics are presented in Table 1. Approximately 42.5% of participants lived with their families. About one in four participants reported using the Internet for less than 60 min daily, being in a committed relationship, never having watched pornography, or viewing pornography for less than

Table 1 Sociodemographic characteristics of participants

Variables	Group	<i>M</i>	<i>SD</i>	<i>N</i>	%
Age		21.5	2.33		
Starting age to watch porn		11.4	3.10		
History of pornography viewing (days)		45.0	98.9		
Living with	Family			181	42.5
	Roommate			105	24.6
	Partner			78	18.3
	Single			62	14.6
Daily internet use	<30 min			34	8.0
	30–60 min			79	18.5
	1–3 h			142	33.3
	3–6 h			116	27.2
	>6 h			55	12.9
Relationship status	In a relationship			111	26.1
	Married			3	0.7
	Noncommitted/flirting			80	18.8
	Single			232	54.5
Frequency of watching pornography	Never			121	28.4
	1–2			108	25.4
	3–5			78	18.3
	6–10			72	16.9
	11 and above			47	11.0
Continuous pornography viewing time	<15 min			123	28.9
	16–30 min			103	24.2
	31–59 min			74	17.4
	1–2 h			73	17.1
	2–3 h			53	12.4

M mean; *SD* standard deviation; *N* sample size; % percentage

15 min at a time. The mean age was 21.50 ($SD=2.33$), and the average age of first pornography exposure was 11.43 ($SD=3.10$).

Pornography Craving Questionnaire (PCQ)

Pornography craving was measured using the 12-item PCQ developed by Kraus and Rosenberg (2014), which was adapted and validated for Turkish culture in the present study. Items were rated on a seven-point Likert scale. The primary aim of this study was to evaluate the psychometric properties of the PCQ. Participants with an average score of five or higher were considered to exhibit pornography craving. The original scale demonstrated high internal consistency (Cronbach's $\alpha=0.89$), while the Turkish version showed excellent reliability (Cronbach's $\alpha=0.95$). Internal

consistency was used to assess reliability, and structural validity was examined using confirmatory factor analysis (CFA).

The Brief Sensation Seeking Scale (BSSS)

Seeking sexual excitement refers to the tendency to pursue optimal levels of sexual arousal and to engage in novel sexual experiences. The original scale was developed by Hoyle (2002) and later adapted into Turkish by Çelik and Turan (2016). The BSSS is a unidimensional instrument consisting of 8 items. In the original study, the Cronbach's alpha coefficient was 0.79, while in the present study it was 0.88, indicating good internal consistency. Higher scores reflect above-average levels of sensation seeking behavior.

Sexual Compulsivity Scale (SCS)

The SCS, originally developed by Ballester-Arnal et al. (2013) and adapted into Turkish by Akin and Çelik (2015), was used to measure sexual compulsivity. The Cronbach's alpha reliability coefficient was .72 for the sub-scale of *interference of sexual behavior* (items 1–4 and 10), 0.90 for the sub-scale of *failure to control sexual impulses* (items 5–9), and 0.89 for the whole scale. In this study, it was .88 for the *interference of sexual behavior* sub-scale, 0.85 for the *failure to control sexual impulses* subscale, and 0.91 for the entire scale. It consists of 10 items and is scored on a 4-point Likert scale (not suitable for me = 1, very suitable for me = 4), which measures sexual compulsion in two dimensions (interference with sexual behavior and failure to control sexual impulses). It is a measurement tool based on self-reported information. There are no reverse-coded items, and the range of scores may vary between 10 and 40, with higher scores indicating higher levels of sexual compulsion.

The Barratt Impulsiveness Scale Short Form (BIS-11)

The BIS-11 was originally developed by Reise et al. (2013) and later adapted into Turkish by Tamam et al. (2013). The BIS-11 assesses impulsivity across three subdomains: non-planning, motor impulsivity, and attentional impulsivity. The short form of the BIS is an 11 item self-report instrument designed to measure the frequency of impulsive behaviors. Items are rated on a 4-point Likert scale ranging from 1 (rarely/never) to 4 (almost always). The scale includes three distinct subscales: non-planning impulsivity (Items 1–5, reverse-coded), motor impulsivity (Items 6–10), and attentional impulsivity (Items 11–15). Higher total scores indicate greater impulsivity. The original short form demonstrated acceptable internal consistency: $\alpha = 0.82$ for the total score, $\alpha = 0.80$ for non-planning, $\alpha = 0.70$ for motor impulsivity, and $\alpha = 0.64$ for attentional impulsivity. In the present study, Cronbach's alpha coefficients were 0.94 for the total scale, 0.90 for non-planning, 0.84 for motor impulsivity, and 0.90 for attentional impulsivity, indicating excellent internal consistency.

Data Analysis

Descriptive statistics, Cronbach's alpha coefficients, independent samples t-tests, and correlation analyses were conducted using SPSS version 26 (see Table 2). Primary analyses were performed using IBM AMOS version 25 (Collier, 2020). The significance level was set at $p < 0.05$. A Cronbach's alpha of 0.70 or higher was considered acceptable for scale reliability. To assess model fit, commonly used goodness-of-fit indices were used (Brown, 2015), including: Chi-Square Minimum/df (CMIN/df; ≤ 3.00 for acceptable fit), Goodness-of-Fit Index (GFI; ≥ 0.90 for acceptable, ≥ 0.95 for excellent), Comparative Fit Index (CFI; ≥ 0.90 for acceptable, ≥ 0.95 for excellent), Root Mean Square Error of Approximation (RMSEA; ≤ 0.06 for good, ≤ 0.08 for acceptable), Tucker-Lewis Index (TLI; ≥ 0.90 for acceptable, ≥ 0.95 for good), and Standardized Root Mean Square Residual (SRMR; ≤ 0.06 for good, ≤ 0.08 for acceptable). Reliability was further interpreted using alpha values, where coefficients of 0.70–0.89 were considered strong, 0.40–0.69 moderate, and below 0.40 weak (Alpar, 2022). A one-way analysis of variance (ANOVA) was used as a parametric test, to assess discriminant validity due to the presence of more than 30 cases per group (Alpar, 2022).

Validity and Reliability Process

Content validity of the scale was established through consultation with seven experts specializing in addiction and psychometrics, whose professional experience ranged from 5 to 20 years. Based on their feedback, revisions were made and subsequently reviewed by two additional experts to assess the language validity. The final version was prepared for the pilot study. Since the pilot study was conducted, interrater reliability was not evaluated. The English version of the scale was first administered during the pilot phase, and item analysis along with Cronbach's alpha was used to ensure initial reliability. To assess the reliability of the Turkish adaptation, test–retest reliability was examined by administering the Turkish version of the scale to the same participants after a three-week interval. This timeframe was chosen to balance potential carryover effects from shorter intervals (e.g., memory, mood, or practice effects) with the risk of status change due to longer delays (Harkness et al., 2003). Measurement error was not measured because the study focused solely on the cultural adaptation of the instrument. The item-total correlations and internal consistency were calculated using Cronbach's alpha. The final version of the translated scale was refined based on the participant feedback. To assess test–retest reliability, correlations between pre-test and post-test scores were computed, along with paired t-test results. The Intraclass Correlation Coefficient (ICC) between the two administrations was 0.96 (95% CI), indicating excellent reliability.

These procedures were conducted as preliminary examinations, recognizing that the results may have been influenced by the sample size. The administration phase began following the completion of necessary preparations and quality controls. As the scale consists of 12 items, a sample size between 5 to 20 times the

Table 2 Item analysis for pilot study

Item	Scale if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
English (n=83)			
1. The thought of watching pornography makes me sexually aroused	$M=41.4, SD=15.2$	.54	.90
2. I would feel less bored if I watched pornography right now	$M=42.0, SD=14.9$	.78	.89
3. I will watch pornography as soon as I get the chance	$M=42.0, SD=14.9$	.80	.89
4. If I were watching pornography this minute, I would feel energized	$M=42.1, SD=15.3$	.67	.89
5. If I watched pornography right now, I would have difficulty stopping	$M=41.0, SD=15.9$	.31	.91
6. I have an urge to watch pornography right now	$M=41.3, SD=15.4$	.63	.90
7. If I were watching pornography this minute, I would feel happier	$M=41.6, SD=15.4$	.58	.90
8. If the situation allowed, I would watch pornography right now	$M=41.6, SD=15.2$	.66	.90
9. Right now, I am making plans to watch pornography	$M=41.6, SD=15.2$	.68	.89
10. I would feel less stressed if I watched pornography right now	$M=41.4, SD=15.1$	.73	.89
11. My heart would beat faster if I were watching pornography right now	$M=40.9, SD=15.5$	.51	.90
12. I want to watch pornography right now	$M=41.6, SD=15.1$	.69	.89
13. Total scale	$M=3.90, SD=1.39$		.90
Turkish (n=69)			
1. Porno izleme düşüncesi beni cinsel olarak tahrik eder	$M=42.3, SD=16.5$	.71	.91
2. Şu an porno izleseymdim daha az sıkıldım	$M=42.6, SD=16.5$	.80	.91
3. Fırsat buldukça porno izlerim	$M=42.7, SD=16.5$	.83	.92
4. Şu an porno izliyorum olsaydım kendimi daha enerjik hissederdim	$M=42.8, SD=16.8$	.70	.93
5. Şu an porno izleseymdim, kendime engel olmakta zorluk çekebilirdim	$M=42.1, SD=17.4$	.38	.92
6. Şu an porno izlemek için şiddetli arzum var	$M=42.0, SD=16.9$	.72	.92
7. Şu an porno izliyorum olsaydım kendimi daha mutlu hissederdim	$M=42.4, SD=17.1$	.61	.92
8. Fırsatım olsa şu an porno izlerdim	$M=42.2, SD=16.9$	.65	.92
9. Şu an porno izlemeyi planlıyorum	$M=42.2, SD=16.7$	.71	.92

Table 2 (continued)

Item	Scale if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
10. Şu an porno izleseydim kendimi daha az stresli hissederdim	$M=42.1$, $SD=16.8$	.68	.92
11. Şu an porno izleseydim kalbim daha hızlı atardı	$M=41.7$, $SD=16.7$	.68	.92
12. Şu an porno izlemek istiyorum	$M=42.2$, $SD=16.6$	.73	.91
13. Ölçek toplam	$M=3.84$, $SD=1.52$		.93

M mean; *SD* standard deviation

number of items is recommended based on scale development guidelines (Alpar, 2022). Accordingly, although the minimum required sample size was 240, the final sample included 426 participants. To ensure the reliability and validity of the scale, we conducted item analysis, calculated Cronbach's alpha for internal consistency, and performed CFA to confirm the expected factor structure. These analyses were repeated three weeks later using the same participants to examine test-retest reliability, including recalculation of item-total correlations, Cronbach's alpha, and ICC. Convergent and divergent validity were assessed using Pearson's correlation coefficients, with the BSSS, SCS, and BIS-11 serving as comparison measures. Discriminant validity was examined to determine whether the adapted scale measured a construct distinct from related psychological variables. For this purpose, demographic and behavioral variables were analyzed, including age, living arrangement, daily Internet usage, relationship status, age at first pornography exposure, date and time of most recent viewing, and frequency and duration of pornography use. In summary, the validity and reliability process included: (a) expert consultation for content validity, (b) expert review for language validity, (c) pilot testing and technical checks, and (d) administration of the finalized, adapted scale.

Findings from the Pilot Study

The English version of the scale was administered to 83 participants, yielding a Cronbach's alpha of 0.90. Following the completion of the questionnaire, item analysis was conducted. The results indicated that removing Item 5 increased Cronbach's alpha to 0.91. However, given that the original alpha coefficient was already considered acceptable (Helms et al., 2006), item 5 was retained because of its conceptual importance in measuring pornography craving; its removal was judged to potentially compromise content validity (Koçak et al., 2014). One week after incorporating expert feedback and finalizing the Turkish version of the questionnaire, the questionnaire was re-administered to the same group. A total of 69 individuals completed the Turkish version of the PCQ, which demonstrated a Cronbach's alpha of 0.92. A strong correlation was found between the English and Turkish versions of the PCQ, $r=0.948$, $p<0.001$, and no significant difference was observed between the two administrations $t(1.158)$, $p=0.251$. (see Table 2).

Result

To examine differences across demographic variables such as relationship status, daily Internet use, pornography use frequency, and age independent samples t-tests and one-way ANOVAs were conducted. The results revealed several significant differences between the groups. Participants living with roommates scored the highest on the PCQ, significantly higher than those living alone or with family/partners, $F(2, 423)=18.81$, $p<0.001$. Similarly, single individuals scored greater on the PCQ than those living with family or in a partnership, $F(2, 423)=45.06$, $p<0.001$. Moreover, Internet use was significantly and positively associated with

PCQ. Those spending less than 30 min online had the lowest average scores, while participants using the Internet for 3–6 h per day had the highest scores on the PCQ, $F(3, 422)=45.89$, $p<0.001$. Individuals in both the 3–6 h and >6 h groups scored significantly higher than those in all other groups. Regarding religiosity and relationship orientation, participants who reported no religious affiliation or identified as flirtatious had the highest mean scores on the PCQ, significantly higher than those who were married or in committed relationships. Single individuals also reported significantly higher PCQ scores than those in relationships or marriages. Pornography use frequency was positively associated with PCQ, with individuals viewing pornography 11 or more times per week reporting the highest levels of PCQ. Additionally, several negative correlations were observed between demographic variables and pornography craving. A moderate reverse relationship was found between age, age at first pornography exposure, and PCQ scores. A weak negative association was also found between the duration of individual pornography sessions and PCQ. The group differences are presented in Table 3.

In the present study, convergent validity was assessed by examining Pearson's correlation coefficients among the following study variables: PCQ, BSSS, Interference of Sexual Behavior (ISB), Failure to Control Sexual Impulses (FCSI), Non-Planning (NP), Motor Impulsivity (MI), Attentional Impulsivity (AI), and the total BIS-11. All the correlation coefficients were statistically significant, indicating strong associations between the measured constructs. The PCQ demonstrated strong positive correlations with the BIS-11 total score, $r=0.866$, $p<0.001$, SCS, $r=0.814$, $p<0.001$, BSSS $r=0.804$, $p<0.001$ and AI $r=0.819$, $p<0.001$. This suggests that these instruments measure closely related psychological constructs. Notably, the PCQ and BIS-11 emerged as key variables because of their strong intercorrelations with the majority of the other measures, indicating their ability to capture the core aspects of impulsivity and craving. These strong and consistent intercorrelations support the construct validity of the adapted PCQ within the target population. The full correlation matrix is presented in Table 4.

The results of the CFA indicated that all model fit indices were within acceptable ranges: CMIN/df=4.86, RMR=0.872, GFI=0.970, CFI=0.941, and RMSEA=0.095. The test–retest reliability analysis yielded an ICC of 0.91, reflecting excellent temporal stability. Internal consistency reliability was also high, with a Cronbach's alpha of 0.95. The CFA results further revealed that the third item "I watch pornography whenever I have the opportunity" was the most representative of the underlying construct of pornography craving. The detailed results of the item analysis and the CFA are presented in Table 5 and Fig. 1.

Discussion

Given that Turkey ranks among the top three countries in terms of problematic pornography use (Böthe et al., 2024), it is noteworthy that no scale has been developed or adapted to measure pornography craving within the Turkish cultural context. Therefore, the aim of this study was to adapt the PCQ (Kraus & Rosenberg, 2014) in Turkish culture and evaluate its psychometric properties among men. Based on our

Table 3 Examination of the group differences

Variables	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>F/r</i>	<i>P</i>
Living with	Family	181	3.31 ^{a,b}	1.72	18.80	<.001
	Roommate	105	4.70 ^{b,c}	1.58		
	Partner	78	3.29 ^{c,d}	1.56		
	Single	62	4.10 ^{b,d}	0.69		
Daily internet use	< 30 min	34	2.07 ^e	0.80	45.90	<.001
	30–60 min	79	2.50 ^e	0.98		
	1–3 h	142	3.67 ^f	1.68		
	3–6 h	116	4.80 ^g	1.53		
	> 6 h	55	4.69 ^g	1.65		
Relationship status	In a relationship	111	2.67 ^e	1.26	45.05	<.001
	Married	3	2.22	0.98		
	Noncommitted/flirting	80	5.25 ^f	1.18		
	Single	232	3.80 ^g	1.75		
Frequency of watching pornography per week	Never	121	2.19 ^e	0.76	200.5	<.001
	1–2	108	2.85 ^f	1.07		
	3–5	78	4.66 ^g	1.47		
	6–10	72	5.49 ^h	1.00		
	11 and above	47	5.78 ^h	0.66		
Continuous pornography viewing time	< 15 min	123	2.30 ^e	0.99	108.8	<.001
	16–30 min	103	3.06 ^f	1.21		
	31–59 min	74	4.55 ^g	1.52		
	1–2 h	73	5.23 ^h	1.28		
	2–3 h	53	5.43 ^h	1.29		
Age		150			1.72	<.001
Starting age to watch pornography		424			-.619	<.001
History of pornography viewing (days)		418			-.379	<.001

M mean; *SD* standard deviation; *N* sample size; ^{a,b} significant difference between groups with different letters; ^{c,d} significant difference between groups with the same letter; ^{e,f,g,h} significant difference between groups with different letters

findings, the CFA supported the unidimensional structure of the 12-item scale in the Turkish sample, with all factor loadings found to be statistically significant. These findings suggest that the adapted version of the PCQ maintains the original structure proposed by Kraus and Rosenberg (2014) and is a valid and reliable tool for measuring pornography craving in Turkish culture.

Based on the analysis of sociodemographic variables in our sample, the findings indicate that Turkish men who spend between three and six hours online per day scored the highest on the PCQ. Consistent with prior research and theoretical assumptions, craving may serve as a key determinant of pornography use frequency (Chen et al., 2018). Our results support previous findings suggesting that the amount of time spent online is positively associated with pornography consumption among

Table 4 Correlation between pornography craving, sensation seeking, interference of sexual behavior, failure to control sexual impulses, non-planning, motor impulsivity, attentional impulsivity, general impulsivity

	PCQ	BSSS	SCS	ISB	FCSI	NP	MI	AI	BIS
PCQ	1	.80	.81	.79	.74	.79	.74	.82	.87
BSSS	< .001	1	.80	.77	.74	.72	.69	.72	.79
SCS	< .001	< .001	1	.94	.94	.71	.70	.74	.79
ISB	< .001	< .001	< .001	1	.76	.69	.68	.71	.77
FCSI	< .001	< .001	< .001	< .001	1	.63	.63	.69	.72
NP	< .001	< .001	< .001	< .001	< .001	1	.69	.75	.90
MI	< .001	< .001	< .001	< .001	< .001	< .001	1	.76	.89
AI	< .001	< .001	< .001	< .001	< .001	< .001	< .001	1	.92
BIS	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	1

* *P* values above the diagonal line are the Pearson correlation coefficients, values below the diagonal line are the *p* values; *PCQ* Pornography Craving Questionnaire; *BSSS* Brief Sensation Seeking Scale; *ISB* Interference of Sexual Behavior; *FCSI* Failure to Control Sexual Impulses; *NP* Non-Planning; *MI* Motor Impulsivity; *AI* Attentional impulsivity; *BIS* Barratt Impulsiveness Scale

men (Kirby, 2021). Additionally, single individuals reported higher PCQ scores than those in relationships, indicating that being single may be linked to increased motivation for pornography use. This finding is consistent with earlier studies showing that single individuals tend to report higher levels of pornography use than those in committed relationships (Smutný & Šulc, 2018).

To the best of our knowledge, the PCQ has previously been adapted for use in the Iranian and Korean cultural contexts. Consistent with the original version, our findings support a unidimensional structure comprising of 12 items. In the Iranian adaptation by Molavi et al. (2020), which was conducted with a sample of 234 participants, two factors were identified: psychological reactions and desire, each comprising five items. The Cronbach's alpha values were 0.89 for the first factor and 0.72 for the second. In contrast, the Korean adaptation by Kim et al. (2021), which included 226 participants, confirmed a unidimensional 12-item structure, with a Cronbach's alpha of 0.91. Our study had the largest sample size among the existing PCQ validation studies. The internal consistency of the Turkish version (Cronbach's $\alpha=0.95$) exceeded that of the original PCQ (Kraus & Rosenberg, 2014), as well as the Iranian and Korean adaptations. The consistency in factor structure observed across the Korean, American, and Turkish samples despite representing distinct cultural contexts (i.e., Asian, American, and Mediterranean-European) suggests that the PCQ captures a construct with cross-cultural relevance and interpretability. The Iranian adaptation differed from the others, yielding a two-factor solution with fewer items. This difference may be attributable to Iran's unique legal and sociocultural environment, particularly its religious and moral frameworks, which likely influences participants' perceptions and responses to items related to pornography. Cultural sensitivity toward such topics may result in different factor structures, owing to variations in response patterns.

Table 5 The results of item analysis and confirmatory factor analysis

Item	Scale mean $\pm$ Sd if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted	Standardized estimates
Test (n = 426) English				
1. Porno izleme düşüncesi beni cinsel olarak tahrik eder [The thought of watching pornography makes me sexually aroused]	$M = 40.8, SD = 19.5$	.69	.95	.85
2. Şu an porno izleseydim daha az sıkıldım [I would feel less bored if I watched pornography right now]	$M = 41.4, SD = 19.2$	.82	.95	.91
3. Fırsat buldukça porno izlerim [I will watch pornography as soon as I get the chance]	$M = 41.5, SD = 19.2$	.86	.95	.94
4. Şu an porno izliyorum olsaydım kendimi daha enerjik hissederdim [If I were watching pornography this minute, I would feel energized]	$M = 41.7, SD = 19.3$	.82	.95	.93
5. Şu an porno izleseydim, kendime engel olmakta zorluk çekebilirdim [If I watched pornography right now, I would have difficulty stopping]	$M = 40.9, SD = 19.8$	.59	.95	.79
6. Şu an porno izlemek için şiddetli arzum var [I have an urge to watch pornography right now]	$M = 41.6, SD = 19.3$	.80	.95	.88
7. Şu an porno izliyorum olsaydım kendimi daha mutlu hissederdim [If I were watching pornography this minute, I would feel happier]	$M = 41.6, SD = 19.3$	.80	.95	.87
8. Fırsatım olsa şu an porno izlerdim [If the situation allowed, I would watch pornography right now]	$M = 41.6, SD = 19.2$	.81	.95	.90
9. Şu an porno izlemeyi planlıyorum [Right now, I am making plans to watch pornography]	$M = 41.7, SD = 19.2$	.80	.95	.93
10. Şu an porno izleseydim kendimi daha az stresli hissederdim [I would feel less stressed if I watched pornography right now]	$M = 41.5, SD = 19.2$	.81	.95	.90
11. Şu an porno izleseydim kalbim daha hızlı atardı [My heart would beat faster if I were watching pornography right now]	$M = 40.9, SD = 19.5$	.67	.95	.81

Table 5 (continued)

Item	Scale mean $\pm$ Sd if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted	Standardized estimates
12. Şu an porno izlemek istiyorum [I want to watch pornography right now] Cronbach Alpha = .954; 3,764 $\pm$ 1,753	$M = 41.6$, $SD = 19.0$	.83	.95	.92
Re-test (n = 62)				
1. Porno izleme düşüncesi beni cinsel olarak tahrik eder [The thought of watching pornography makes me sexually aroused]	$M = 32.2$, $SD = 15.0$	.52	.90	
2. Şu an porno izleseydim daha az sıkıldım [I would feel less bored if I watched pornography right now]	$M = 34.0$, $SD = 14.6$	.69	.88	
3. Fırsat buldukça porno izlerim [I will watch pornography as soon as I get the chance]	$M = 34.2$, $SD = 14.5$	.77	.87	
4. Şu an porno izliyorum olsaydım kendimi daha enerjik hissedirdim If I were watching pornography this minute, I would feel energized]	$M = 34.9$, $SD = 15.0$	.57	.88	
5. Şu an porno izleseydim, kendime engel olmakta zorluk çekebilirdim [If I watched pornography right now, I would have difficulty stopping]	$M = 32.1$, $SD = 15.2$	.38	.89	
6. Şu an porno izlemek için şiddetli arzum var [I have an urge to watch pornography right now]	$M = 34.4$, $SD = 15.0$	.63	.88	
7. Şu an porno izliyorum olsaydım kendimi daha mutlu hissedirdim [If I were watching pornography this minute, I would feel happier]	$M = 34.8$, $SD = 15.1$	.59	.89	
8. Fırsatım olsa şu an porno izlerdim [If the situation allowed, I would watch pornography right now]	$M = 34.8$, $SD = 14.7$	.73	.88	
9. Şu an porno izlemeyi planlıyorum [Right now, I am making plans to watch pornography]	$M = 35.0$, $SD = 14.1$	.64	.88	
10. Şu an porno izleseydim kendimi daha az stresli hissedirdim [I would feel less stressed if I watched pornography right now]	$M = 34.3$, $SD = 14.8$	.63	.88	

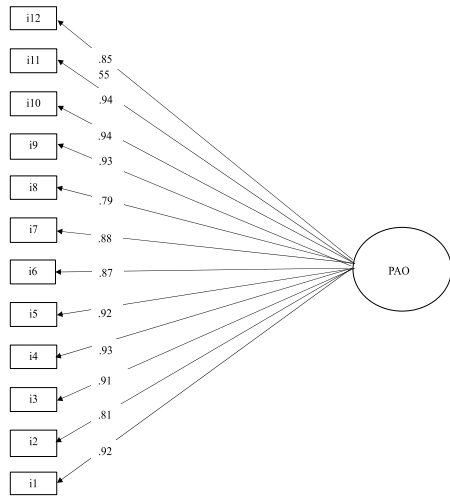
Table 5 (continued)

Item	Scale mean $\pm$ Sd if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted	Standardized estimates
11.Şu an porno izleseydim kalbim daha hızlı atardı [My heart would beat faster if I were watching pornography right now]	$M = 32.3, SD = 15.0$	.44	.89	
12.Şu an porno izlemek istiyorum [I want to watch pornography right now]	$M = 34.6, SD = 14.5$	.78	.88	
Total scale	$M = 3.09, SD = 1.35$		.90	

M mean; *SD* standard deviation

Fig. 1 Results of confirmatory factor analysis. *Note.* PAO Pornografi arzulama ölçeği

Results of Confirmatory Factor Analysis



Although the instruments used to measure criterion validity varied across the studies, meaningful comparisons could still be made. For instance, the Korean adaptation study used the Sexual Impulsivity Scale (SIS) and the Cybersexual Addiction Index (CAI), while in the current study we used the SCS. The Korean version of the PCQ demonstrated a moderate to strong correlation with the CAI, $r=0.66$, $p<0.05$ and a weak to moderate correlation with the Sexual Impulsivity Scale, $r=0.37$, $p<0.05$. In contrast, the Turkish version of the PCQ exhibited a strong correlation with the SCS, $r=0.81$, $p<0.05$. These differences in the strength of the correlation may be attributed to the theoretical closeness of pornography craving to sexual compulsivity rather than to sexual impulsivity. The strong association between the PCQ and SCS in our study supports the notion that pornography craving may reflect a more compulsive, rather than impulsive, behavioral pattern. Notably, the Iranian adaptation has yet to report evidence for convergent or criterion validity, limiting interpretability and cross-study comparisons. Additionally, pornography use frequency (weekly) was positively associated with PCQ scores in our sample, indicating that individuals who engage more frequently in pornography consumption tend to report higher levels of craving. This finding is consistent with the original PCQ validation study, which also reported a positive association between pornography use frequency and craving (Kraus & Rosenberg, 2014).

In this context, several scale development studies regarding pornography use and related variables were examined, including the Consumption of Pornography Scale-General (COPS-G; Hatch et al., 2020), which measures general consumption of pornographic content; the PPCS; (Böthe et al., 2018) and its Turkish validation (Böthe et al., 2024), both of which assess problematic pornography use; the study by Hald and Štulhofer (2016), which investigated types and categories of pornography consumption on a large

scale; the Pornography Use Avoidance Self-Efficacy Scale (PUASES; Kraus et al., 2017), which evaluates the avoidance of pornography along with self-efficacy beliefs; the cultural adaptations of the Problematic Pornography Use Scale (PPUS) to Chinese and Hungarian contexts (Chen et al., 2021) and to the Persian context (Darvish & Nickmanesh, 2017); the psychometric evaluation of the Pornography Consumption Inventory (PCI) in a sample of hypersexual men (Reid et al., 2011); and the CPUI; (Grubbs et al., 2010a, 2010b). Finally, our study focused on pornography craving by adapting and validating the PCQ, originally developed by Kraus and Rosenberg (2014), for use within Turkish culture. In this study, validity and reliability tests were performed for adaptation and validation of the PCQ. In this context, a) expert evaluations were conducted to establish content validity during the validation process; b) item analysis was performed; c) correlation analysis, CFA results, and Cronbach's alpha reliability coefficients were assessed in the reliability analysis section; and d) ICC values, which measure temporal stability, were found to be within the acceptable limits recommended in the literature. As a result, the adaptation and validation of the PCQ into Turkish culture has been successfully completed and made available for use by both researchers and clinicians (see Appendix 1). With this contribution, it is anticipated that the growing body of pornography-related research in Turkey will continue to expand.

Strengths, Limitations, and Future Directions

This present study adapted the PCQ to Turkish culture and evaluated its psychometric properties. A notable strength of this study is the adaptation of a scale that specifically focuses on pornography craving, as previous research in the Turkish context has primarily emphasized problematic pornography use. Although this study makes significant contributions to the field, it has certain limitations. First, while the motor impulsivity subscale demonstrated excellent internal consistency in the current study ($\alpha=0.90$), previous research has reported lower reliability for this subscale ($\alpha=0.64$); therefore, findings related to this subscale should be interpreted with caution (Cohen & Swerdlik, 2018). Second, although the psychometric properties of the adapted scale were found to be satisfactory, it is important to acknowledge that a 12-item measure can only serve as a screening tool and may not capture the full depth of the construct (i.e., pornography craving). Third, the participant sample consisted solely of men, as women were deliberately excluded because of the relatively lower prevalence of pornography use among them. As a result, the findings may be specific to men and limit the generalizability of the results, even though women also engage in pornography use. Future studies should include diverse participant groups with varying demographic characteristics to enhance generalizability. In particular, including women, older adults, and individuals from sexual minority groups would allow for a more inclusive and comprehensive interpretation of pornography craving in the Turkish context.

Conclusion

Although Turkey ranks among the highest in Europe in terms of problematic pornography use, the availability of instruments to measure such constructs remains limited. While existing tools primarily focus on problematic pornography use in the Turkish population, there is also a need to measure non-problematic pornography use. To address this gap, we adapted the PCQ to the Turkish culture and evaluated its psychometric properties. The findings indicated that the Turkish adaptation of the PCQ demonstrated structural equivalence to the original scale and proved to be a reliable instrument for measuring pornography craving in the Turkish context. This tool can be used by clinicians and researchers to measure the prevalence and intensity of pornography craving in the Turkish populations.

Appendix 1

Turkish translation of pornography craving scale

Items

1. Porno izleme düşüncesi beni cinsel olarak tahrik eder
 2. Şu an porno izleseymdim daha az sıkıldırımdım
 - 3 Fırsat buldukça porno izlerim
 4. Şu an porno izliyor olsaydım kendimi daha enerjik hissederdım
 5. Şu an porno izleseymdim, kendime engel olmakta zorluk çekebilirdim
 6. Şu an porno izlemek için şiddetli arzım var
 7. Şu an porno izliyor olsaydım kendimi daha mutlu hissederdım
 8. Fırsatım olsa şu an porno izlerdım
 9. Şu an porno izlemeyi planlıyorum
 10. Şu an porno izleseymdim kendimi daha az stresli hissederdım
 11. Şu an porno izleseymdim kalbim daha hızlı atardı
 12. Şu an porno izlemek istiyorum
-

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Data Availability The data supporting the findings of this study are available on request.

Declarations

Conflict of interest Authors HII, NGY, SAD, and EU declare that they have no conflict of interest.

Ethics Approval The protocol for the adaptation of the PCQ was approved by the Ethical Committee of Medipol University (approval no. 156/2022).

Informed Consent All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and the Helsinki Declaration of 1975, as revised in 2000 (5). Informed consent was obtained from all patients for inclusion in the study.

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