

**Psychometric properties of the Spanish version of the Online Sexual  
Addiction Questionnaire: An exploratory study using a sample of convicted  
sex offenders**

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# **Psychometric properties of the Spanish version of the Online Sexual Addiction Questionnaire: An exploratory study using a sample of convicted sex offenders**

ABSTRACT. This study explored the psychometric properties of the Online Sexual Addiction Questionnaire (OSA-Q). In total, 100 sexual offenders completed the OSA-Q Spanish version, along with the Millon Clinical Multiaxial Inventory-III (MCMI-III) for the assessment of related impairment. 34 individuals with social-desirability bias were extracted from the sample. A four-factor structure accounted for 77% of the variance and internal consistency was strong ( $\alpha = .97$ ). Additionally, correlations with related clinical scales were statistically significant. Overall, online sexual offenders showed higher scores on the OSA-Q than contact-exclusive offenders. According to our results, the OSA-Q shows promise as a screening in forensic samples.

Keywords: Online sexual addiction; Pornography; Cybersex; Sexual offenders; Personality; Child sexual exploitation material.

## Introduction

Online sexual activity (OSA) has been defined as the use of the Internet for any activity that involves human sexuality, such as accessing sexual materials, searching for sexual partners or engaging in sexual chat (Cooper et al., 2001). According to figures, OSA constitutes an appealing behavior to many individuals (Ross, 2005), regardless of age (Castro-Calvo et al., 2018b). As an example, *PornHub* (the largest pornography site on the Internet) reported in their annual review that they received over 42 billion visits in 2019 (8.7 billion more searches compared to 2018), with a daily average of 115 million visits a day (Pornhub.com, 2020). Several studies have documented positive effects of OSA, such as the fulfillment of sexual desires or entertainment (Castro-Calvo et al., 2018b; Daneback et al., 2013; Rissel et al., 2017; Vaillancourt-Morel et al., 2017); however, OSA may also result in a problematic behavior in a small subgroup of individuals (less than 15% of adult men; Ballester-Arnal et al., 2017; Rissel et al., 2017; Ross et al., 2012) who display an uncontrolled or compulsive Internet use for sexual purposes, associated with psychological distress and/or functional impairment (Cooper et al., 2001; Darshan et al., 2014; de Alarcón et al., 2019; Duffy et al., 2016; Garcia & Thibaut, 2010; Kafka, 2013; Ross et al., 2012; Wéry et al., 2018a; Young, 2008). At present, the inclusion of Compulsive Sexual Behavior Disorder as an impulse control disorder in the forthcoming eleventh edition of the International Classifications of Diseases has been approved (Kraus et al., 2018). Despite this, scholarly debates about the accuracy and utility of the inclusion of problematic sexual behaviors such as excessive masturbation, cybersex or pornography use (Karila et al., 2014) as behavioral addictions (i.e., addictive disorders not related to the use of psychoactive substances) are still ongoing (for an extensive review of this topic, see: Grubbs et al., 2020).

Both the engagement in OSA aimed at relieving negative mood in the short term, as well as the involvement in OSA as an anonymous means of satisfying sexual fantasies, have

been suggested as key predictors for a problematic sexual behavior (Laier & Brand, 2017; Wéry et al., 2018a; Wéry & Billieux, 2016). At the same time, several studies have already explored correlates of online sexual addiction in men, such as poor psychosocial functioning (Harper & Hodgins, 2016), insecure attachment style (Faisandier et al., 2011; Zapf et al., 2008), negative affect (e.g., loneliness; Butler et al., 2018; Tylka, 2015; Wéry et al., 2018a; Wéry et al., 2018b), dysfunctional coping style (Antons et al., 2019; Laier et al., 2015; Reid et al., 2008; Wéry et al., 2018b; Wéry & Billieux, 2016), comorbid psychiatric disorders (e.g., substance abuse, mood and anxiety disorders; Karila et al., 2014; Kowalewska et al., 2019; Starcevic & Khazaal, 2017; Wéry & Billieux, 2017; Wéry et al., 2016), sexual dissatisfaction (Daspe et al., 2018; Vaillancourt-Morel et al., 2017), or video game addiction (Harper & Hodgins, 2016). Along these lines, it is also important to note that the construct of online sexual addiction refers to non-paraphilic behaviors, although paraphilic disorders can exist concurrently with problematic OSA (Reid, 2016). With regard to personality traits, features linked to a broader spectrum of addictive behavior such as high narcissism, impulsivity, neuroticism, obsessionality, and compulsivity, have been associated with online sexual addiction (Antons & Brand, 2018; Egan & Parmar, 2013; Harper & Hodgins, 2016; Kasper et al., 2015; Leedes, 2001). In this sense, prior studies point toward the existence of an “addictive personality” or a general tendency to become addicted among some individuals with compulsive sexual behavior (Efrati et al., 2019a), who present with some similar personality traits to those of patients with substance use disorders, such as high neuroticism and impulsivity (Zilberman et al., 2018).

OSA research has mainly focused on non-offending samples and, thus, relatively few empirical investigations have examined online sexual addiction among individuals convicted of a sexual offense. Overall, studies focusing on sexual offenders analyze excessive sexuality or sexual addiction in general (not specifically related to the addictive use of OSA; see Table

1); furthermore, the variety of existing conceptualizations and measures of compulsive online and offline sexual behaviors make it difficult to draw clear conclusions in this regard (Karila et al., 2014; Wéry & Billieux, 2017). A few studies have also explored the association between OSA and risk for sexual offending and, at present, there is no clear evidence to suggest a direct relationship between both variables (Mellor & Duff, 2019), except for men already predisposed to sexual offending due to the presence of more primary risk factors. Among these individuals, heavy exposure to non-consenting pornography may add to the risk of an actual sexually aggressive offense (Malamuth, 2018).

[insert Table 1 here]

According to the Spanish Criminal Code, crimes against sexual freedom and indemnity are not limited to contact sexual offenses (i.e., involving physical contact with a victim), but also include a large number of non-contact sexual behaviors (i.e., not involving physical contact with a victim), such as online sexual offenses (e.g., online sexual solicitation of children or child sexual exploitation material offenses; CSEM); thus, it is possible that subgroups of individuals convicted of sexual offenses differ in their involvement with OSA. In reference to CSEM offenders in particular, prior evidence supports the absence of a direct relationship between CSEM use and the commission of subsequent contact sexual offenses (Aebi et al., 2014; Henshaw et al., 2017; Owens et al., 2016; Riegel, 2004; Sheehan & Sullivan, 2010; Soldino et al., 2019a). That is, the use of CSEM would more likely operate as a compensatory method or a behavioral extension of contact offending, than as its precursor. Additionally, research suggests that, in some cases, CSEM use is a manifestation of compulsive sexual behavior (e.g., part of a broader pattern of problematic online pornography use; Seigfried-Spellar & Rogers, 2013; Seto & Ahmed, 2014; Seto et al., 2010; Southern, 2008).

Preliminary evidence points toward the existence of specific thinking patterns and underlying implicit theories (ITs; i.e., core beliefs that bias the processing of social information; Ward, 2000) among these individuals, when compared to contact sex offenders (Soldino et al., 2020). CSEM users present with different degrees of involvement in CSEM activities (e.g., in terms of duration or intensity; Seto & Eke, 2017) and, thus, each one of them would perceive their behavior as more or less controllable. For instance, some CSEM users claim a compulsive or obsessive quality to their behavior (Egan et al., 2005). In this sense, a specific subgroup of CSEM users endorse the belief that they have no control over their actions due to it being internally generated and highly stable, resulting in a view of themselves as being “addicted” to viewing CSEM (i.e., *Self as Uncontrollable IT*; Soldino et al., 2020). Furthermore, some CSEM users perceive the process of searching, finding, and collecting CSEM as rewarding (i.e., *Self as Collector IT*; Bartels & Merdian, 2016). The apparent overlap between these two ITs among some CSEM users suggests the existence of an “addiction” to the process of collecting CSEM in a subgroup of offenders (rather than the instrumental function of the CSEM itself; Soldino et al., 2020), which would resemble the compulsive “search and acquire” behaviors of individuals who identify as having problematic Internet pornography use (Delmonico & Miller, 2003; Harper & Hodgins, 2016; Orzack & Ross, 2000).

### **The current study**

Given that at the time of the design of the present study (2015), there were no validated instruments available in Spanish for the assessment of online sexual addiction (Castro-Calvo et al.’s Spanish validation of the Sexual Addiction Screening Test was published in 2018), the first aim of this work was to explore the psychometric properties of a Spanish version of the Online Sexual Addiction Questionnaire (OSA-Q; a screening tool for the assessment of online sexual addiction; Putnam, 1997) in a forensic sample of adult males convicted of

sexual offenses in Spain. Our primary aims were to (1) explore the underlying factor structure of the OSA-Q, (2) analyze the scores obtained by our sample and detect differences between subgroups of individuals, and (3) identify associations between OSA-Q results and common personality disorders and clinical syndromes (conceptualized as related areas of impairment).

Based on previous research, and considering our available data, we expected to find: (1) higher OSA-Q scores among individuals convicted of online sexual offenses; (2) significant correlations between OSA-Q scores and compulsive, narcissistic, melancholic, schizoid, avoidant, and antisocial clinical personality patterns; and (3) significant correlations between OSA-Q scores and substance dependence, depression, bipolar, and anxiety clinical syndromes. Overall, we were concerned about the influence of social desirability response bias on self-report assessment instruments (especially considering the illegality of CSEM and the stigma that many still apply to OSA; Duffy et al., 2016; Grubbs et al., 2015; Rasmussen et al., 2018), and we based our hypothesis on the idea that those respondents presenting themselves in a positive light would be less likely to report anything that could imply that they were approving of OSA.

To our knowledge, this is the first study conducted in Spain that explores problematic OSA in a forensic sample. Examining the features of online sexual addiction in individuals convicted of sexual offenses may assist forensic practitioners in the assessment and treatment of sexual offending behavior, since the correct identification of offending individuals with an online sexual addiction would allow their referral to specialized treatment of such a compulsive sexual behavior (Darshan et al., 2014; de Almeida Neto et al., 2013; Gola et al., 2017; Kraus et al., 2016).

## **Method**

### ***Sample***

The study sample included 100 adult males (age 18 or older) convicted of (at least) one sexual offense (i.e., an offense against sexual freedom or indemnity according to the Spanish Criminal Code). Their age ranged between 19 and 77 years ( $M = 43.75$ ;  $SD = 13.07$ ). 86% of the participants were Spanish nationals, 11% were nationals of Latin American countries, and 3% were of other nationalities.

With regard to criminological data, 60% were convicted of a contact sexual offense against a child victim (i.e., under 16 years of age, according to the threshold age for engaging in sexual activity), 20% were convicted of online-exclusive sexual offenses (i.e., non-contact sexual offenses against child victims involving information and communication technologies), 12% were dual sex offenders (i.e., online sexual offenders who also engage in contact sexual offending against child victims), and 8% were convicted of a contact sexual offense against an adult victim (i.e., over 16 years of age, according to the threshold age for sexual consent). 34% had prior criminal records (for prior convictions for any offense, including sexual offenses), whereas 6% had prior convictions of sexual offenses specifically. 67% were serving a prison sentence and 33% were serving alternative penalties/asures to prison in the community at the time of the assessment.

### ***Measures***

#### *Online Sexual Addiction Questionnaire (OSA-Q; Putnam, 1997)*

A Spanish version of this heuristic self-report instrument (24 items coded as yes/no; see back translation in Table 2) was used for the screening of symptoms of online sexual addiction in our sample. Considering the special characteristics of our sample, it was explicitly clarified

during the assessment that items were referring to the use (before the arrest) of any type of online pornography or the engagement in any kind of online sexual interaction (i.e., including legal sexual materials but also CSEM, or online sexual contacts with minors). According to Putnam (2000), the effects of online sexual behavior assessed by the OSA-Q include social withdrawal, life interference, tolerance/withdrawal, obsessive compulsive behavior, emotional distress, and impairment. These categories were developed to reflect areas theoretically associated with the concept of addiction and are similar to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000) criteria for Substance Dependence, Impulse Control Disorders, and Obsessive-Compulsive Disorder (Putnam, 2000). The items on the OSA-Q are dichotomous with an endorsement of an item resulting in an increase by 1 point in total score. Based on the information provided on the website where the OSA-Q was originally accessible (<http://onlinensexaddict.org/osaq.htm>), total scores of five or higher would be associated to a high likelihood of online sexual addiction. However, much like many other instruments available for the assessment of problematic online sexual behavior, there is a general absence of established empirically based clinical cut-off points and, thus, its reliability and validity has yet to be established (George et al., 2018; Miner et al., 2017; Purcell, 2012; Wéry & Billieux, 2017). As suggested by Putnam (2000), the use of the OSA-Q is recommended if accompanied by other valid and reliable tools for the assessment of related areas of impairment.

[insert Table 2 here]

*Millon Clinical Multiaxial Inventory-III (MCMI-III; Millon et al., 1997)*

The Spanish adaptation of the MCMI-III (Cardenal & Sánchez, 2007) was used to further assess the sample, as this was the most current version of the original MCMI available in

Spain at the time of data collection (i.e., June 2015 – September 2017; MCMI-IV was released in Spain by Pearson in July 2018; Millon et al., 2018). It is a self-report inventory composed of 175 true-false items. It assesses 24 clinical scales divided into four categories (11 personality disorders, 3 severe personality disorders, 7 clinical syndromes, 3 severe syndromes) and has 5 correction scales. The scales in the Personality cluster reflect personality disorders found in Axis II in the DSM-IV-TR (American Psychiatric Association, 2000), while Syndrome cluster depicts disorders found in Axis I. Participants' response style is examined through the three modifying indices of the MCMI-III (i.e., Disclosure, Desirability and Debasement validity scales). This instrument has been widely used in forensic settings, to provide diagnostic and psychometric evidence of pathological disturbances (Loinaz et al., 2012; Suen, 2013), and has been proven useful in the detection of general psychopathological symptoms among adult men convicted of contact sexual offenses (Soldino et al., 2019b). It uses Base-Rate (BR) scores – BR are transformed scores reflecting the prevalence rates of particular characteristics within the standardization sample, ranging from 0 to 115. A BR score of 60 corresponds to the median raw score; a BR score > 75 indicates the presence of a trait; a BR score > 85 indicates the presence of a disorder (McCann & Dyer, 1996). The original version of the MCMI-III (Millon et al., 1997) exhibited alpha coefficients ranging from .66 to .90, and test-retest reliabilities ranging from .82 to .96. The Spanish adaptation has similar properties, with internal consistency ranging from .65 to .88, with a test-retest median of .91 (Cardenal & Sánchez, 2007).

### ***Procedure***

Institutional research approval and permission to access case file information were obtained from the General Secretariat of Penitentiary Institutions (Spanish Ministry of Internal Affairs). First, researchers were provided with a list of individuals convicted of a sexual

offense who were incarcerated at the Valencia prison (Spain) or were on probation or supervised release. These individuals were individually informed about the aim of the research and that their participation was voluntary, would not be rewarded, would not affect in any sense the conditions of their sentences, and was confidential. Those individuals who wanted to participate in the research signed an informed consent form at the time of their assessment, permitting the use of their anonymous data for research. First, their court sentences were reviewed and coded, along with demographic information. Afterwards, participants responded individually (following instructions from the researchers) to the OSA-Q and MCMI-III.

### ***Data analysis***

First, descriptive analyses of the total sample ( $N = 100$ ) were conducted in relation to their scores on the OSA-Q and MCMI-III. Second, participants' social desirability response bias was examined through the Desirability validity scale of the MCMI-III (i.e., Desirability BR scores above 85 as an indicator of the presence of significant social desirability response bias) and Spearman rank correlations were conducted to evaluate the relationship between the scores on this subscale and the total score on the OSA-Q. According to Cohen (1988), correlations of .10, .30, and .50 were considered small, moderate, and large effect sizes, respectively. Third, to compare participants' characteristics in both groups (with and without social desirability response bias), we used Odds Ratios (*OR*) and 95% confidence intervals (95% CI) to examine any significant differences in categorical variables. Due to violations of normality, we performed Mann-Whitney *U* tests for continuous variables ( $r$  was the effect size statistic for this test; Field, 2013). All subsequent analyses were then performed only for the subsample of individuals without social desirability response bias ( $n = 66$ ).

In order to establish the factorial structure of the OSA-Q, we performed an exploratory factor analysis (EFA) on the basis of the tetrachoric correlation matrix (as

recommended when modeling dichotomous data; Castro-Calvo et al., 2018a; Lorenzo-Seva & Ferrando, 2012). We used parallel analysis to determine the number of factors to extract (Timmerman & Lorenzo-Seva, 2011). Maximum Likelihood (ML) was used as our factor loading estimation method (as all other estimation methods were likely to be non-reliable in our sample; Grice, 2001); applying an oblique rotation (direct oblimin). Subsequently, internal consistency for each factor and for the whole questionnaire was evaluated with ordinal Cronbach's  $\alpha$  reliability coefficients.

Spearman rank correlations were then conducted to evaluate the relationship between the scores on the OSA-Q and sociodemographic and criminological variables, and between OSA-Q and MCMI-III scores. Due to violations of normality, multiple pairwise-comparisons between offender groups were conducted using the Kruskal-Wallis test by ranks.

## Results

The mean OSA-Q total score for the total sample was 3.71 ( $SD = 5.19$ , range 0-20). MCMI-III scales mean BR scores and standard deviations are shown in Table 3. The highest mean BR score was found on the Desirability validity subscale ( $BR > 75$ ). The modal code (i.e., resulting MCMI-III profile) had no clinically elevated scales, although the most prominent personality subscales were Narcissistic and Compulsive ( $BR > 60$ ).

[insert Table 3 here]

### ***Participant's social desirability (N = 100)***

Participants with significant social desirability response bias ( $BR$  score  $> 85$  on the MCMI-III Desirability subscale;  $n = 34$ ) showed lower total scores on the OSA-Q than those with non-significant scores on the Desirability subscale ( $U = 1534$ ,  $p < .01$ ,  $r = .31$ ; see Table 4).

Furthermore, a statistically significant negative correlation ( $r_s = -.38$ ,  $p < .001$ ; 95% CI [-.39,

-.38]; moderate effect size) was found between the participants' BR scores on the MCMI-III Desirability subscale and the OSA-Q total scores. Participants with significant social desirability response bias were older (48 vs 42 years;  $U = 769.5, p < .05, r = .26$ ); although, no other statistically significant differences in sociodemographic or criminological variables were found between groups (*OR* null value contained within the 95% CI). Multiple linear regression analyses indicated that, after controlling for the age of the participants, social desirability response bias had a significant effect on OSA-Q total scores ( $p < .01$ ) and accounted for 9% of the variance. Considering these results, the subsample of individuals with significant social desirability response bias ( $n = 34$ ) were not included in subsequent analyses.

[insert Table 4 here]

#### ***Exploratory factor analysis of the OSA-Q (n = 66)***

To verify the applicability of the EFA to our Spanish version of the OSA-Q, we calculated the Kaiser–Meyer–Olkin index and confirmed the sampling adequacy for the analysis (KMO = 0.83; Field, 2013). Additionally, Bartlett's test for sphericity [ $\chi^2(276) = 13,365.09, p < .001$ ] indicated the adequacy of the correlation structure for factor analysis. Through analysis of the anti-image correlation matrix, we also verified the adequacy of the 24 OSA-Q items for EFA (all anti-image correlations  $> .57$ ; Field, 2013). After parallel analysis of the tetrachoric correlation matrix, we estimated that the appropriate number of factors to be extracted was four (factor eigenvalues  $> 1.06$ ). The factorial solution derived from the ML estimation factor analysis revealed that this four-factor structure accounted for 77.06% of the total variance of the questionnaire.

We then examined the item loadings on each of the four factors identified (see Table 5) to infer the underlying concepts that make up the Spanish version of the OSA-Q. 9 items

had their primary loadings on Factor 1, which accounted for 27.18% of the variance in OSA-Q scores and had an eigenvalue of 13.57. Factor 1 was comprised of two clusters: (1) impaired control (items 1, 3, 4, 15, and 16); and (2) fulfillment of sexual needs (items 5, 17, 20, and 23). Items on Cluster 1 “impaired control” were linked to the process of abandonment of the behavior (Griffiths, 2001; Purcell, 2012). Individuals preoccupied with the extent of the engagement in OSA try to manage and control this behavior but face difficulties to stop it and engage in repeated failed attempts to quit OSA (Goodman, 1990; Twohig et al., 2009). Item 24 (i.e., *Have you ever worried that your online sexual behavior is out of control?*) had a cross-loading of .49 on Factor 1, however this item had a stronger primary loading of .57 on Factor 3. Cluster 2 “fulfillment of sexual needs” was related to the use of the Internet for sexual purposes such as masturbation (Daneback et al., 2013). The Internet may be perceived as a safer environment than offline life to satisfy sexual desires for marginalized individuals (e.g., individuals with a paraphilic diagnose; Griffiths, 2012; Schwartz & Southern, 2000) and a compensatory means for an unsatisfactory sex life (Daspe et al., 2018). Repetitive engagement in OSA positively reinforces the behavior (e.g., the individual masturbates to orgasm while watching online sexually explicit material; Seto et al., 2001) and is associated with some specific negative effects such as the inability of getting sexually aroused or having an orgasm without sexually explicit material, performance anxiety during sex and difficulties in forming intimate relationships (Aviv et al., 2015; Fernandez & Griffiths, 2019; Kowalewska et al., 2019).

[insert Table 5 here]

With an eigenvalue of 1.94 and 26.88% of explained variance, the second factor “craving/tolerance” grouped 8 items with primary loadings (items 6, 7, 8, 13, 14, 18, 21, and 22). This factor was linked to a rapid habituation to repeated exposure to sexual images,

leading to an intense desire to search for more explicit/novel material to attain sexual arousal (Antons & Brand, 2018; Kraus et al., 2016; Park et al., 2016). Individuals with problematic pornography use have been described as likely to spend considerable amount of time online searching for or collecting different and novel sexually explicit material (Delmonico & Miller, 2003; Kraus et al., 2016; Orzack & Ross, 2000; Park et al., 2016), leading in some cases to obsessive “search and acquire” behaviors (Davis et al., 2002). Some individuals invest money in order to obtain “better” (e.g., new, hardcore, higher quality) material on restricted websites that require prior payment to gain access to content (Mitchell et al., 2011; Rojo-García, 2002), or paid real-time cybersex, along with an increase in the frequency and time spent in OSA. This may be associated with concerns about possible means of concealing the behavior (Fernandez & Griffiths, 2019). Items 16 (i.e., *Have you ever tried to stop your online sexual behavior and then felt a strong desire to return to it?*) and 19 (i.e., *Do you feel embarrassed or guilty after viewing online pornography or engaging in online sexual encounters?*) cross-loaded on Factor 2, however these items had stronger primary loadings on Factor 1 and 2 respectively.

Factor 3 “intrapyschic-interpersonal conflict” had an eigenvalue of 1.84 and an explained variance of 12.66%. 3 items (items 12, 19, and 24) had their primary loadings on Factor 3. Problems in interpersonal relationships (e.g., arguments with significant others) may arise as a consequence of repetitive engagement in OSA (Griffiths, 2005; Schneider, 2003; Young, 2008). Additionally, subjective awareness that the individual’s involvement in OSA has reached the point of lack of control and addiction is often accompanied by dysphoria (e.g., embarrassment, guilt; de Almeida Neto et al., 2013; Grubbs et al., 2015; Ross et al., 2012). Item 4 (i.e., *Have you ever been upset with yourself for wasting too much time searching for sex or sexual material on the internet?*) had a cross-loading of .40 on Factor 3, however this item had a stronger primary loading of .50 on Cluster 1 of Factor 1, identified as

“impaired control”. Items 14 (i.e., *Do you regularly check for new videos on the pornographic web pages you usually visit?*) and 17 (i.e., *Have you fantasized that you were having sex with a real partner while viewing online pornography or while engaging in online sexual contacts?*) had negative cross-loadings on Factor 3.

Factor 4 “salience” referred to increased risk-taking among individuals who display high frequency/amount of time spent on OSA. In these cases, OSA becomes the prime priority of a person’s life, dominating thinking processes, while disregarding the harm such behavior may cause (e.g., isolation, occupational conflict; Fernandez & Griffiths, 2019; Purcell, 2012). With an eigenvalue of 1.32 and 10.34% of explained variance, the fourth factor was composed of three items with primary loadings (items 2, 9, and 11). Item 17 (i.e., *Have you fantasized that you were having sex with a real partner while viewing online pornography or while engaging in online sexual contacts?*) had a cross-loading of .48 on Factor 4, however this item had a stronger primary loading on Cluster 2 of Factor 1 “fulfillment of sexual needs” and would better fit that interpretation.

The mean OSA-Q total score was 4.79 ( $SD = 5.79$ , range 0-20). Mean scores of this subsample on the OSA-Q items and factors are reported in Table 6. Composite scores were created for each of the four factors, based on the mean of the items which had their primary loadings on each factor. Internal consistency for the total score of the OSA-Q was strong ( $\alpha = .97$ ; 95% CI [.95, .98]). Moreover, Cronbach’s  $\alpha$  remained stable after item dropping ( $\alpha$  equaled .96 when any of the 24 items was dropped from the analysis); indicating that the scores for each item were highly correlated with the overall score on the OSA-Q. Internal consistency was also supported by each factor separately ( $\alpha_{\text{Factor1}} = .97$ ;  $\alpha_{\text{Factor2}} = .95$ ;  $\alpha_{\text{Factor3}} = .95$ ;  $\alpha_{\text{Factor4}} = .81$ ).

[insert Table 6 here]

### ***Online sexual addiction in our sample (n = 66)***

No statistically significant correlations ( $r_s = -.13, p = .30$ ; 95% CI [-.36, .11]) were found between the age of the participants and OSA-Q total scores. Neither were statistically significant differences detected according to the nationality, criminal history, or location (prison or community) of the respondents.

All individuals convicted of contact sexual offenses against adult victims ( $n = 4$ ) showed OSA-Q total scores of 0; whereas the subgroup of men with contact sexual offenses against children showed average scores of 2.72 ( $SD = 4.44$ ). In regard to those individuals who engaged in online sexual offenses, online-exclusive offenders showed lower mean OSA-Q total ( $M = 6, SD = 5.49$ ) than dual offenders ( $M = 9.73, SD = 6.47$ ). Statistically significant differences were found between the OSA-Q total scores of the four groups ( $\chi^2(3) = 22,388, p < .001, \eta^2 = .34$ ); although pairwise post-hoc comparisons showed non-statistically significant differences between both contact-exclusive groups (child victim vs. adult victim;  $p = .09$ ), as well as between dual and online-exclusive offenders ( $p = .12$ ). After combining the four groups into two separate groups, a Mann-Whitney test indicated that OSA-Q total scores were higher for online offenders (i.e., dual and online-exclusive offenders;  $n = 26; Mdn = 7.58, SD = 6.09$ ) than for contact-exclusive offenders (i.e., individuals convicted of contact sexual offenses against child or adult victims;  $n = 40; Mdn = 2.45, SD = 4.28; U = 833, p < .01, r = .53$ ), with a large effect size associated. Specifically, online offenders showed significantly higher scores on OSA-Q factors 1 ( $U = 853.5, p < .01, r = .56$ ; these differences were also significant when analyzing separately both factor 1 clusters “impaired control” and “fulfillment of sexual needs”) and 2 “craving/tolerance” ( $U = 720.5, p < .01, r = .37$ ).

Table 7 reports Spearman’s correlations between the participant’s OSA-Q total scores and MCMI-III subscales. Correlation analyses revealed statistically significant positive relationships between OSA-Q total scores and (a) Alcohol dependence ( $r_s = .31, p < .05$ ); (b)

Antisocial ( $r_s = .27, p < .05$ ); and (c) Sadistic ( $r_s = .25, p < .05$ ) subscales. Additionally, correlations between OSA-Q total scores and (a) Drug Dependence ( $r_s = .23, p = .06$ ); (b) Borderline ( $r_s = .23, p = .06$ ); (c) Compulsive ( $r_s = -.22, p = .08$ ); and (d) Negativistic subscales ( $r_s = .22, p = .08$ ) approached marginal levels of significance, albeit with small effect sizes.

[insert Table 7 here]

Correlations between OSA-Q factor scores and the MCM-III were also explored (see Table 7). No statistically significant correlations were found between Factor 1 (i.e., *impaired control and fulfillment of sexual needs*) and personality or syndrome scales. Factor 2 scores (i.e., *craving/tolerance*) were correlated positively with Borderline ( $r_s = .27, p < .05$ ) and Antisocial personality subscales ( $r_s = .25, p < .05$ ), and negatively with the Compulsive personality subscale ( $r_s = -.25, p < .05$ ). Regarding syndrome subscales, Factor 2 was positively correlated with Alcohol dependence ( $r_s = .25, p < .05$ ). Statistically significant positive correlations were also found between Factor 3 (i.e., *intrapsychic-interpersonal conflict*) and Negativistic ( $r_s = .26, p < .05$ ) and Borderline personality subscales ( $r_s = .25, p < .05$ ); and Bipolar syndrome subscale ( $r_s = .30, p < .05$ ). Finally, Factor 4 “salience” showed the greatest number of statistically significant correlations with MCM-III subscales. Concerning personality subscales, significant correlations (moderate effect size) were found with Sadistic ( $r_s = .46, p < .001$ ); Antisocial ( $r_s = .42, p < .001$ ); Borderline ( $r_s = .37, p < .001$ ); Negativistic ( $r_s = .36, p < .001$ ); and Compulsive ( $r_s = -.31, p < .05$ ). Small effect size correlations were also detected with Depressive ( $r_s = .29, p < .05$ ) and Masochistic personality subscales ( $r_s = .26, p < .05$ ). Furthermore, moderate effect size positive significant correlations were detected with Drug dependence ( $r_s = .46, p < .001$ ), Alcohol dependence ( $r_s = .44, p < .001$ ), and Thought disorder syndrome subscales ( $r_s = .38, p < .001$ ).

## Discussion

The goal of the current study was to explore the psychometric properties of a Spanish version of the OSA-Q and its correlations with personality disorders and clinical syndromes, as well as with types of sexual offending, using a sample of 100 adult males convicted of sexual offenses. Overall, the mean OSA-Q total score for the total sample ( $M = 3.71$ ,  $SD = 5.19$ ) was below five points (total score theoretically associated to a high likelihood of online sexual addiction), and no clinically elevated scales were found on the MCMI-III profile. However, the high mean BR scores observed on the Desirability validity subscale ( $M = 75.36$ ,  $SD = 19.02$ ), although expected (assessments conducted in forensic settings are generally at risk of simulation, dissimulation or deception; Echeburúa, et al., 2011), were a matter of concern, since OSA-Q scores (most likely as any other measure of OSA; Duffy et al., 2016; Grubbs et al., 2015; Rasmussen et al., 2018) were negatively affected by social desirability response bias (accounting for 9% of the variance).

Once the sample was restricted to those individuals with BR scores  $\leq 85$  on the MCMI-III Desirability subscale ( $n = 66$ ), an EFA was performed on our Spanish version of the OSA-Q (24 items), resulting in a four-factor structure which accounted for 77.06% of the total variance of the questionnaire. This structural factor captured the main components of online sexual addiction, as originally theorized by Putnam (i.e., social withdrawal, life interference, tolerance/withdrawal, obsessive compulsive behavior, emotional distress, and impairment; 2000). Internal consistency for the total score of the OSA-Q and for each factor separately was strong ( $\alpha_{\text{Total}} = .97$ ;  $\alpha_{\text{Factor1}} = .97$ ;  $\alpha_{\text{Factor2}} = .95$ ;  $\alpha_{\text{Factor3}} = .95$ ;  $\alpha_{\text{Factor4}} = .81$ ), and the mean OSA-Q total score for this subsample approached the theoretical threshold of five points ( $M = 4.79$ ,  $SD = 5.79$ ). As hypothesized, individuals convicted of online sexual offenses (i.e., dual and online-exclusive offenders) showed significantly higher scores on the OSA-Q than contact-exclusive offenders (i.e., individuals convicted of contact sexual

offenses against child or adult victims), and both online-exclusive ( $M = 6$ ,  $SD = 5.49$ ) and dual offenders ( $M = 9.73$ ,  $SD = 6.47$ ) showed mean OSA-Q total scores overcoming the theoretical threshold for online sexual addiction. Additionally, OSA-Q total scores were positively correlated (moderate effect size) with MCMI-III Alcohol dependence scores. This link may support the notion that some individuals are more prone to addictive behaviors in general (Starcevic & Khazaal, 2017), and aligns with prior findings of an existing association between alcohol use disorder and other behavioral addictions (Di Nicola et al., 2015). Furthermore, statistically significant small effect size positive correlations were detected with Antisocial and Sadistic personality subscales, considered as the “typical” criminal personality traits and also associated with substance use disorders (Castillo Fernández et al., 2016).

Among the four factors, Factor 1 had the greater explanatory capacity over the entire questionnaire (27.18% of its variance), although no statistically significant correlations were found with MCMI-III subscales. This factor was comprised of two clusters labeled “impaired control” (Cluster 1.1) and “fulfillment of sexual needs” (Cluster 1.2). Cluster 1.1 related items assess the capacity of the individual to manage or control their OSA and it is consistent with diagnostic criteria of compulsive sexual behavior disorder (Kraus et al., 2018) and the “loss of control” factor of the Spanish version of the Sexual Addiction Screening Test (Castro-Calvo et al., 2018). Furthermore, it aligns with the “Self as Uncontrollable” IT identified among some CSEM users (Soldino et al., 2020). Items included in Cluster 1.2 were related to the use of OSA for masturbatory purposes, as a compensatory means of satisfying sexual needs in absence of offline sexual relationships, which would, in turn, reinforce OSA. In this sense, prior research found some CSEM users describe personal circumstances, such as deficits in intimate partner relationships, as preceding their offending behavior (Soldino et al., 2020). Individuals convicted of online sexual offenses showed significantly higher scores

on this factor (and on both clusters separately) than individuals convicted of contact-exclusive sexual offenses.

The second most important factor was “craving/tolerance” (26.88% of the explained variance). Although inspired by the terminology used for substance use disorders, these have been identified as common symptoms among individuals with sexual addiction (Allen et al., 2017; Rosenberg et al., 2014). Again, individuals convicted of online sexual offenses showed significantly higher scores on this factor than individuals convicted of contact-exclusive sexual offenses. In this regard, it is common to find individuals who end up viewing CSEM after reaching habituation to repeated exposure to (although extreme) legal pornography, in order to attain sexual arousal (Seigfried-Spellar & Rogers, 2013). Moreover, habituation may also occur with repeated exposure to CSEM, leading to the search for a “better product” (e.g., depiction of more extreme sexual behaviors or depiction of younger children; Taylor & Quayle, 2003). Small effect size statistically significant positive correlations were found between the “craving/tolerance” factor scores and MCMI-III Alcohol dependence, Borderline and Antisocial subscales, all of them linked to impulsivity traits and unadaptive coping strategies (Krueger et al., 1993; Millon et al., 1997). Furthermore, Factor 2 was negatively correlated with the Compulsive personality subscale, which could be related to the characteristic disciplined self-control of those people with elevations on this scale, as described by Millon et al. (1997).

Factor 3 “intrapsychic-interpersonal conflict” was associated with psychological distress and/or functional impairment (key criterion for the diagnosis of behavioral addictions; Kardefelt-Winther et al., 2017) resulting from repetitive engagement in OSA. Furthermore, this factor was positively correlated with MCMI-III Negativistic, Borderline and Bipolar subscales, in line with the feelings of dysphoria detected among individuals with problematic OSA (de Almeida Neto et al., 2013; Grubbs et al., 2015; Ross et al., 2012). In

our sample, the use of CSEM could enhance the moral incongruence of this behavior (a feeling that has been observed among legal pornography users; Grubbs et al., 2019) among some individuals, which might lead to individual feelings of addiction and consequent psychological distress over time (Grubbs et al., 2015). However, no statistically significant differences were found in the total scores for this factor between individuals convicted of online sexual offenses against children and contact-exclusive sexual offenders.

Finally, factor 4 “salience” was related to the interference of OSA in the lives of those individuals who have made this behavior their prime priority, although it had the smallest explanatory capacity (10.34% of explained variance). As found by Soldino et al. (2020), some CSEM users acknowledge they knew at the time of offending the impact of their actions and despite this, they put themselves at risk of being arrested (in some cases believing that being caught by the police was the only thing that would stop them from viewing CSEM). This factor showed statistically significant positive correlations with multiple MCMI-III personality (Sadistic, Antisocial, Borderline, Negativistic, Compulsive, Depressive and Masochistic) and syndrome subscales (Drug dependence, Alcohol dependence, and Thought disorder), which could indicate that those individuals with higher scores in this factor would find themselves in a situation of severe psychological distress and functional impairment.

### ***Limitations and future directions***

Our study offers preliminary empirical evidence of the potential utility of the OSA-Q in Spanish forensic settings, but is limited in its scope and generalizability due to a number of limitations. First, the small number of cases included in our study represents a major potential limitation in order to reach sound conclusions regarding the validity of the Spanish version of the OSA-Q. Nevertheless, with regard to the small size requirements for EFA models, the characteristics of our data (no missing data, magnitudes of the loadings, low amount of

factors, and high amount of variables) allowed us to explore the factor structure and estimate the loadings of the OSA-Q without bias (de Winter et al., 2009; Kyruazos, 2018; McNeish, 2017). It would be of interest to verify the four-factor structure of the OSA-Q yielded by our EFA through the use of confirmatory factor analysis with a larger sample, as well as evaluate its temporal consistency.

Second, at the time of data collection (2015-2017), there were no validated instruments available in Spanish for the assessment of online sexual addiction, and the Spanish adaptation of the MCMI-III (Cardenal & Sánchez, 2007) was the most current version of the original MCMI available in Spain. At present, it would be possible to replicate our study using new validated instruments, such as the Spanish adaptations of the MCMI-IV (Millon et al., 2018) or the Sexual Addiction Screening Test (Castro-Calvo et al., 2018).

Third, regarding the nature of the sample used for the validation of the OSA-Q, since the study did not consider the participation of individuals with a prior clinical diagnose of online sexual addiction, it is not possible to determine with true certainty the diagnostic validity of the OSA-Q, nor to establish valid cut-off points for online sexual addiction. In addition, no control groups were included (such as men convicted of non-sexual offenses or non-offending samples) which prevents us from analyzing whether online sexual addiction is significantly prevalent in samples of sex offenders.

Following previous studies exploring the association between OSA and risk for sexual offending, we encourage the development of longitudinal research designs that analyze the progression of pornography use in people diagnosed with online sexual addiction, with the objective of identifying risk factors for online sexual offending. Likewise, it would be especially relevant to explore whether online sexual addiction contributes to the prediction of recidivism among individuals convicted of online sexual offenses, since this would allow to improve existing risk assessment tools for these individuals.

## ***Conclusion***

Although preliminary, this is the first study to explore the psychometric properties of the OSA-Q, as well as the first to explore online sexual addiction in a Spanish forensic sample, which, overall, is an important step forward in expanding the limited research conducted on this topic in non-English speaking countries. According to our findings, the components of online sexual addiction assessed by the OSA-Q include impaired control, fulfillment of sexual needs, craving, tolerance, intrapsychic and interpersonal conflict, and salience. Moreover, these areas of impairment show statistically significant correlations with other psychological disorders, as measured by a well-established psychometric instrument such as the MCMI-III. However, it is necessary to be especially cautious in the use of the OSA-Q, due to the influence of social desirability on the scores obtained. Considering all this, the OSA-Q shows promise as a valid screen for online sexual addiction in forensic samples, but only if accompanied by other valid and reliable tools for the detection of social desirability response bias.

Taking into account the results of our study, forensic practitioners should consider the possibility that some of the individuals who commit sexual crimes (especially those engaging in online sexual offending against children), could present with an online sexual addiction. This might have various implications for the criminal justice system. By way of an example, taking into account the effect on a person's willpower of the incapacity to control or voluntarily stop one's OSA, it could be argued that individuals with an online sexual addiction could present with modifying circumstances of criminal responsibility in cases of online sexual offending (in Spain, this could be considered by means of the analogical mitigating circumstance regulated in art. 21.7 of the Spanish Criminal Code; as has been previously argued for cases of pathological gambling; Correcher Mira, 2019). Furthermore, the correct detection of online sexual addiction among people convicted of sexual crimes

could improve risk management plans. For instance, after a preliminary screening of online sexual addiction, individuals with high scores on the OSA-Q could be referred to specialized clinical treatment of compulsive sexual behavior disorder (when effective treatment protocols are available, Grubbs et al., 2020). Likewise, established sex offender treatment programs (especially those tailored for individuals convicted of online sexual offenses) could benefit from the inclusion of therapeutic ingredients proven successful in the treatment of other behavioral addictions.

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Table 1. Prior studies analyzing sexual addiction among sexual offending samples

Study	Measure	Sample	Main results
Efrati et al. (2019b)	Self-report measure of compulsive sexual behavior disorder (including compulsive online sexual behavior)	103 adult males incarcerated for sexual offenses	6% met the clinical criterion for compulsive sexual behavior disorder.
Kingston & Bradford (2013)	Behavioral indicator of hypersexuality (i.e., total sexual outlet of seven or more orgasms per week)	568 adult males charged/convicted of contact sexual offenses	12% met the clinical criterion for hypersexuality. Higher total sexual outlet among those with adult victims than those who offended against related children (i.e., incest offenders). Significant association between hypersexuality and long-term sexual and violent recidivism.
Krueger et al. (2009)	Diagnosis of hypersexual disorder (including both online and offline compulsive sexual behavior)	60 adult males arrested for online sexual offenses against children	33% had a diagnosis of hypersexual disorder. No significant correlation between hypersexual and paraphilic disorders.
Marshall et al. (2008)	Self-report measures of sexual addiction (including online sexual behavior)	114 adult males incarcerated for contact sexual offenses	44% reached the addiction criterion. No significant differences between those with adult and child victims.
Marshall & Marshall (2006)	Self-report measures of sexual addiction (including online sexual behavior)	40 adult males incarcerated for contact sexual offenses	35% reached the addiction criterion. No significant differences between ages and problems with drugs and alcohol. Sexual offender sexual addicts more likely to report having experienced childhood or adolescent sexual abuse and a preoccupation with sexual thoughts.

Table 2. Spanish adaptation of the OSA-Q (Putnam, 1997)

# item	Back translation
1	Do you spend more time than you should with sexual material?
2	Have you ever been caught looking at sexual material on your computer?
3	Have you ever resolved to stop your internet sexual behavior and have not been able to do it?
4	Have you ever been upset with yourself for wasting too much time searching for sex or sexual material on the internet?
5	Have you ever masturbated at the computer while looking at pornography or engaging in sexual behavior with others online?
6	Do you need sexual images or videos that are increasingly more graphic, in order to attain the same level of sexual excitement?
7	Have you lost interest in previously arousing pornography or in previous online sexual partners and need to find new sexual material or contacts to attain the same level of sexual excitement as in the past?
8	Have you spent money for sexual material or sexual interaction at pay websites?
9	Have you viewed online pornography or engaged in online sexual interactions during working hours?
10	Have you been told that you spend too much time on the computer or on the internet?
11	Have you ever spent time viewing online sexual material or engaging in online sexual interactions during time that you should have spent with your family, friends, or a romantic partner?
12	Has your internet sexual behavior caused you problems with friends, family, or a romantic partner?
13	When you are not online, do you think about getting back online to visit sexual websites or make sexual contacts?
14	Do you regularly check for new videos on the pornographic web pages you usually visit?
15	Have you ever tried to stop your online sexual behavior by doing things like deleting your sex site bookmarks?
16	Have you ever tried to stop your online sexual behavior and then felt a strong desire to return to it?
17	Have you fantasized that you were having sex with a real partner while viewing online pornography or while engaging in online sexual contacts?
18	Have you accumulated debt from fees paid to gain access to internet sexual material?
19	Do you feel embarrassed or guilty after viewing online pornography or engaging in online sexual encounters?
20	Have you ever feared that you would be caught in the act of masturbating in front of the computer?
21	Have you ever come up with ways to avoid being caught looking at pornography or engaging in an online sexual encounter?
22	Is it easier for you to reach climax masturbating to pornography or engaging in online sexual encounters as compared to when having physical sex with a partner?
23	Do you masturbate to sexual material on the internet because it is easier than finding or maintaining offline sexual relationships?
24	Have you ever worried that your online sexual behavior is out of control?

Table 3. MCMI-III base rate scores for the total sample ( $n = 100$ )

<b>MCMI-III scales</b>	<b><i>M</i></b>	<b><i>SD</i></b>
<i>Validity</i>		
X Disclosure	98.97 <sup>a</sup>	31.60
Y Desirability	75.36	19.02
Z Debasement	48.13	23.33
<i>Personality</i>		
1 Schizoid	46.49	21.43
2A Avoidant	41.10	25.54
2B Depressive	38.90	26.23
3 Dependent	46.24	20.85
4 Histrionic	45.12	18.27
5 Narcissistic	64.44	17.19
6A Antisocial	43.42	22.80
6B Sadistic	37.60	23.66
7 Compulsive	63.49	21.93
8A Negativistic	41.14	22.73
8B Masochistic	38.06	24.52
S Schizotypal	36.86	26.24
C Borderline	37.47	24.50
P Paranoid	49.17	26.37
<i>Syndrome scales</i>		
A Anxiety	48.04	34.54
H Somatoform	37.38	26.04
N Bipolar (manic)	51.08	22.77
D Dysthymia	36.49	28.74
B Alcohol dependence	44.51	24.29
T Drug dependence	43.24	29.02
R Post-traumatic stress	34.83	28.33
SS Thought disorder	35.90	31.17
CC Major depression	37.68	30.48
PP Delusional disorder	49.87	30.61

Note. <sup>a</sup> Raw scores.

Table 4. Analysis of sample characteristics distinguishing participants with and without significant social desirability response bias

Variable	Total sample ( <i>N</i> = 100)	Desirability BR > 85 ( <i>n</i> = 34)	Desirability BR ≤ 85 ( <i>n</i> = 66)	Comparison statistic
Total OSA-Q score: <i>M</i> ( <i>SD</i> ) [range]	3.71 (5.19) [0–20]	1.62 (2.83) [0–13]	4.79 (5.79) [0–20]	<b><i>U</i> = 1534, <i>p</i> &lt; .01, <i>r</i> = .31</b>
Age: <i>M</i> ( <i>SD</i> ) [range]	43.75 (13.07) [19–77]	47.76 (11.83) [24–74]	41.68 (13.27) [19–77]	<b><i>U</i> = 769.5, <i>p</i> &lt; .05, <i>r</i> = .26</b>
Nationality: <i>n</i> (%)				$\chi^2$ (2, <i>N</i> = 100) = 2.33, <i>p</i> = .31, <i>V</i> = .153
Spanish	88	29 (85.29)	59 (89.39)	<i>OR</i> = .46, 95% CI [.12, 1.71]
Latin American	11	6 (17.65)	5 (7.58)	<i>OR</i> = 2.59, 95% CI [.60, 11.70]
Other	3	1 (2.94)	2 (3.03)	<i>OR</i> = .97, 95% CI [.02, 19.28]
Type of sexual offense: <i>n</i> (%)				$\chi^2$ (3, <i>N</i> = 100) = 6.12, <i>p</i> = .11, <i>V</i> = .247
Contact (child victim)	60	24 (70.59)	36 (54.55)	<i>OR</i> = 1.99, 95% CI [.77, 5.43]
Contact (adult victim)	8	4 (11.76)	4 (6.06)	<i>OR</i> = 2.05, 95% CI [.36, 11.82]
Online-exclusive	20	5 (14.71)	15 (22.73)	<i>OR</i> = .59, 95% CI [.15, 1.94]
Dual	12	1 (2.94)	11 (16.67)	<i>OR</i> = .15, 95% CI [0, 1.15]
Prior criminal records: <i>n</i> (%)	34	10 (29.41)	24 (36.36)	<i>OR</i> = .73, 95% CI [.27, 1.92]
Prior convictions of sexual offenses: <i>n</i> (%)	6	1 (2.94)	5 (7.58)	<i>OR</i> = .37, 95% CI [.01, 3.53]
Imprisoned: <i>n</i> (%)	67	23 (67.65)	44 (66.67)	<i>OR</i> = 1.05, 95% CI [.40, 2.82]

Note. Values in bold indicate statistically significant differences between groups (*p* < .05). *OR* = odds ratio; CI = confidence interval.

Table 5. OSA-Q factorial loadings (oblimin rotation;  $n = 66$ )

	Factor loading
Factor 1 (27%)	
Cluster 1.1.: <i>impaired control</i>	
<b>1. Do you spend more time than you should with sexual material?</b>	<b>.83</b>
<b>15. Have you ever tried to stop your online sexual behavior by doing things like deleting your sex site bookmarks?</b>	<b>.71</b>
<b>16. Have you ever tried to stop your online sexual behavior and then felt a strong desire to return to it?</b>	<b>.53</b>
<b>4. Have you ever been upset with yourself for wasting too much time searching for sex or sexual material on the internet?</b>	<b>.50</b>
<b>3. Have you ever resolved to stop your internet sexual behavior and have not been able to do it?</b>	<b>.50</b>
24. Have you ever worried that your online sexual behavior is out of control?	.49
Cluster 1.2.: <i>fulfillment of sexual needs</i>	
<b>5. Have you ever masturbated at the computer while looking at pornography or engaging in sexual behavior with others online?</b>	<b>.86</b>
<b>23. Do you masturbate to sexual material on the internet because it is easier than finding or maintaining offline sexual relationships?</b>	<b>.85</b>
<b>20. Have you ever feared that you would be caught in the act of masturbating in front of the computer?</b>	<b>.78</b>
<b>17. Have you fantasized that you were having sex with a real partner while viewing online pornography or while engaging in online sexual contacts?</b>	<b>.60</b>
Factor 2 (27%): <i>craving/tolerance</i>	
<b>13. When you are not online, do you think about getting back online to visit sexual websites or make sexual contacts?</b>	<b>.91</b>
<b>7. Have you lost interest in previously arousing pornography or in previous online sexual partners and need to find new sexual material or contacts to attain the same level of sexual excitement as in the past?</b>	<b>.85</b>
<b>18. Have you accumulated debt from fees paid to gain access to internet sexual material?</b>	<b>.82</b>
<b>6. Do you need sexual images or videos that are increasingly more graphic, in order to attain the same level of sexual excitement?</b>	<b>.80</b>

<b>22. Is it easier for you to reach climax masturbating to pornography or engaging in online sexual encounters as compared to when having physical sex with a partner?</b>	<b>.68</b>
<b>8. Have you spent money for sexual material or sexual interaction at pay websites?</b>	<b>.60</b>
<b>14. Do you regularly check for new videos on the pornographic web pages you usually visit?</b>	<b>.57</b>
19. Do you feel embarrassed or guilty after viewing online pornography or engaging in online sexual encounters?	.45
<b>21. Have you ever come up with ways to avoid being caught looking at pornography or engaging in an online sexual encounter?</b>	<b>.42</b>
16. Have you ever tried to stop your online sexual behavior and then felt a strong desire to return to it?	.41
<hr/>	
Factor 3 (13%): <i>intrapsychic-interpersonal conflict</i>	
<b>12. Has your internet sexual behavior caused you problems with friends, family, or a romantic partner?</b>	<b>.77</b>
<b>24. Have you ever worried that your online sexual behavior is out of control?</b>	<b>.57</b>
<b>19. Do you feel embarrassed or guilty after viewing online pornography or engaging in online sexual encounters?</b>	<b>.57</b>
4. Have you ever been upset with yourself for wasting too much time searching for sex or sexual material on the internet?	.40
14. Do you regularly check for new videos on the pornographic web pages you usually visit?	-.41
17. Have you fantasized that you were having sex with a real partner while viewing online pornography or while engaging in online sexual contacts?	-.46
<hr/>	
Factor 4 (10%): <i>salience</i>	
<b>2. Have you ever been caught looking at sexual material on your computer?</b>	<b>.81</b>
<b>9. Have you viewed online pornography or engaged in online sexual interactions during working hours?</b>	<b>.46</b>
17. Have you fantasized that you were having sex with a real partner while viewing online pornography or while engaging in online sexual contacts?	.48
<b>11. Have you ever spent time viewing online sexual material or engaging in online sexual interactions during time that you should have spent with your family, friends, or a romantic partner?</b>	<b>.41</b>

*Note.* Items with primary factor loadings of .40 or above were considered for interpretation purposes and were bolded. Items which failed to meet minimum criteria of having a primary factor loading of .40 or above (i.e., item

Table 6. OSA-Q total, factor and item scores for the subsample of participants without social desirability response bias ( $n = 66$ )

	Range	$M$ ( $SD$ )
Total OSA-Q score	0–24	4.79 (5.79)
Factor 1	0–9	2.45 (3.02)
Cluster 1.1: <i>impaired control</i>	0–5	1.09 (1.79)
Item 1	0–1	0.15 (0.36)
Item 3	0–1	0.23 (0.42)
Item 4	0–1	0.27 (0.45)
Item 15	0–1	0.24 (0.43)
Item 16	0–1	0.20 (0.40)
Cluster 1.2: <i>fulfillment of sexual needs</i>	0–4	1.36 (1.48)
Item 5	0–1	0.53 (0.50)
Item 17	0–1	0.27 (0.45)
Item 20	0–1	0.80 (0.49)
Item 23	0–1	0.18 (0.39)
Factor 2: <i>craving/tolerance</i>	0–8	1.02 (1.85)
Item 6	0–1	0.11 (0.31)
Item 7	0–1	0.14 (0.35)
Item 8	0–1	0.14 (0.35)
Item 13	0–1	0.09 (0.29)
Item 14	0–1	0.18 (0.39)
Item 18	0–1	0.03 (0.17)
Item 21	0–1	0.24 (0.43)
Item 22	0–1	0.09 (0.29)
Factor 3: <i>intrapsychic-interpersonal conflict</i>	0–3	0.55 (0.96)
Item 12	0–1	0.11 (0.31)
Item 19	0–1	0.27 (0.45)
Item 24	0–1	0.17 (0.38)
Factor 4: <i>salience</i>	0–3	0.45 (0.77)
Item 2	0–1	0.21 (0.41)
Item 9	0–1	0.05 (0.21)
Item 11	0–1	0.20 (0.40)

Note.  $M$  = mean;  $SD$  = standard deviation.

Table 7. Spearman's correlations between OSA-Q scores (four factors) and MCMI-III personality and syndrome scales ( $n = 66$ )

MCMI-III scales	OSA-Q total	Factor 1	Factor 2	Factor 3	Factor 4
<i>Personality</i>					
1 Schizoid	.06	.13	-.02	-.09	-.02
2A Avoidant	-.05	.03	-.13	.06	.05
2B Depressive	.18	.18	.10	.19	.29*
3 Dependent	-.05	-.03	.06	.09	.08
4 Histrionic	-.12	-.15	-.05	-.06	-.11
5 Narcissistic	-.14	-.18	-.08	-.06	-.17
6A Antisocial	.27*	.18	.25*	.13	.42***
6B Sadistic	.25*	.20	.19	.15	.46***
7 Compulsive	-.22 <sup>†</sup>	.20	-.25*	-.01	-.31*
8A Negativistic	.22 <sup>†</sup>	.14	.13	.26*	.36***
8B Masochistic	.14	.09	.10	.10	.26*
S Schizotypal	.07	.08	.03	.12	.23 <sup>†</sup>
C Borderline	.23	.18	.27*	.25*	.37***
P Paranoid	-.02	-.06	-.07	.19	.15
<i>Syndrome</i>					
A Anxiety	-.01	-.04	.05	.08	.14
H Somatoform	-.12	-.15	-.06	.00	.12
N Bipolar (manic)	.05	-.05	.05	.30*	.24 <sup>†</sup>
D Dysthymia	.10	.11	.10	.16	.19
B Alcohol dependence	.31*	.24 <sup>†</sup>	.25*	.21 <sup>†</sup>	.44***
T Drug dependence	.23 <sup>†</sup>	.17	.20	.10	.46***
R Post-traumatic stress	.07	.04	.13	.15	.21
SS Thought disorder	.18	.13	.22 <sup>†</sup>	.21 <sup>†</sup>	.38***
CC Major depression	.11	.10	.08	.07	.24 <sup>†</sup>
PP Delusional disorder	-.06	-.11	-.09	.12	.12

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; <sup>†</sup> marginal significance.

ACCEPTED VERSION