

Cybersex Addiction: A Study on Spanish College Students

Dr Rafael Ballester-Arnal Ph.D¹, Mr Jesus Castro Calvo^{2,*}, Dr M. Dolores Gil-Llario³, Beatriz

Gil-Julia

¹Universitat Jaume I, Departamento de Psicología Básica, Clínica y Psicobiología, Castello de la Plana, 12071 Spain Email: rballest@uji.es

²Universitat Jaume I, Psicología Básica, Clínica y Psicobiología, Castellón, Spain

³Universitat de Valencia, Departamento de Psicología Evolutiva y de la Educación, Valencia, 46071 Spain Email: dolores.gil@uv.es

⁴Universitat Jaume I, Psicología Básica, Clínica y Psicobiología, Castello de la Plana, 12071 Spain Email: bgil@uji.es

* (Corresponding Author) Mr Jesus Castro Calvo Email: castroj@psi.uji.es

Abstract

The aim of this study was to determine type and frequency of online sexual practices among Spanish college students, prevalence of risk and pathological cybersex use profiles, and correlates/predictors of this behaviour. Participants were 1,557 males and females between 18 and 25 years old. Results showed that cybersex use is not as frequent as that documented in other Western countries. However, a significant percentage of participants with a risky (9%) or pathological (1.7% in men and 0.1% in women) profile was identified. Finally, we found a set of variables that, in interaction with gender, explains 58% of the variance for cybersex addiction scores.

Keywords

Sexuality, Internet, Cybersex, Addiction, Spain

INTRODUCTION

According to the latest survey by the National Institute of Statistics, 97% of Spaniards aged between 15 to 24 years had used the Internet during the past three months, most daily (INE, 2013). The applications, uses, and available online content are innumerable, but there is one that has grown exponentially: pornography. While in 1998 there were an estimated 100,000 pornographic websites all over the world (Rice-Hugues, 1998), in 2006 this figure had risen to 4.2 million (12% of total websites; Family Safe Media, 2006) thus becoming a very lucrative business whose earnings ranges between 1 and 97 billion dollars annually (Wondracek, Holz, Platzer, Kirda, & Kruegel, 2010). The availability of Internet access devices, the ease of finding online sex contents, the anonymity, and low cost (Cooper, 1998) make the Internet an ideal medium for young people to experiment with their sexuality.

Cybersex consumption patterns in young people

The term “cybersex” or online sexual activities (OSA) refers to Internet-based activities, materials, and behaviours that are sexual in nature (Döring, Daneback, Shaughnessy, Grov, & Byers, 2015). It comprises a series of activities that can be performed either alone or in interaction with other users (Shaughnessy, Byers, & Walsh, 2011). The most common are those that do not require contact with other users: reading erotic texts, downloading pictures or viewing pornographic films. Its prevalence depends on factors such as age and sex. Wollack, Mitchell, and Finkelhor (2007) conducted a study with 1,500 American boys and girls between 10 and 17 years old. In boys, only 1% of the children aged 10-11 years had sought pornography on the Internet; however, this percentage increased to 11% between 12-13 years, 26% between 14-15 years and 40% in the age group 16-17 years. In girls, pornography consumption was

practically non-existent until the 16-17 year age band, in which 8% said they had searched online for pornography. However, it is from 17 years upwards when young people begin to experiment more with sex on the Internet.

In the Shaughnessy et al. (2011) study of young Canadians, aged 18 to 28 years, 85.8% of males and 39.3% of females said they had searched Internet for pornography. Morgan (2011) obtained similar results (80% of males and 33.3% females) in a study of 782 young Americans between the ages of 18 and 30 years. In addition, the males confirmed they masturbated on most occasions when they watched pornography, whilst the females did so far more sporadically. Finally, Döring et al. (2015) found a lifetime prevalence of 76.5% for accessing sexually stimulating material when they compared OSA among four countries college students, with a very small moderating effect by country.

Another relatively frequent online sexual practice noted was sexual contact with other users. This prevalence ranges from 9.4-30% in males and 14.9-34% in females (Daneback, Cooper, & Månsson, 2005; Goodson, McCormick, & Evans, 2001; Shaughnessy et al., 2011). Among male and female college students, Döring et al. (2015) found that 30.8% reported having engaged in cybersex. The age where sexual contact with other users was most commonly found was between 18 and 24 years, gradually decreasing thereafter (Daneback et al., 2005). The females showed a preference for sexual contact with other users, rather than viewing pornography (Wright, Bae, & Funk, 2013). Studies among virtual environments (*Second Life*) users have revealed that the main motivation to maintain sexual contacts on the Internet is to achieve sexual stimulation and pleasure, followed by the satisfaction of establishing an emotional bond with another person, and to sexually experiment in a safe environment, with the

possibility that this online relationship might move into real life (Craft, 2012). Contrary to popular belief, the most common online sexual contact is not with strangers (37.1%) but with a partner (82.4%) or with acquaintances with whom no stable relationship is maintained (45.8%) (Shaughness & Byers, 2014).

The proliferation of new devices (such as mobiles phones or tablets) has changed -to some extent- the way people access and interact via the Internet. However, PCs remain the main way to access to sexual explicit materials on the Internet. Wallmyr and Wellin (2006) reported a small percentage (3%) of pornography exposure through mobile phones. Nowadays, the percentage of people who use mobile phones or tablets to watch Internet pornography remains low (29.5%) compared with the percentage who use PCs (73.9%) (Lundin, Træen, Lewin, & Štulhofer, 2014). For this reason, our study is exclusively focused on the cybersex access through PCs.

Cybersex: positive, negative outcomes, and addiction

The main reason for resorting to Internet sex is the search for sexual pleasure. Daneback, Sevcikova, Mansson, and Ross (2013) found that most young people between 18 and 24 years of age stated that their online sexual activity satisfied their sexual needs, either moderately or completely (80% in males and 73% in females). More frequent masturbation during online sexual activities was associated with greater sexual satisfaction.

Another common argument to justify the practice of cybersex is its educational potential: for many young people, the Internet is a useful tool to address the lack of sexual knowledge and sexuality, or to "learn certain skills" by the viewing of pornography (Simon, Daneback, & Sevcikova, 2014).

However, not everyone values the benefits of Internet sex. In fact, there is debate about their possible consequences for the psychosexual development, especially among teenagers and young people (Doring, 2009). One of the biggest risks attributed to cybersex is the possibility of being a victim of unwanted sexual solicitation or abuse (Jones, Mitchell, & Finkelhor, 2012; Mitchell, Finkelhor, & Wolak, 2007). In a review of the impact of online pornography on adolescents and youth, Flood (2010) also highlighted its potential to cause negative emotional reactions (from disgust to anger or shock), to encourage the adoption of certain sexual practices (e.g., anal sex), to promote more open sexual attitudes, to encourage early first-time sex and subsequent promiscuity, to establish gender role sexism, to increase the likelihood of committing a sexual assault, and finally to lead to the onset of addiction.

Multiple investigations have demonstrated the potential harms associated with cybersex addiction. Cybersex addiction or online sexual compulsiveness is defined as excessive and uncontrolled use of cybersex leading to serious work, social and personal problems (Cooper & Griffin-Shelley, 2002). Ross, Mansson, and Daneback (2012) found, under lax criteria, that 7.6% of their sample of Internet users showed problems in controlling their sexual behaviour online; while under stricter criteria, this percentage fell to 1.7%. The main predictors of problematic Internet use, according to this same study, were the degree of religiosity (the more religious, the higher the risk), the frequency of viewing pornography, and the types of online sexual activities (greater risk for users watching pornographic films, who share pornographic images or input pictures of themselves). Other studies (Cooper, Griffin-Shelley, Delmonico, & Mathy, 2001; Egan & Parmar, 2013; Meerkerk, Van Den Eijnden, & Garretsen, 2006; Orzack & Ross, 2000; Schwartz & Southern, 2000; Sinković, Stulhofer, & Bozic, 2013; Tsitsika et al, 2009) have

suggested, as predictors of cybersex addiction, those men who are homosexual or bisexual, who practice high sexual frequency, and with a range of partners and types of sexual practices in their offline relationships, who get a sexually transmitted disease, suffered abuse or addiction to the Internet, or exhibited behavioural problems and social maladjustment, early exposure to sexual content, greater tendency to sexual sensation seeking, or finally, a general vulnerability in controlling their own behaviour in a variety of areas.

Importance of cultural perspective in the study of cybersex addiction

Griffiths (2012) suggests two scenarios in which socio-cultural context can influence on the consumption of cybersex. On the one hand, people living in countries with positive attitudes toward sexuality may be more likely to consume cybersex as an alternative form of sexual expression. On the other hand, there are two possible ways to react to a conservative context toward sexuality in terms of cybersex consumption: their members could be more likely to engage in cybersex as an anonymous alternative to what, in real life, would attract social or even legal rejection or these rigid sexual norms could simply inhibit the practice of cybersex. Take into account socio-cultural context may help us to understand why the prevalence of pornography can reach 93% in Hong Kong (Lam & Chan, 2007) or 85% in Canada (Shaughnessy et al., 2011), while in Taiwan it barely reaches 38% (Lo & Wei, 2005). It may also explain in part why the pattern of cybersex consumption in young Peruvians (most especially with respect to the role of gender) varies greatly when compared with the young in the United States (Velezmoro, Negy, & Livia, 2012). The case of Spain in terms of attitudes toward sexuality is complex: in comparison with other European countries, Spain is one of the most permissive with regards to homosexuality (Stulhofer & Rimac, 2009). However, attitudes toward

casual sex, teenage sex or extramarital sex are conservative in comparison with countries such as Sweden, Norway or the Netherlands (Widmer, Treas, & Newcomb, 1998). This double socio-sexual standard has also been documented in studies exploring attitudes and sexual risk behaviours for HIV-AIDS among youth from Spain and Mexico (Ballester-Arnal, Gil-Llario, Giménez-García, & Ruiz-Palomino, 2009; Giménez-García, Ballester-Arnal, Gil-Llario, Cárdenas-López, & Durán-Baca, 2013). It seems to be the result of mass media and social movements attempt to foster sexual openness in a society with strong religious beliefs (Castro-Calvo, Ballester-Arnal, Gil-Llario, & Gimenez-Garcia, 2015). Thus, it is difficult to predict how Spanish double socio-sexual standard could influence on the probability to engage or not in online sexual activities.

As Griffiths asserted (2012, pp. 122), “cross-cultural comparisons of Internet sex addiction need to be conducted in order to contrast and compare its prevalence epidemiologically and assess the experience of it on an individual level”. Based on this requirement, an investigation began in Spain that culminated in the publication of two articles: one about the influence of having or not a stable partner on the practice of cybersex (Ballester, Castro, Gil, & Giménez, 2014) and the other about online sexual activities among adolescents (Ballester-Arnal, Giménez-García, Gil-Llario, & Castro-Calvo, 2016). However, as far as we know, no large scale scientific study has yet been performed in Spain that compromised participants aged 18 years or older. This lack of empirical evidence has motivated the present study.

In this explorative study, we intend to investigate the prevalence of different behaviours related to the use of internet for sexual purposes, the prevalence of different consumption

profiles (recreational, risk, and pathological), and the predictive role of certain variables on the severity of cybersex consumption. We hypothesize that:

- (1) Cybersex consumption will be very common, especially among males.
- (2) We expected that approximately 2-6% of the sample will match a pathological profile, with a similar percentage matching a risky profile.
- (3) Finally, we hypothesize that the severity of cybersex consumption will be predicted by a combination of psychological and sexual variables (such as sexual frequency or Internet addiction), some of them in interaction with gender.

METHOD

Participants

A total of 1,557 college students between 18 and 25 years of age participated ($M = 20.37$; $SD = 1.983$). All belonged to the middle classes, living in urban environments and had internet access. 64.4% were female. 94.2% considered themselves heterosexual, 3.6% bisexual and 2.2% homosexual. 55.5% had a steady partner, but the majority lived with their parents or shared flats.

Measures

During the evaluation of participants three instruments were used:

-Ad-Hoc Questionnaire: it collected information on demographic variables (gender, age, and education), sexual life (sexual orientation, same-sex intercourse, current frequency of sexual activity, specific sexual behaviours ever experienced, and current frequency of pornographic use different from cybersex), and Internet access and use (accessing computer at home, number of hours online per week and number of hours online for sexual pursuits, also weekly).

-Internet Sex Screening Test (ISST) adapted and validated for the Spanish population (Ballester, Gil, Gomez, & Gil, 2010) from the original Delmonico version (1997). This consists of 25 dichotomous (True / False) responses, evaluating the degree to which the online sexual behaviour of a person is, or is not, problematic. With respect to the psychometric properties, Ballester et al. (2010) reported a reliability (Cronbach's Alpha) of 0.88 and a test-retest stability of 0.82. The internal consistency of the same scale for this study was 0.84. This questionnaire offers a global index of cybersex addiction and a result for five factors: A) Online sexual compulsivity (COMPULS): loss of control over one's own behaviour, and other pathological indicators; B) Online sexual behaviour-isolation non-compulsive (COSOL): online sexual activities not requiring interaction with other users, and their use for sexual gratification; C) Online sexual Behaviour-Social (COSOC): cybersex interaction with other users and the possibility of bringing that relationship into real life; D) Online sexual spending (GASTO): economic investment paying for cybersex and practice; E) Seriousness perceived of online sexual behaviour (PERGRA): perceptions about the severity of the consumption itself.

-Spanish adaptation of the Internet Addiction Questionnaire (CAI) (Young, 2004): was composed of 20 Likert-type questions (1=Rarely / 5=Always), which identified the extent to which Internet use was problematic. The score ranged from 20 to 100. A psychometric study of a Spanish-language sample, showed a reliability of 0.89 (Puerta-Cortés, Carbonell, & Chamorro, 2012). Using the Cronbach's Alpha, the reliability of the present study questionnaire was assessed at 0.91.

Procedure

Questionnaires were applied by members of UNISEXSIDA (AIDS and Sexuality Research Unit) at the Universitat Jaume I of Castellón (Spain). The research team hosted a booth at the faculty entrance and a member of the team actively approached each person who passed the booth offering the possibility of collaborating in our research voluntarily. Those who accepted signed an informed consent form and then completed the pencil and paper questionnaires described above. To ensure response confidentiality, participants completed questionnaires anonymously and alone.

Data Analysis

Data were analysed using SPSS version 21.0. We used chi-square for categorical variables (items of the questionnaire) and *t* test for continuous variables (factors and total score). The magnitude of the differences in these contrasts was estimated by calculating the effect size: specifically, Cohen's *d* estimated for the results of the *t* test and Cramer's phi for the chi squared test (Sheskin, 2000). Pearson's correlations coefficients were calculated to ascertain linear relationship between variables. Hierarchical linear regression was performed to determine the most effective predictors of dimensionally measured cybersex consumption: that is, the dependent variable was the total ISST score. Continuous and categorical variables (such as sex, sexual orientation or specific sexual behaviours) were introduced into the first block following Hardy (1993) coding recommendations. In order to test the possible moderating effects of sex on the relationship between independent and dependent variables of the model, gender interactions terms were entered into the second block.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of the Jaume I University approved the study. All subjects were informed about the study and all provided informed consent.

RESULTS**General sexual behaviour**

98.9% of males and 95.2% of females reported having ever experienced some kind of sexual behaviour. In males, the most frequent were masturbation (90.1%), vaginal intercourse (84.4%), oral sex (80.1%), and mutual masturbation (78%). Females usually practiced vaginal sex (89.3%), oral sex (72.5%), mutual masturbation (71.9%) and masturbation (56.3%). Regarding current sexual frequency, 26% of males and 17% of females claimed to have a sexual frequency of once a week; 23.5% and 26.6% respectively, a frequency of 3 times a week; and finally, 44.7% and 19.5% respectively, reported having a sexual frequency of more than 3 times a week.

Accessibility and use of the Internet and cybersex

Almost all of the participants (98.6%) had a computer at home from which to access the Internet. The average amount of time spent on the Internet for males was 11.24 hr ($SD = 15.68$), significantly higher ($t = 5.05$, $p < 0.001$, $d = 0.31$) than females ($M = 7.54$, $SD = 9.39$).

Focusing on the use of the Internet for sexual pursuits, males ($M = 86.25$ minutes, $SD = 225.05$) spent more time weekly on online sexual activities than women ($M = 11.28$ minutes, $SD = 92.96$; $t = 8.717$, $p < 0.001$, $d = 0.49$). The great variance in both cases suggests an uneven distribution on the time devoted to cybersex. According to Table 1, the vast majority of females

(90.5%) did not practice cybersex regularly, 7.3% spent less than one hour per week, and the percentage who responded with more than an hour a week was practically nil. In the males, again a majority (55%) claimed not to practice often, but a significant percentage spent less than one hour per week (22.9%), or between 1 and 3 hours (12.5%). Finally, it is significant that 4.8% confirmed spending six hours or more per week (1.9% of them over 11 hours).

Online Sexual Behaviour

As shown in Table 2, the most common online sexual behaviours from the ISST are looking for sexual material on the Internet (35.5%), having a username for surfing the Internet (30.6%), masturbating while connected to the Internet (30.2 %), or having bookmarked sex sites (29.6%). Sexual behaviour that involved interaction with other users (COSOC) was less frequent. In this sense, 24.8% communicated with other users while connected, 17.5% had been face-to-face for sex with someone who had been met online, and 12.9% confirmed that they had participated in sex chatrooms. The prevalence of certain behaviours characteristics of a problematic cybersex use was highlighted: 7.9% had promised themselves to stop using Internet for sexual purposes, and for 7.4%, cybersex had interfered with their lives. Finally 4% believed they were addicted to cybersex.

Analysing online sexual behaviours by gender, the men reported significantly higher prevalence in 24 out of 25 ISST items explored (all with a significance <0.001). Given the large sample size, it is more appropriate to analyse these differences from the effect size estimated by Cramer's Phi. According to the criteria established by Cohen (1988), the difference in prevalence between males and females reached a medium effect ($0.30 < Phi < 0.50$) for all the behaviours covered by the COSOL factor. For instance, the prevalence of students who reported

masturbating while connected to the Internet was four times higher in men than in women (59% vs. 14.3%). Similarly, the percentage of participants who reported having searched for sexual material through an Internet browser is also increased in men (55.9% in men and 24.2% in women). The difference in the proportion of males and females who manifest certain signs of pathological consumption (COMPULS) reached a small effect ($0.10 < \Phi < 0.30$) and this is also similar for the majority of behaviours in the social sphere of cybersex consumption (COSOC), or perception of its severity (PERGRA). To cite just three examples, significantly more men reported spending >5 hours per week in OSA (10.3%), having participated in sex chatrooms (20.5%) or having promised themselves to stop using the Internet for sexual purposes (14.9%) compared to women (0.8%, 8.6%, and 4% respectively).

Similar results were found analysing the average score for males and females in the ISST (sub-) scales. Total ISST score in men is more than two times the score in women ($t=19.52$; $p<0.001$) and more than four times in the case of COMPULS score ($t=11.40$; $p<0.001$). In both cases, as well as in PERGRA and COSOL scores, gender differences reached large effect size magnitudes ($d>0.50$).

Frequency of a profile of recreational, risky and pathological use of cybersex

According to the criteria established by Carnes, Delmonico and Griffin (2007), participants were classified into three groups (Table 3): recreational users (ISST total score between 0 and 8), risky users (9 and 18), and pathological users (19 and 25).

The majority of participants evaluated (90.7%) matched a recreational profile, followed by a significant percentage (8.6%) of risky users. Less than 1% matched a pathological profile. We found important differences between males and females, especially in the recreational and

risk profiles (Cramer's Phi of 0.28 and 0.26 respectively). While the percentage of females recreational users (96.9%) was higher than males percentage, the percentage of males registered as at risk and pathological profile (18.8 and 1.7% respectively) was higher than females. Gender differences reach statistical significance in all three cases (significance <0.001).

Correlates and predictors of cybersex use

As indicated in Table 4, most of the variables considered were related in a statistically significant manner, and with a positive sign with respect to one or more cybersex consumption aspects. Age, for example, correlated significantly with the total ISST score, and with 2 of its 5 subscales (COSOC and GASTO). All variables related to offline sexual behaviour (having sex with a same-sex partner, frequency of sexual activity, or different sexual practices, such as masturbation, mutual masturbation, oral sex, anal sex and other behavioural activities) were significantly associated with the total cybersex questionnaire score, and with several of its subscales (especially COMPULS, COSOL and COSOC). Finally, Internet use variables (time online, and the total score on the Internet addiction questionnaire) and pornographic consumption characteristics (time spent practicing cybersex and the consumption of pornography through other means) showed the strongest positive relationship.

Conversely, having a stable partner was negatively and significantly associated with the total cybersex questionnaire score, and with 4 of its 5 subscales. Also the practice of vaginal intercourse was inversely related to some dimensions of cybersex consumption.

The results of the first block of the hierarchical multiple regression analysis (table 5) revealed that the most important predictor of ISST scores was Internet addiction, followed by pornography consumption by other means and the time devoted to cybersex. The model included

6 additional variables (gender, having participated in oral sexual, bisexual orientation, having undertaken unusual sexual practices, vaginal intercourse, and sexual frequency) and explains 56.3% of the ISST score variance ($F = 125.505$, $p < 0.001$). Only female gender and having participated in vaginal intercourse were negatively related to ISST score.

In the second block of the hierarchical multiple regression analysis, interactions terms between gender and variables included in the previous analysis were performed. In order to simplify the table, we only include significant interactions. First, we found a significant interaction between gender and unusual sexual practices: for men, having undertaken unusual sexual practices were associated with higher levels of ISST scores, but this was not the case for women (figure 1). On the contrary, the time spent in online cybersex or having participated in vaginal sex was more associated with higher levels of ISST scores in the case for women. Finally, sexual frequency is positively related with ISST scores in the case for women and negatively related in the case for men (figure 2).

DISCUSSION

Types of sexual activity and frequency among Spanish college students

Our results indicated that young college students show a clear preference for online sexual behaviour that requires no interaction with other users, such as searching for and viewing pornography. This preference had been documented in most previous research (Hald, 2006; Johansson & Hammeren, 2007; Shaugnessy et al, 2012) and may be understood in terms of its cost-benefit: people seek sex on the Internet as a quick way to satisfy sexual desire (Daneback et al., 2013). In this sense, the viewing of pornography becomes the most rapid option for attaining pleasure (Johansson & Hammeren, 2007; Morgan, 2011). These results are also in accordance

with the Triple-A engine theory, which states that the accessibility, affordability, and anonymity of the Internet provides the perfect medium to foster sexual behaviours (Cooper & Griffin-Shelley, 2002).

Nevertheless, the prevalence for seeking pornography or the use of sex chatrooms is significantly lower than that found in samples with similar characteristics in other western countries like Sweden (Daneback et al., 2005), the USA (Morgan, 2011) or Canada (Shaugnessy et al., 2012). This is also true when we compare the prevalence of pornography consumption or sex chatting in our study (35.5% and 12.9% respectively) with that found by Döring et al. (2015) in a recent study among 4 countries college students (76.5% and 30.8%). An exception is the Goodson et al. investigation (2001) among US university under-graduates, where the percentage of pornography consumption (43.5%), or using sex chatrooms (12.8%), is quite similar to that obtained in this study. These low prevalence rates can be explained by the manner of exploring the different types of online sexual behaviour: while in other studies (e.g., Shaugnessy et al., 2012) cybersex definitions were much broader and considered more types of sexual practices (the use of dating webpages, sexting, etc.), we have taken account only the viewing of pornography or participation in sex chatrooms. Another explanation for these results could be linked to the way in that Spanish socio-cultural context influences on cybersex activity. Instead of foster online sexual activities as an anonymous and secure form of sexual expression and experimentation, Spanish conservative attitudes toward certain sexual issues (such as casual sex) could inhibit the practice of cybersex. This alternative explanation would go against the hypothesis of a “new globalized net generation that appropriates the Internet in similar ways

regardless of their national cultures” (Döring et al., 2015, pp. 7), suggesting that sex attitudes and values still have an important role in sexual behaviour and development.

In females, frequency and type of cybersex use could have an explanation on the basis of the sexual script theory (Wright et al, 2013). Cybersex leaves in second place the emotional and relational aspects of sexual activity (most important in female sexuality), focusing on physical attributes and erotic pleasure. This explains the low pornography consumption by females and their preference for sex chatrooms. The results obtained in this investigation only partially validated this theory. As expected, cybersex consumption by females was much lower than that recorded for males; however, we did not find a preference for the use of sex chatrooms (like the males, females prefer to use online pornography). This preference is not as marked as in the male case, but more than double reported sought Internet pornography (24.2%) instead of participating in sex chatrooms (8.6%). While this finding is not common, other studies have found similar results (Shaughnessy et al., 2011).

More specifically, percentage of females who say they have undertaken some of the major activities mentioned herein regarding sexual exploration online was significantly lower than that found in previous studies. For example, while Morgan (2011) reported a prevalence of pornographic use by females with 33% and Shaughnessy et al. (2011) with 39%, in our study the figure barely reached 24%. In the study by Wright et al. (2013) in which 18,225 American women were evaluated between 1973 and 2010, one must regress to 1995 to find a figure of pornographic consumption equal to that obtained in our study. The same is true when analysing the prevalence of the use of sex chatrooms: whereas in our study it is 8.6%, in the Cooper et al. (2003) the figure increased to 32%. Finally, the percentage of girls who masturbated while

searching online pornography (14%) remained well below that obtained in other studies, such as the 18% figure in Shaughnessy et al. (2011).

While it seems that to chat for sexual purposes is relatively uncommon in both males and especially females, to do so for romantic reasons or to move the relationship into real life is more common. This was well reflected, for example, in the percentage of respondents who had come face to face with someone they had only met online (25%).

The investment of time in online sexual activities is not one of the most frequently studied issues. An exception is the study of Daneback et al. (2005), which found that male pornography users spent an average of 4 hours a week in such sexual activity online. In our study, males spent an average of 1.5 hr weekly in online sexual activities and females spent less than 15 mins. In both cases, the weekly time reported by Daneback et al. far exceeded that documented in our research.

Cybersex users profiles among Spanish college students

The time spent on cybersex may also be taken as an indicator of pathological consumption. According to Cooper, Delmonico, and Burg (2000), recreational users would spend approximately 1 hr. weekly on cybersex, risky users between 1 and 10 hrs., and finally those pathologically affected spend more than 11 hrs. a week. The latter group comprised 7.92% of their sample. In our case, only 1.9% of boys exceeded 11 hours a week consuming cybersex. This 1.9% of pathological users identified from the time criterion of Cooper et al. (2000) nearly matched the 1.7% obtained in this study from a completely different approach, namely, the total ISST score. Ross et al. (2012) found exactly the same percentage of pathological cybersex users (1.7%), which adds further credibility to our prevalence estimation. Nor should the percentage of

19% for risky users be overlooked, especially considering that many may eventually develop an addiction (Carnes et al, 2007).

In females, we found a quite similar percentage of pathological profiles considering time criterion and ISST score criterion. When considering the time criterion, 0.2% of females could be classified as pathological users, a percentage virtually identical to the 0.1% obtained from ISST scoring criteria. This result is consistent with studies where a lower prevalence of problems related to cybersex is documented in females than in males (Ross et al., 2012).

Finally, the proportion of males and females who claimed they experienced symptoms of pathological consumption is significant. The percentage of young college students who valued their consumption as a problem far exceeded the real prevalence of pathological users: while the prevalence of pathological consumption is estimated at 1.7% in males and 0.2% in females, 9.3% and 1.1 % respectively believed themselves addicted to cybersex. Furthermore, 13.4% of males and 4.1% of females believed that cybersex has sometimes interfered with certain aspects of their lives.

Predictors of cybersex consumption among Spanish college students

We have found a set of variables that explains 58% of the variance for Internet Sex Screening Test score. The most powerful predictor was the Internet addiction score (Young, 2004), a factor that affects to men and women in a similar way. The most recent studies suggest that Internet addiction is related to cybersex addiction, or as a precursor, or as a related phenomenon (Egan & Parmar, 2013). As a precursor, it is understood that cybersex addiction constitutes a subtype of Internet addiction (Schiebener, Laier, & Brand, 2015); as a related phenomenon, the cybersex and Internet addiction relationship may be explained by the fact that

both share a common cause, namely, a vulnerability to developing addictive disorders. More research is needed in order to confirm the kind of relationship between Internet and cybersex addiction, but our results highlight the key importance of this issue in the understanding of cybersex addiction.

Following Internet addiction, there are two variables related to the characteristics of cybersex consumption that predict the total ISST score: alternative ways to consume pornography and time spent in online sexual activities. In the case of time spent in online cybersex, the results indicated a significant interaction with gender, suggesting that the relationship was different for men and women. Men's level of cybersex addiction did not significantly differ whether they spent more or less time in cybersex consumption. Conversely, women who spent more time in online cybersex reported high levels of cybersex addiction (higher scores on the ISST). As such, time spent online seems to be more relevant to women's experience of cybersex addiction than men's.

Finally, we found a significant association between certain aspects of sexual behaviour and the consumption of cybersex. Having practiced oral sex was positively related with the severity of cybersex consumption in both males and females. In males, undertaking unusual sexual behaviour (understood as any sexual activity other than masturbation, mutual masturbation, oral sex, and vaginal or anal sex) was positively associated with a higher ISST scoring. Other studies have documented a link between online and offline sexual behaviour (Hald, kuyper, Adam, & de Wit, 2013; Luder et al, 2011), but there is no record of a relationship with unusual sexual behaviour. Presumably, some of the sexual behaviour in this category are of a paraphilic nature, thus an investigation should be undertaken to establish whether sexual

deviants find on the Internet a way to experiment with paraphilic content. Other aspects such as lower frequency of sexual intercourse with a partner or not having participated in vaginal sex were associated with a higher ISST scoring in the case for males but not for females. Conversely, a high sexual frequency or having participated in vaginal sex were associated with higher ISST scoring in the case for females, highlighting the key importance of gender in the understanding of online sexual activity.

In both males and females, self-identified bisexual arousal pattern allow us to predict a significant variance in ISST scores. This result supports the hypothesis that sex on the internet has not led to an environment which only satisfies sexual desire, but rather a way to find and make contact with people with similar sexual orientation or interests (Ross & Kauth, 2002).

Limitations and future directions

The fact that this study has a number of limitations is recognized. First, results obtained from the examined sample (university students) may not be representative of all young Spaniards between 18 and 25 years of age or of the university student population in general. However, the fact that the percentage of young Spaniards studying at the University, or already graduated, is higher than the European Union average (Ministry of Education, 2009), increases the sample's representativeness. In this sense, the affordability of university studies in Spain allows anyone (regardless of their economic status) to study a degree. In addition, sexual activity and frequency is influenced by age, so younger participants are probably more sexual active than older individuals (Shulman & Conolly, 2013). Second, the tool used for assessment (ISST), despite being the only one that has been validated in this study's context (to ensure reliability and validity), does not cover the wide range of situations comprising the cybersex phenomenon, a

fact that conditions the (over or under) estimate of the prevalence of online sexual behaviour. Finally, we analysed cross-sectional data, so causality between variables should not be inferred.

Despite these limitations, this study provides evidence that enhances the understanding of online sexual activity in young Spaniards and, in turn, guides our research in new directions.

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Table 1. Time spent weekly in cybersex use by gender

	Not habitually used	0-1 hr.	1-3 hr.	3-6 hr.	6-11 hr.	More than 11 hr.
Males	54.9%	22.9%	12.5%	5%	2.9%	1.9%
Females	90.5%	7.3%	1.3%	0.4%	0.1%	0.2%

Table 2. ISST Means (total and subscales) and prevalence of cybersex behaviours by totals and by gender

	Total	Males	Females	Inferential statistic	Size effect	Magnitude Effect
ISST Total (range=0-25)	$M=3.47$	$M=5.74$	$M=2.21$	$t=19.52^{**}$	$d=1.05$	Large
	$SD=3.74$	$SD=4.27$	$SD=2.68$			
COMPULS (range=0-8)	$M=0.41$	$M=0.82$	$M=0.19$	$t=11.40^{**}$	$d=0.60$	Large
	$SD=1.08$	$SD=1.51$	$SD=0.65$			
2. I spend more than 5 hours per week using my computer for sexual pursuits	4.2%	10.3%	0.8%	$\chi^2=80.42^{**}$	$V=0.23$	Small
6. I spent more money for online sexual material than I planned	2.2%	4.9%	0.7%	$\chi^2=29.15^{**}$	$V=0.14$	Small
7. Internet sex has sometimes interfered with certain aspects of my life	7.4%	13.4%	4.1%	$\chi^2=44.89^{**}$	$V=0.17$	Small
15. Internet to experiment with different aspects of sexuality (sexual slavery, homosexuality, etc.)	9.2%	15.3%	5.9%	$\chi^2=37.21^{**}$	$V=0.15$	Small
16. Personal website which contains sexual materials	3.5%	7.3%	1.4%	$\chi^2=36.39^{**}$	$V=0.15$	Small
18. Cybersex use as a reward for having achieved something (finishing a project, a stressful day, etc.)	5%	10.6%	2%	$\chi^2=54.21^{**}$	$V=0.19$	Small
19. When I cannot access sexual information online, I feel anxious, angry or disappointed	5.5%	10.7%	2.6%	$\chi^2=45.00^{**}$	$V=0.17$	Small
25. I think I am addicted to online sex	4%	9.3%	1.1%	$\chi^2=61.49^{**}$	$V=0.20$	Small
COSOL (range=0-6)	$M=1.51$	$M=2.73$	$M=0.85$	$t=24.06^{**}$	$d=1.28$	Large
	$SD=1.71$	$SD=1.83$	$SD=1.21$			
1. I have some sexual sites bookmarked	29.6%	48.2%	19.5%	$\chi^2=139.19^{***}$	$V=0.30$	Medium
5. I searched for sexual material through an Internet browser	35.5%	55.9%	24.2%	$\chi^2=156.07^{***}$	$V=0.32$	Medium

10. I have masturbated while connected to the Internet	30.2%	59%	14.3%	$\chi^2=335.7$ 4***	V=0.4 7	Medium
11. I have accessed sexual sites from others computers besides my home	14.7%	31.8%	5.2%	$\chi^2=200.3$ 5***	V=0.3 6	Medium
13. I tried to hide what is on my computer or monitor so others cannot see it	29.6%	51.5%	17.7%	$\chi^2=193.7$ 8***	V=0.3 5	Medium
14. I have stayed up after midnight to access sexual material online	11.2%	24.5%	3.9%	$\chi^2=150.9$ 8***	V=0.3 1	Medium
COSOC (range=0-6)	M=1.2 1	M=1.6 1	M=0.9 9	t=8.51***	d=0.4 5	Medium
	SD=1.40	SD=1.59	SD=1.23			
8. I have participated in sex chatrooms	12.9%	20.5%	8.6%	$\chi^2=44.73^*$ **	V=0.1 7	Small
9. I have a nickname that I use on the Internet	30.6%	34.3%	28.5%	$\chi^2=5.72^*$	V=0.0 6	Nil
20. I have increased the risks I take online (give out name and phone number, meet people offline, etc)	10.9%	14.4%	8.8%	$\chi^2=12.02^*$ **	V=0.0 9	Nil
22. I have met face to face with someone, I met online for romantic purposes	17.5%	25.5%	13.1%	$\chi^2=37.42^*$ **	V=0.1 6	Small
23. I use sexual humour and innuendo with others while online	24.8%	34.7%	19.3%	$\chi^2=45.24^*$ **	V=0.1 7	Small
24. I have run across illegal sexual material while on the Internet	25%	31.6%	21.3%	$\chi^2=20.04^*$ **	V=0.1 1	Small
GASTO (range=0-2)	M=0.0 7	M=0.1 2	M=0.0 4	t=4.92***	d=0.2 6	Small
	SD=0.28	SD=0.38	SD=0.21			
3. I have joined sexual sites to gain access to online sexual material	2.8%	6.9%	0.6%	$\chi^2=50.98^*$ **	V=0.1 8	Small
4. I have purchased sexual products online	3.9%	4.7%	3.5%	$\chi^2=1.38$	V=0.0 3	Nil
PERGRA (range=0-3)	M=0.2 5	M=0.4 3	M=0.1 5	t=9.61***	d=0.5 1	Large
	SD=0.55	SD=0.70	SD=0.42			
12. No one knows I use my computer for sexual purposes	14.1%	21.6%	10%	$\chi^2=38.92^*$ **	V=0.1 6	Small
17. I have promised myself to stop using the Internet for sexual purposes	7.9%	14.9%	4%	$\chi^2=57.77^*$ **	V=0.2 0	Small
21. I have punished myself when I use	3.1%	6.4%	1.2%	$\chi^2=31.88^*$	V=0.1	Small

the Internet for sexual purposes (e.g. time-out from computer)				**	4	
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* $p < 0,05$

** $p < 0,01$

*** $p < 0,001$

ISST total: global index of cybersex addiction; COMPULS: Online sexual compulsivity; COSOL: Online sexual behaviour-isolation non-compulsive; COSOC: Online sexual Behaviour-Social; GASTO: Online sexual spending; PERGRA: Seriousness perceived of online sexual behaviour.

Table 3. Profiles of the sample's internet sex use by totals and by gender (%)

	Total	Males	Females	Chi Squared	Cramer's Phi	Magnitude Effect
Recreational Use	90.7	79.5	96.9	122.323***	0.286	Small
User at Risk	8.6	18.8	3	108.011***	0.269	Small
Pathological User	0.7	1.7	0.1	12.974***	0.093	Nil

* $p < 0,05$

** $p < 0,01$

*** $p < 0,001$

Table 4. Correlation between the ISST and each subscale with other variables

	ISST Total	COMPULS	COSOL	COSOC	GASTO	PERGRA	
Age	0.070**	0.037	0.090***	0.019	0.073**	0.019	
Stable partner	-0.133***	-0.096***	-0.080**	- 0.165***	-0.028	-0.071**	
Homosexual relationships	0.284***	0.202***	0.232***	0.236***	0.130***	0.132***	
Sexual relationship frequency	0.142***	0.096***	0.172***	0.050	0.031	0.070**	
Sexual activity of whatever type	0.135***	0.064*	0.147***	0.089**	0.045	0.066*	
Sexual Behaviour	Masturbation	0.283***	0.123***	0.352***	0.148***	0.078**	0.156***
	Mutual masturbation	0.122***	0.029	0.194***	0.055*	0.016	0.009
	Vaginal sex	-0.065*	-0.072**	-0.009	-0.083**	-0.007	-0.051*
	Oral sex	0.182***	0.068**	0.242***	0.098***	0.057*	0.072**
	Anal sex	0.295***	0.237***	0.283***	0.158***	0.162***	0.127***
	Others	0.192***	0.226***	0.106***	0.115***	0.188***	0.083**
Time spent weekly online	0.272***	0.194***	0.196***	0.243***	0.169***	0.128***	
Internet addiction	0.520***	0.376***	0.322***	0.424***	0.241***	0.305***	
Time spent weekly practicing cybersex	0.455***	0.494***	0.360***	0.215***	0.336***	0.242***	
Use of pornography via sources alternative to the internet	0.567***	0.405***	0.622***	0.291***	0.233***	0.319***	

*p<0,05

**p<0,01

***p<0,001

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ISST total: global index of cybersex addiction; COMPULS: Online sexual compulsivity; COSOL: Online sexual behaviour-isolation non-compulsive; COSOC: Online sexual Behaviour-Social; GASTO: Online sexual spending; PERGRA: Seriousness perceived of online sexual behaviour.

Table 5. Hierarchical multiple regression examining predictive variables of cybersex consumption (total ISST)

	<i>B</i>	SE	β	R ² corrected	R ² change	F
Block 1						
Internet addiction	0.101	0.007	0.334** *			
Pornography via alternative sources	1.608	0.152	0.323** *			
Time spent in online cybersex	0.215	0.038	0.154** *			
Gender (female)	- 1.020	0.204	- 0.141** *			
Having participated in oral sex	0.745	0.202	0.093** *			
Bisexual orientation	1.272	0.446	0.067**			
Having undertaken unusual sexual practices	0.899	0.346	0.061**			
Having participated in vaginal sex	- 0.678	0.277	- 0.061**			
Sexual relationship frequency	0.119	0.054	0.056*	0.563		125.505* **
Block 2						
Internet addiction	0.117	0.012	0.386** *			
Pornography via alternative sources	1.509	0.183	0.303** *			
Time spent in online cybersex	0.166	0.044	0.119** *			
Gender (female)	0.597	0.99	0.082			

		5				
Having participated in oral sex	0.755	0.35 3	0.094*			
Bisexual orientation	0.586	0.68 9	0.031			
Having undertaken unusual sexual practices	1.611	0.44 5	0.110** *			
Having participated in vaginal sex	- 1.597	0.42 2	- 0.144** *			
Sexual relationship frequency	0.386	0.10 9	0.180** *			
Gender X Time spent in online cybersex	0.285	0.09 6	0.085**			
Gender X Having undertaken unusual sexual practices	- 1.733	0.69 4	- 0.075**			
Gender X Having participated in vaginal sex	1.681	0.55 8	0.236**			
Gender X Sexual relationship frequency	- 0.399	0.12 6	- 0.319**	0.580	0.17** *	70,508** *

*p<0,05; **p<0,01; ***p<0,001



Figure 1. Gender moderating the association between unusual sexual practices and ISST score.

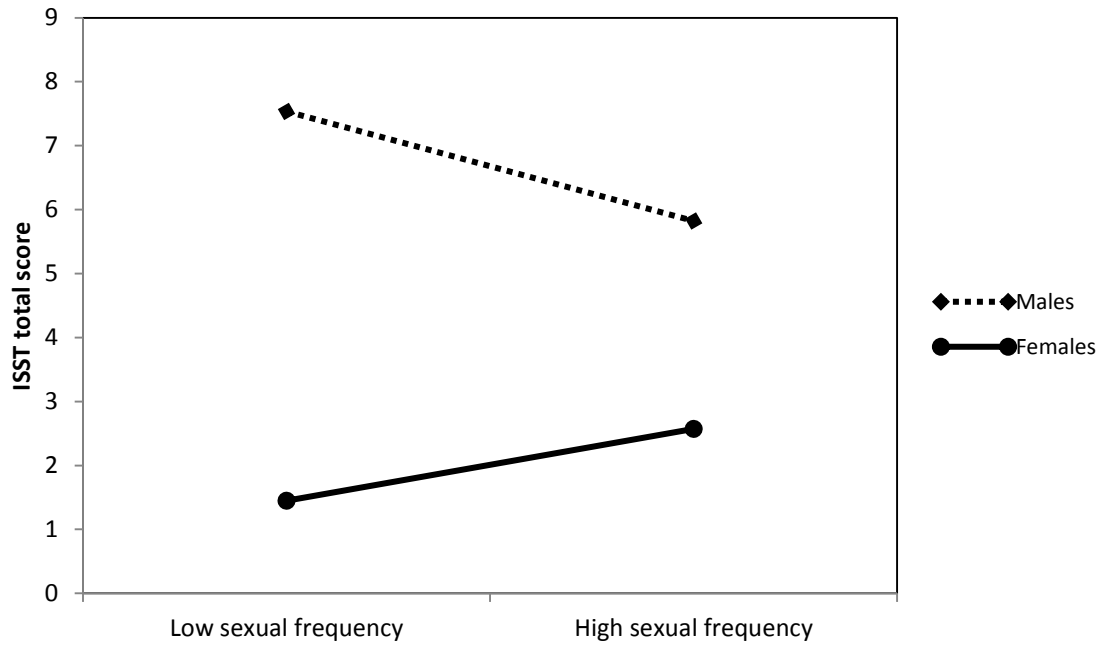


Figure 2. Gender moderating the association between sexual frequency and ISST score.