anales de psicología, 2013, vol. 29, nº 2 (mayo), 319-327
http://dx.doi.org/10.6018/analesps.29.2.131381

ISSN edición impresa: 0212-9728. ISSN edición web (http://revistas.um.es/analesps): 1695-2294

Minors' exposure to online pornography: Prevalence, motivations, contents and effects

Eva González-Ortega* and Begoña Orgaz-Baz

University of Salamanca, Spain

Título: La exposición de los menores a la pornografía en Internet: prevalencia, motivaciones, contenidos y efectos.

Resumen: En virtud del aumento de la disponibilidad de material pornográfico en Internet, ha surgido la necesidad de investigar las características y consecuencias de la exposición de los niños y adolescentes a este tipo de material. Partiendo de informes retrospectivos de una muestra de 494 estudiantes de la Universidad de Salamanca recogidos con una encuesta *on-line*, este estudio analiza la prevalencia y el grado de exposición de los menores a la pornografía en Internet, las razones de la exposición, los tipos de imágenes que ven, y las reacciones a dichas imágenes. Según los resultados, el 63% de los chicos y el 30% de las chicas presenciaron pornografía *online* durante su adolescencia. Un porcentaje mayor de varones lo hicieron alguna vez durante más de 30 minutos. Ambos sexos recuerdan haber presenciado imágenes variadas, incluidos contenidos de dominación, pornografía infantil y violación. Con mayor probabilidad, los chicos informan de un consumo deliberado de pornografía y de búsqueda de excitación sexual, mientras que las chicas recuerdan haberse visto expuestas involuntariamente. En uno de cada seis casos, la pornografía observada produjo un fuerte impacto. Los chicos recuerdan en mayor medida reacciones de excitación sexual y masturbación, y las chicas, de evitación, asco y preocupación.

Palabras clave: Internet; pornografía; adolescentes; diferencias de género; efectos.

Abstract: Since Internet has made pornographic materials more available, there is a need for more research on the characteristics and implications of children's and adolescents' exposure to such materials. This study examined the prevalence and extent of minors' exposure to online pornography, the reasons for exposure, the types of images seen and the strong effects of exposure, as reported by college students. We used an online survey to collect retrospective reports of a sample of 494 students of the University of Salamanca. Results show that 63% of boys and 30% of girls were exposed to online pornography during adolescence. Boys are more likely to have ever been exposed for more than 30 minutes. Boys are more likely to report deliberate consumption and sexual excitement seeking, whereas girls are more likely to report involuntary exposure. Both genders remember viewing a variety of images, including contents of bondage, child pornography and rape. One in six of exposed participants remember strong reactions. While more boys report sexual excitement and masturbation, more girls report avoidance, disgust or concern.

Key words: Internet; pornography; adolescents; gender differences; effects.

Introduction

In the last decade, cheaper connectivity costs, technological improvements and the influx of personal computers into homes have caused an exponential increase in the number of Internet users (Castellana, Sánchez-Carbonell, Graner, & Beranuy, 2007), which grew by 3.8% in Spain during 2012, reaching 10.5 million (67.9%) of households (INE, 2012). Moreover, the use of computers (96%) and the Internet (91.2%) among 10 to 15 year-old minors is becoming universal in our country (INE, 2012), and parents´ reports suggest that a significant proportion of children aged 4 (19.8%) to 9 (64.7%) have accessed Internet in the last month (AIMC, 2012a). Doubtless, this spread of the Internet among young people is positive since it provides them with a space to socialize, learn and engage in public life (Palfrey, 2008) but the existence of a large number of pornographic websites is also driving concern about their likely exposure to "harmful" or "inappropriate" contents (Espinar & López, 2009; García et al. 2010).

Indeed, Internet has made sexually explicit materials more accessible to youth than ever before (Brown & L'Engle, 2009). The accessibility, affordability, anonymity, explicitness, interactivity, and even portability of online pornography -thanks to laptops, cell phones, etc.- (Collins, Martino & Shaw, 2011) make it more appealing to minors. Furthermore, the widespread of the Internet have made children's exposure to sexual material more sudden, unexpected and unwanted (Finkelhor, Kimberly & Janis, 2000). In fact, cyberporn is now available in many different ways, such us pop-up adverts, websites, Internet searches, e-mails, etc. (Dombrowski, Gischlar, & Durst, 2007)

We must not forget, however, that children may also deliberately search for this material due to age-appropriate curiosity (Flood, 2007; Ybarra & Mitchell, 2005), thus the problem is not only the voluntary nature of exposure but the content of the exposure as well. Besides imagery of naked people and sexual intercourse, cyberporn includes other much more graphic and deviant sexual practices such as bestiality, sadism, rape, sexual abuse, etc. (Thornburgh & Lin, 2002; Veldman, 2007). As Lo & Wei (2005) highlights, these unique aspects of Internet pornography might intensify its undesirable effects. In Spain, 74.5% of parents believe that access to inappropriate sexual content can pose a risk to the child (INTECO, 2009). Surprisingly, however, 64.8% of parents with children under age 14 do not set any control system to prevent them from access to certain contents on the Internet (AIMC, 2012b).

In sum, online pornography is seen as possibly more accessible than traditional pornography (Mesch, 2009), and youth's exposure to it as mostly unwanted and harmful but are these concerns really justified? Or are we overreacting? (Veldman, 2007). Firstly, with regard to the prevalence of exposure, the literature provides with a growing body of cross-cultural evidence that many youth get in contact with cyberporn: 42% of U.S. 10-17 year-olds (Wolak, Mitchell, & Finkelhor, 2007); 57% of U.K. 9-19 year-olds (Livingston & Bober, 2005); 75% of Australian 16-17 year-olds (Flood,

*** Dirección para correspondencia [Correspondence address]:** Eva González Ortega. Departamento de Psicología Evolutiva y de la Educación. Facultad de Psicología. Avda.de la Merced, 109-131, 37005, Salamanca (Spain). E-mail: evagonz@usal.es

2007); 38% of Taiwanese adolescents (Lo & Wei, 2005); 47% of Dutch 13-18 year-olds (Peter & Valkenburg, 2006), and 27% of Croatian aged 10-16 years (Flander, Cosic, & Profaca, 2009). Across Europe, seeing pornography online is the second most common risk at around 4 in 10 teenagers (Livingstone & Haddon, 2009). In 2010, 14% of 9-16 year-olds reported having seen obviously sexual images on the Internet in the past year, although only 35% of parents showed to be aware of it (Livingstone, Haddon, Görzig, & Ólafsson, 2011). In Spain, the few studies available indicate that around one-third of 10 to 17 year-olds have accessed online sexual contents (Acción Contra la Pornografía Infantil ACPI & Protegeles, 2002; INTECO, 2009) although only 15% of parents seems to know it (INTECO, 2009). In 2010, 11% of 9-16 year-olds Spanish minors reported having seen sexual images online in the past year (Garmendia, Garitaonandia, Martínez, & Casado, 2011) and also recently, 61% of a sample of 200 undergraduates reported having started visiting pornographic websites when they were 11-18 year old (Labay, Labay, & Labay, 2011). Seemingly, exposure is gendered, boys reporting higher rates of both intentional and unintentional exposure (Cameron et al. 2005; Finkelhor et al. 2000; Flood, 2007; INTECO, 2009; Livingston et al. 2011; Lo & Wei, 2005; Mesch, 2009; Montiel, Carbonell, & Orts, 2011; Peter & Valkenburg, 2006; Sabina, Wolak & Finkelhor, 2008; Sánchez-Chavez et al. 2007; Wolak et al. 2007; Ybarra & Mitchell, 2005), and increases with age (ACPI, 2002; Finkelhor et al. 2000; INTECO, 2009; Livingston et al., 2011; Peter & Valkenburg, 2008; Wolak et al. 2007), although this variable has not always found related to intentional exposure (Mesch, 2009; Peter & Valkenburg, 2006).

Secondly, in terms of motivations for exposure, research findings generally suggest that most children accidentally view pornography (Flood, 2007; Livingston & Bober, 2005; Wolak et al. 2007) while searching or surfing the Internet, opening E-mail or clicking on links in E-mail or Instant Messages (Finkelhor et al. 2000). Some studies using focus groups have even found that none of their female (Cameron et al. 2005) or both gender (Garitaonandia & Garmendia, 2007) participants report intentional viewing, although the assessment of exposure to controversial content is likely to have facilitated response distortion (Cameron et al., 2005). In fact, research has shown that the rate of deliberate consumption of cyberporn is considerable, with boys being more likely to be seekers than girls, e.g. 25 vs. 5% (Ybarra & Mitchell, 2005); 38 vs. 2% (Flood, 2007); 78 vs. 56% (Sánchez-Chavez et al. 2007), respectively. Most commonly cited reasons for consultation are sexual excitement, curiosity, sexual information seeking and being with friends who wanted to do it (Sánchez-Chavez et al. 2007; Sabina et al. 2008). Besides, there seems to be gender differences in the extent of consumption as well. In the study by Peter & Valkenburg (2006), one fourth of boys and 5% of girls reported exposure to various types of online sexually explicit material at least once a week.

Thirdly, regarding the content of the exposure, yet few studies have examined what types of pornography children have seen on the Internet (Finkelhor et al. 2000; Livingston et al. 2011; Peter & Valkenburg, 2006; Sabina et al. 2008; Wolak, Mitchell & Finkelhor, 2006). Findings, nonetheless, suggest that a remarkable portion of the imagery seen involves some paraphilic or criminal sexual behaviour. Thus, one survey found that, among youth aged 10 to 17 who reported unwanted exposure, 86% had seen pictures of naked people; 37% pictures of people having sex; 13% images of sexual violence and 10% pictures "involving animals or other strange things" (Wolak et al. 2006). Similarly, Sabina et al. (2008) found that one third of male college students saw images of bondage or bestiality before being 18; 18% saw images of sexual violence and 15% saw child pornography. Apparently, girls' rate of exposure to the various types of sexually explicit material is smaller (Peter & Valkenburg, 2006; Sabina et al. 2008).

Finally, although there is growing worry about the harm to youth's psychosocial development of seeing online pornography (Mesch, 2009; Wolak et al. 2007), research on the effects of exposure is still scarce (Flood, 2009). In 2006, Wolak et al. found that 74% of 10-17 year-olds felt not at all or only a little upset when they saw online sexual material, suggesting that exposure, even when unwanted, is not necessarily distressing. Similarly, 54% of U.K. 9-19 year-olds (Livingstone & Bober, 2005) and two thirds of European (Livingston et al., 2011) and Spanish (Garmendia et al., 2011) 9-16 year-olds reported not having felt bothered when they saw sexual images on the Internet, and most of those bothered said they got over it straight away. In the study by Sabina et al. (2008), most students said the online pornography they saw before 18 did not strongly affect them. Among those who said it did (1 in 8 boys and 1 in 5 girls), some had mostly positive feelings and others had negative feelings. Boys reported more sexual excitement, and girls reported more embarrassment and disgust. With regard to effects on youth sexuality, a recent review of the research shows that adolescents who consume pornography may develop unrealistic sexual beliefs, more permissive sexual attitudes, sexual preoccupation, and earlier sexual experimentation. Findings, nonetheless, are not conclusive (Owens, Behun, Manning & Reid, 2012) and most are based on correlational analyses that do not allow determinations of casualty (Flood, 2009). Additionally, it has been found that exposure to sexually explicit internet material does not increase sexual risk behaviour among adolescents (Luder et al. 2011; Peter & Valkenburg, 2011a).

In brief, most research has focused on examining the prevalence and patterning of youth's exposure to Internet pornography. However, according to Flood (2007), it is also critical to assess the significance and effects of this exposure, the content of sexual material, the characteristics of the viewer, whether exposure is deliberate or accidental, the duration of viewing, whether it is solitary or collective, etc. As Flood (2007) claims, "it should not be assumed that any and

all instances of minors' exposure to sexually explicit materials necessarily involve negative effects". In other words, research must contextualise findings and try to understand how and why some children encounter risks and with what consequences (Staksrud, Livingstone & Haddon, 2007). Sabina et al. (2008) study may be a good model of how these facts can be examined, and we strongly need to follow this model in our country, where research has mainly concerned with use habits and paid less attention to risks (Staksrud et al., 2007). In Spain, besides, college students are among the first generation to grow up with the Internet and thus they may be a good population for an exploratory study on this topic.

Based on these considerations, the current study aimed to answer the following research questions:

1. Were Spanish college students exposed to online pornography before age 18? If so, how old were they when they were first exposed? To what extent were they exposed?
2. Were they voluntary or involuntary exposed? For what reasons?
3. What types of sexual content they did they see? To what extent?
4. Did they see online pornography that had a strong effect on them? If so, in what setting and via which media? What type of sexual content did they see? What physical and emotional reactions did they experience?
5. Do responses to these questions significantly differ by gender or by academic degree (undergraduate vs. graduate students)?

Method

Procedure

Data collection took place during spring semester 2007. First, students from the Faculties of Psychology and Occupational Therapy at the University of Salamanca (Spain) were called to participate in a self-administered online survey regarding exposure to pornography by a posting in the Virtual Campus "Studium" (posted on April 16, 2007). However, since the size of the sample initially obtained by this procedure was not sufficient, all students from the University of Salamanca received a survey request by e-mail distribution list (submitted on May 21, 2007), with the approval of the Vice-Rector for Research.

According to available data (Hernández, 2008), more than 30000 students were accessible for participation (26746 of which were students enrolled in undergraduate courses during the academic year 06/07). Both by email or posting on virtual campus, potential participants were informed that the survey included questions about Internet use and exposure to online pornography. It was highlighted that the online survey took about 15 minutes to finish and participation was anonymous and voluntary. In addition, potential participants were asked to inform other university students about the survey and given information about how to contact the researchers in case of questions.

Participants

By the time the survey was offline (on August 9, 2007) a total of 517 responses had been gathered. Nonetheless, twenty three responses were excluded because of duplicate entries (n =10) or participants indicating they were 17 or younger (n =13). The final sample consisted of 494 students, 125 males (25.3%) and 268 females (74.3%). The mean age was 24.1 years old (SD = 5.6). As Table 1 shows, most participants (77.3%) were undergraduate students, with a mean age of 22.8 (SD = 4.6).

Table 1. Demographics.

		Undergraduate (n=381)	Graduate (n=109)	Total (n=490)
Gender	Male (n=125)	26.0%	22.0%	25.1%
	Female (n=368)	74.0%	78.0%	74.9%
	Total	77.8%	22.2%	100%
Age		22.8 (SD=4.6)	28.7 (SD=6.5)	24.1 (SD=5.6)
Year in school	First	12.6%		9.8%
	Second	17.1		13.2
	Third	31.0		24.0
	Forth	18.9		14.7
	Fifth/Sixth	20.4		15.9
	B.A.		25.5%	5.7
	PhD./Master		67.2	15.1
	Curses		7.3	1.6

Measures

Questions were modelled on prior research by Sabina et al. (2008) and gathered three types of information:

- *Demographics*. Participants were asked about their gender, age and year in school.
- *Exposure to pornography*. Participants were asked, "Before you were 18, did you ever see pornography on the internet (images of naked people or people having sex)?". If their answer was "yes", they were then asked about age at first exposure, number of times they spent more than 30 minutes looking at online pornography (none, 1 time, 2 to 5 times, 6 to 10, 11 to 20, more than 20), and reasons for looking (wanted information about sex, was curious about the different things people do sexually, wanted the sexual excitement, was with friends who wanted to do it, or never looked for pornography on purpose). For this last question, multiple responses were possible. Besides, participants reported the number of times (1-5, 6-10, 11-20, 21-30, or more than 30 times) they saw each of 10 types of online pornography (e.g., intercourse or other sexual activity between a man and a woman, sexual pictures of children, rape or sexual violence). In order to create continuous variables, each category was recoded to its midpoint for number of

times participants viewed each type of image (0, 3, 8, 15.5, 25.5, and 35.5) and pornography for 30 minutes or more (0, 1, 3.5, 8, 15.5, and 25.5).

- *Strong reactions to pornography.* Participants were also asked, "Before you were 18 did you see pornography on the Internet that had a strong effect on your attitudes or emotions?" If so, they were asked further questions about age, setting, media, images seen, physical reactions, emotional reactions, perceived effects, and overall rating of the experience (1=very negative; 5=very positive).

Analyses

SPSS version 18.0 was used for all analyses. Chi-square analyses and *t*-tests were used to compare participants by gender and academic degree in terms of number and types of images seen and other related variables (reasons for exposure, effects, etc.).

Results

Prevalence and extent of exposure

Overall, 38.7% of participants saw pornography on the Internet before age 18. This constitutes 45.5% of undergraduates (n = 174) and 14.7% of graduates (n = 16), the former being significantly more likely to report this early exposure (χ^2 = 34.07, df = 1, n = 491, p < .001). The mean age of first exposure for undergraduates (M = 15.44, SD = 1.16) is significantly lower than for graduates (M = 16.33, SD = .71) (t = -2.28, df = 151, p < .05). Consistently, most graduates (88.8%) remember their first exposure at ages 16 or 17 whereas 47.2% of undergraduates remember their first exposure at ages 13 to 15.

With regard to gender, boys (63.2%, n = 79) are significantly more likely than girls (30.2%, n = 111) to report exposure to online pornography before 18 (χ^2 = 42.99, df = 1, n = 493, p < .001). The mean age of first exposure is 15 (M = 15.5, SD = 1.16), with no significant difference between genders. The earlier age of exposure reported by both genders is 13. Only exceptionally, boys are significantly more likely than girls to be exposed at age 14 (20.6% of boys, 8.2% of girls; χ^2 = 4.87, df = 1, n = 153, p < .05).

Concerning the extent of the exposure, there is no significant difference in the proportion of undergraduate (34.3%) and graduate students (12.5%) that viewed online pornography during their minority for thirty minutes or more at a time at least once. Nevertheless, undergraduates (M = 4.42, SD = 8.71) did so a significantly higher mean number of times (t = 4.16, df = 81.525, p< .001) than graduates (M = .43, SD = 1.23).

Regarding gender, boys (62.5%) are significantly more likely than girls (16.4%) to report viewing online pornography for thirty minutes or more at a time at least once (χ^2 = 24.9, df = 1, n = 113, p < .001). Besides, we observe that boys (M = 8.32, SD = 10.49) remember doing so a significantly higher mean number of times (t = 3.59, df = 53.585, p<.001), compared to girls (M=1.84, SD=6.06).

Motivations for exposure

Table 2 shows that most male participants (84.3%) viewed online pornography before age 18 because they wanted the sexual excitement, whereas one in five of female did (χ^2 = 49.04, df = 1, n = 124, p < .001). Boys are also more likely to report viewing pornography on Internet because they were curious about things people do sexually (χ^2 = 16.11, df = 1, n = 124, p < .001), wanted information about sex (χ^2 = 10.98, df=1, n = 124, p < .001), or were with friends who wanted to do it (χ^2 = 5.66, df = 1, n = 124, p < .02). To the contrary, girls (56.2%) are significantly more likely than boys (3.9%) to report never looking for pornography on purpose (χ^2 = 36.17, df = 1, n = 124, p < .001). Participants' reported reasons for exposure do not differ by academic degree.

Content of the exposure

Data included in Table 2 also indicates that more than four-fifth of participants saw images of naked people, naked people showing genitals (in explicit poses) and mixed gender intercourse (or other sexual activity) on the Internet before age of 18, with no significant differences in the rate of exposure to the diverse types of images by academic degree, and only two differences by gender: boys are significantly more likely to report seeing same gender intercourse (χ^2 = 3.7, df = 1, n = 118, p < .05) and sexual activity involving more than two people (χ^2 = 19.6, df = 1, n = 118, p < .001) at least once.

Concerning the extent of exposure to the diverse types of images, we observe more significant differences between genders: boys report seeing images of naked people (t = 2.25, df = 94.12, p < .05), naked people showing genitals (t = 3.22, df = 87.32, p < .01), mixed-sex intercourse (t =3.98, df = 84.13, p<.001), sexual activity between more than two people (t = 4.17, df = 69.70, p < .001) and same-sex intercourse (t = 2.01, df = 80.24, p < .05) a significantly higher mean number of times, compared to girls.

On the other hand, it is remarkable that a considerable number of participants saw images of deviant or criminal sexual activity before their majority: 31% saw images of sexual bondage or sexual activity between people and animals; 19% sexual activity involving urine or feces; 7.6% child pornography and 6.8% rape or sexual violence (see Table 2). Again, these rates do not significantly differ by gender or academic degree.

Table 2. Reasons for exposure and type of images seen by gender.

	Male (n =51)	Female (n =73)	Total (n =137)
Reasons			
Wanted the sexual excitement***	84.3%	20.5%	47.2%
Curious about things people do sexually***	58.8	23.3	37.6
Wanted information about sex	47.1	19.2	30.4
With friends who wanted to do it	31.4	13.7	21.6
Never looked on purpose***	3.9	56.2	34.4
Number of times seen images (mean)			
Naked people but no sexual activity*	20.98	15.31	17.75
Naked people showing genitals**	19.33	11.51	14.80
Mixed-sex intercourse***	18.17	8.80	12.81
Sexual activity among 2+ people***	13.23	4.55	8.02
Same-sex intercourse*	9.16	4.80	6.80
Sexual activity involving bondage	3.27	1.19	2.00
Sexual activity between people-animals	1.97	.90	1.31
Sexual activity involving urine or feces	.68	.61	.63
Sexual pictures of children	.56	.26	.38
Rape or sexual violence	.58	.32	.31
Seen images at least once			
Naked people but no sexual activity	93.9%	97.2%	95.9%
Naked people showing genitals	100	93.1	95.8
Mixed-sex intercourse	93.9	84.7	88.5
Sexual activity among 2+ people***	93.6	56.3	71.4
Same-sex intercourse*	66.0	47.9	55.5
Sexual activity involving bondage	38.3	26.8	31.1
Sexual activity between people-animals	37.0	27.8	31.1
Sexual activity involving urine or feces	19.1	19.4	19.2
Sexual pictures of children	6.4	8.5	7.6
Rape or sexual violence	10.6	4.3	6.8

*** p<.001; ** p< .01; * p<.05

Strong effects of exposure

A minority of participants viewed online pornography before age 18 that had a strong effect on them, specifically, one in six (16.7%, n = 29) of exposed undergraduates and one in four (25%, n = 4) of exposed of graduates, with no significant differences by academic degree. Similarly, we observe that small and equal portions of boys (17.7%, n = 14) and girls (17.1%, n = 19), among those exposed, remember strong reactions.

As Table 3 shows, the mean age for an incident that had a strong effect (or the incident that had the strongest effect if there is more than one) is 15 years with no significant differences by gender. Comparisons by academic degree cannot be carried out because of the very low number of graduate participants that report strong reactions.

Regarding the setting and image media, boys are significantly more likely to report being alone when they strongly reacted to online pornography (χ^2 = 3.93, df = 1, n = 29, p < .05) and participants, regardless of gender, are significantly more likely to have strongly reacted to still images, compared to videos (χ^2 = 7.11, df = 1, n = 58, p < .01) and webcam (χ^2 = 28.43, df = 1, n = 58, p < .001).

Concerning the type of images seen, nearly half of participants report a strong effect while viewing sexual activity between people and animals, naked people showing genitals and mixed-sex intercourse. Besides, more than one-third strongly reacted to images of sexual activity between more than two people or sexual activity involving bondage. There are not significant differences by gender.

We find also similar physical reactions between genders. For example, half of boys and more than two thirds of girls remember feeling nervous or sensations in genitals when they were strongly impacted. However, girls more often report flush face and avoidance, whereas boys more often report sexual excitement and masturbation, although non-significantly. As an exception, boys are more likely to report increased heart rate (χ^2 = 7.53, df = 1, n = 29, p < .001). Regarding emotions, most frequent reactions are disgust, shock or curiosity. In a smaller proportion, participants report feeling embarrassed or sexually excited. It is also remarkable that more than half of participants remember feeling thoughtful about it (see Table 3).

Table 3. Strong effect detail by gender

	Male (*n*=11)	Female (*n*=18)	TOTAL (*n*=29)
Mean age	15.55 (*SD*=1.21)	15.81 (*SD*=1.04)	15.70 (*SD*=1.1)
Setting			
By myself*	81.8%	44.4%	58.6%
With one or more people	18.2	44.4	34.5
Image media			
Still images	83.3%	70.6%	75.9%
Videos	41.7	41.2	41.4
Live/streaming video	0	11.8	6.9
Images			
Sexual activity between people-animals	58.3%	47.1%	51.7%
Naked people showing genitals	33.3	52.9	44.8
Mixed-sex intercourse	41.7	47.1	44.8
Sexual activity among 2+ people	50.0	35.3	41.4
Sexual activity involving bondage	33.3	35.3	34.5
Same-sex intercourse	33.3	23.5	27.6
Naked people but no sexual activity	25.0	17.6	20.7
Sexual activity involving urine or feces	8.3	23.5	17.2
Rape or sexual violence	25.0	5.9	13.8
Sexual pictures of children	0	0	0
Physical Reaction			
Increased heart rate**	75%	23.5%	44.8%
Nervous/tense	50.0	41.2	44.8
Sensations in genitals	50.0	38.9	43.3
Flushed face	16.7	47.1	34.5
Avoidance	16.7	41.2	31.0
Sexual excitement	41.7	22.2	30.0
Masturbation	25.0	11.8	17.2
Sweating	25.0	5.9	13.8
Nausea	25.0	5.9	13.8
Dizziness/fainting	8.3	0	3.4
Crying	8.3	0	3.4
Emotional Reaction			
Disgust	41.7%	70.6%	58.6%
Shock or surprise	41.7	58.8	51.7
Curiosity	50.0	47.1	48.3
Embarrassment	41.7	35.3	37.9
Sexual excitement	41.7	33.3	36.7
Worry (about being caught)	25.0	37.5	32.1
Interest or fascination	25.0	29.4	27.6
Guilt or shame	25.0	23.5	24.1
Anger or distress	16.7	11.8	13.8
Fear	25.0	0	10.3
Amusement	8.3	11.8	10.3
Sadness	16.7	0	6.9
Happiness	0	5.9	3.4
Jealousy	0	0	0
Other Effects			
Thoughtful about it	33.3%	64.7%	51.7%
More eager to seek sexual activity	25.0	22.2	23.3
Had unwanted thoughts about it	25.0	17.6	20.7
Less eager to seek sexual activity	25.0	5.9	13.8
Felt cheap or impure	16.7	11.8	13.8
More aware of sex without love/marriage	16.7	0	6.9
Learned some biological facts about sex	8.3	0	3.4
Reinforced beliefs that casual sex is bad	0	5.9	3.4
Felt mature or cool	0	0	0
Felt physically unattractive or inadequate	0	0	0
Overall rating (1=very negative; 5=very positive)	2.67 (*SD* = 1.5)	2.78 (*SD* = 0.65)	2.74 (*SD* = .98)

*** p<.001; ** p< .01; * p<.05

Discussion

Overall, almost forty percent of students in our sample remember being exposed to online pornography when they were underage. This rate appears to be consistent with the average rate of exposure of European teenagers (Livingstone & Haddon, 2009), but is lower than rates found in other research (Flood, 2007; Livingston & Bober, 2005; Peter & Valkenburg, 2006; Sabina et al. 2008). Regarding gender, and similarly to previous international and national studies (Cameron et al. 2005; Finkelhor et al. 2000; Flood, 2007; INTECO, 2009; Livingston et al. 2011; Mesch, 2009; Montiel et al. 2011; Peter & Valkenburg, 2006; Sabina et al. 2008; Wolak et al. 2007; among others) we observe that boys are significantly more likely to report early exposure than girls.

On the other hand, comparisons by academic degree reveal that undergraduate participants are significantly more likely to report exposure to online pornography prior age 18 than are graduates. Likewise, we find that undergraduates report a significantly lower age of first exposure as well as a significantly higher extent of exposure. Probably these differences are due to the fact that Internet use has exponentially increased in Spain over the last decade (AIMC, 2012b) and thus undergraduates in this study, who are average six years younger than are graduates, had much more access to the Internet (and its pornographic contents) during their minority, and from an earlier age.

Similarly, it is remarkable that our study does not show any exposure to online pornography during preadolescence, in contrast to prior findings (ACPI & Protegeles, 2002; INTECO, 2009; Livingston & Bober, 2005; Wolak et al. 2007). But again, we take into account that these results are based on youth's memories, instead of children's or adolescents' self-reports, thus our participants' memories of pre-teenage years refer to 1997 on average, a year in which the rate of Internet access in Spain did not reach 3% (AIMC, 2012b) and online pornography was consequently less available to the public. Furthermore, based on this consideration, our rates appear to be consistent with prior Spanish research finding that 28% of 16-17 year-olds reported having ever accessed a pornographic website (ACPI & Protegeles, 2002); in our study, a similar proportion of students remember seeing online pornography at that age (that is, by 2002 on average). But to the contrary, our data are still inconsistent with those contemporaneously found in the study by Sabina et al. (2008), in which 72% of US students reported exposure before age 18, and 14% of boys and 9% of girls reported exposure before age 13.

In the current study, most frequently reported reason for voluntary exposure to online pornography during adolescence is desire for sexual excitement, followed by curiosity about sex or sexual information seeking. Also in accordance with Sabina et al. (2008), as well as others (Flood, 2007; Sánchez-Chavez et al. 2007; Ybarra & Mitchell, 2005), it is worth noting that a significantly higher proportion of boys report seeking cyberporn for sexual excitement, whereas a significantly higher proportion of girls report never looking for it on purpose. In fact, unlike prior research showing low rates of deliberate consumption in both sexes (Cameron et al. 2005; Flood, 2007; Garitaonandia & Garmendia, 2007; Livingston & Bober, 2005; Mesch, 2009; Ybarra & Mitchell, 2005), we observe that most girls were exposed to online pornography unintentionally, whereas most boys sought it deliberately. Moreover, a significantly higher portion of boys report having ever spent more than thirty minutes at a time looking at pornography on the Internet, what is consistent with Peter & Valkenburg (2006). It should be noted, however, that near half of girls report having watched online pornography voluntarily.

Regarding content of the exposure, our data show a great variety in the type of online sexual images seen by participants before age 18. Unlike prior research (Peter & Valkenburg, 2006; Sabina et al. 2008), we find few gender differences in the rate of exposure to the various types of sexually explicit material. As expected, nevertheless, boys report seeing some types of images a significantly higher mean number of times, what support the evidence that males use pornography more frequently than females (Peter & Valkenburg, 2011b; Svedin, Åkerman, & Priebe, 2011). Doubtless, a matter of concern is that a considerable proportion of Spanish adolescents appear to be exposed to depictions of deviant or criminal sexual behaviour, including sexual activity between people and animals, child pornography and rape, in consistence with Sabina et al.'s findings (2008). For example, one of one of our participants saw "a woman having sex with a horse" and another saw "a woman being offended by a man and used as an object", what made her "regret having seen it". Furthermore, boys remember being repeatedly exposed to pictures of sexual activity involving bondage, domination, pain or humiliation (three times average), what raises concerns about observed links between intentional exposure to x-rated violent material and perpetration of sexually aggressive behaviour among minors (Ybarra, Mitchell, Hamburger, Diener-West, & Leaf, 2011).

On the question of the effects of online pornography, it is reassuring to find out that only a minority of the sample report an incident of exposure to online pornography that had strong effects on them (approximately one in six of the exposed participants, regardless of their gender), although they may be denying or unaware of its influence. Many of the youth with strong effects report seeing multiple types of images in more than one format (especially still images and video), what suggest that viewing might occurred in websites offering a variety of pornographic content. Surprisingly, besides, we observe a higher prevalence of strong reactions to normative images such as naked people or mixed-sex intercourse are, although this fact is probably due to the higher rate of participants' exposition to these types of images on the Internet.

According to our results, there seems to be diversity of physical, emotional and other reactions to online pornography both between and within genders. Overall, near half of

participants remember feeling disgust, shock or surprise, curiosity, increased heart rate, nervous or tense, sensations in genitals or being thoughtful about it. Only one in four or five participants report feeling guilt or shame, feeling more eager to seek sexual activity, or having unwanted thoughts. While boys more frequently remember positive reactions such as sexual excitement and masturbation, girls more frequently report negative reactions such as avoidance, disgust or concern about being caught, although these differences are non-significant in our study, unlike Sabina et al. (2008).

In sum, those worried about the potential negative impact of exposure to online pornography before age 18 may find some support in our findings. We have collected some concerning comments of our participants such as "it was really disgusting and I stopped using the Internet for over a month because it made me remember that scene". However, we should take care not to exaggerate these effects, since strong reactions to viewed online pornography actually appear rare and mixed. In fact, we found that our participants' mean overall rating of the experience that strongly affected them is neither overwhelmingly negative nor positive. Besides, we do not know how long-lasting these negative reactions were, since descriptions of their duration were not coded.

Indeed, it should be noted that our results only apply to young adults' reports of immediate reactions to one particularly memorable encounter with online pornography. Furthermore, college students' retrospective reports may not be accurate, although most participants should have good memories of experiences occurring during adolescence. Thus, further research on the prevalence, characteristics and potential risks of minors' exposure to online pornography in Spain could benefit from sampling children and adolescents, as well as from combining the survey technique with the use of qualitative methods that are uncommon in this field of research (García, Beltrán, & Pérez, 2011). Nonetheless, given the paucity of research in this area and the difficulty of accessing these issues directly with minors, this study may shed light on this complex social issue.

Conclusions

In our study, almost four in ten of the participants remembered being exposed to online pornography before age 18. This experience, therefore, seems to be relatively common among Spanish minors, but is still far from being normative. Furthermore, similarly to Sabina et al. (2008), our data suggest that there is considerable diversity in the extent, reasons, conditions and effects of exposure. While many adolescents may seek online pornography out deliberately, some may be exposed involuntarily. Some may seek it for sexual stimulation while others may just want information about sex. Some may access it frequently, while others may have only a few exposures. Some may strongly react to online pornography, but most may not. Among the former, some may have positive feelings, while others may experience disgust, embarrassment or guilt.

On the other hand, it is remarkable that our results suggest that a considerable proportion of adolescents have easy access to deviant or criminal pornographic contents ("There is too much pornography on Internet, but the real problem is that anyone can access it, even children" said one participant) and, what may be more concerning, often inadvertently ("I downloaded a song and it turned to be a porn video of coprophagy"). Thus, we support the necessity to protect young people from exposure to inappropriate and disturbing sexual contents by providing parents with effective monitoring rules and developing sexual education programs that includes the teaching of ethical norms and skills to critically evaluate pornographic materials (Flood & Hamilton, 2003). Likewise, it is essential to reach a balance between the protection of minors and the promotion of their development (Miranda, 2005) since "protecting children from sexual harm does not mean protecting children from sexuality" (Flood, 2009); a difficult and worthy task.

References

Acción Contra la Pornografía Infantil, ACPI & Protegeles (2002). Acción Contra la Pornografía Infantil y Protégeles para el Defensor del Menor. *Estudio sobre Seguridad Infantil y costumbres de los menores en Internet***.** Retrieved from http://www.protegeles.com/docs/estudio_internet.pdf

Asociación para la Investigación en Medios de Comunicación, AIMC (2012a). *Acceso a Internet de niños menores de 14 años en EGM*. Retrieved from http://www.aimc.es/-EGM-Ninos-en-Internet-.html

Asociación para la Investigación en Medios de Comunicación, AIMC (2012b). *14ª encuesta AIMC a usuarios de Internet*. Retrieved from http://download.aimc.es/aimc/f5g9/macro2011.pdf

Brown, J. D. & L'Engle, K. L. (2009). X-Rated Sexual Attitudes and Behaviors Associated With U.S. Early Adolescents' Exposure to Sexually Explicit Media. *Communication Research, 36*(1), 129-151.

Cameron, K., Salazar, L. F., Bernhardt, J. M., Burgess-Whitman, N., Wingood, G. M. & DiClemente, R. J. (2005). Adolescents' experience with sex on the web: results from online focus groups**.** *Journal of Adolescence, 28,* 535-540.

Cantor, J., Mares, M. L., & Hyde, J.S. (2003). Autobiographical memories of exposure to sexual media content. *Media Psychology , 5*, 1-31.

Castellana, M., Sánchez-Carbonell X., Graner, C., & Beranuy, M. (2007). El adolescente ante las tecnologías de la información y la comunicación: Internet, móvil y videojuegos. *Papeles del Psicólogo, 28*(3), 196-204.

Collins, L. R., Martino, C. S., Shaw, R. (2011). *Influence of New Media on Adolescent Sexual Health: Evidence and Opportunities* (WR761). USA: Department of Health and Human Services. Retrieved from http://aspe.hhs.gov/hsp/11/AdolescentSexualActivity/NewMediaLitRev/index.pdf

Dombrowski, S. C., Gischlar, K. L., & Durst, T. (2007). Safeguarding young people from cyber pornography and cyber sexual predation: A major dilemma of the Internet. *Child Abuse Review, 16,* 153-170.

Espinar, E. & López, C. (2009). Spanish adolescents' views of the uses and risks of new Technologies. *Athenea Digital, 16*, 1-20.

Finkelhor, D., Kimberly, M., & Janis W. (2000). *Online Victimization: A Report on the Nation's Youth***.** Durham, NH: National Center for Missing and Exploited Children, Crimes Against Children Research Center.

Flander, G. B., Cosic, I., & Profaca, B. (2009). Exposure of children to sexual content on the internet in Croatia. *Child Abuse & Neglect, 33*(12), 849-856.

Flood, M. (2007). Exposure to pornography among youth in Australia. *Journal of Sociology, 43*(1), 45-60.

Flood, M. (2009). The harms of pornography exposure among children and young people. *Child abuse review, 18*, 384-400

Flood, M. & Hamilton, C. (2003). *Regulating Youth Access to Pornography* .Discussion Paper No. 53. Canberra, Australia: The Australia Institute.

García, A., Beltrán, P., Gaona, C., López, M.C., Martínez, E. Pérez-Ugena, A., & Vizcaino, R. (2010, February). *Los menores y los usos de Internet: riesgos y características*. Paper presented at the II Congreso Internacional de la Asociación Española de Investigadores de la Comunicación (AE-IC), Málaga, Spain.

García, A., Beltrán, P. & Pérez, M. C. (Agosto, 2011). *La investigación sobre los usos y riesgos de Internet en menores y jóvenes. Estado de la cuestión en España y proyección iberoamericana.* Paper presented at the I Congresso Mundial de Comunicação Ibero-Americana (CONFIBERCOM), Sao Paolo, Brasil.

Garitaonandia, C. & Garmendia, M. (2007). *Cómo usan Internet los jóvenes: hábitos, riesgos y control parental.* Retrieved from http://www.ae-ic.org/santiago2008/contents/pdf/comunicaciones/71.pdf

Garmendia, M., Garitaonandia, C., Martínez, G. & Casado, M. A. (2011). *Riesgos y seguridad en internet: Los menores españoles en el contexto europeo.* UPV/EHU. Bilbao: EU Kids Online. Retrieved from http://www2.lse.ac.uk/media@lse/research/EUKidsOnline/EU%20Kids%20II%20(2009-11)/National%20reports/Spanish%20report.pdf

Hernández, J. (2008). *La Universidad Española en Cifras 2008*. Conferencia de Rectores de las Universidades Españolas. Madrid: CRUE.

Instituto Nacional de Estadística, INE (2012). *Encuesta sobre Equipamiento y Uso de Tecnologías de Información y Comunicación en los Hogares 2012. Notas de prensa.* Retrieved from http://www.ine.es/prensa/np738.pdf

Instituto Nacional de Tecnologías de la Comunicación, Observatorio de la Seguridad de la Información, INTECO (2009). *Estudio sobre hábitos seguros en el uso de las TIC por niños y adolescentes y e-confianza de sus padres.* Retrieved from http://www.inteco.es/Seguridad/Observatorio/Estudios/Estudio_ninos

Labay, M., Labay, A., & Labay, M. (2011). Internet, sexo y adolescentes: una nueva realidad. Encuesta a jóvenes universitarios españoles. *Revista Pediatría de Atención Primaria, 13*, 225-32.

Livingstone, S. & Bober, M. (2005) *UK children go online. Final report of key report findings.* London, UK: London School of Economics and Political Science.

Livingstone, S. & Haddon, L. (2009). *EU Kids online. Final report.* London, UK: London School of Economics and Political Science.

Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2011). *Risks and safety on the internet: The perspective of European children. Full Findings*. LSE, London: EU Kids Online. Retrieved from: http://eprints.lse.ac.uk/33731/

Lo, W. & Wei, R. (2005). Exposure to Internet Pornography and Taiwanese Adolescents' Sexual Attitudes and Behavior. *Journal of Broadcasting & Electronic Media 49*(2), 221–237.

Luder, M. T., Pittet, I., Berchtold, A., Akré, C., Michaud, P. A., & Surís, J. C. (2011). Associations Between Online Pornography and Sexual Behavior Among Adolescents: Myth or Reality? *Archives of Sexual Behavior, 40*(5), 1027-1035.

Mesch, G. S. (2009). Social bonds and Internet pornographic exposure among adolescents. *Journal of Adolescence, 32*(3), 601-618.

Miranda, R. (2005). Los menores en la red: comportamiento y navegación segura. Fundación AUNA. *Cuaderno Sociedad de la Información, 6,* 1-30.

Montiel, I., Carbonell, E., & Orts, E. (2011). Estudio piloto sobre victimización juvenil a través de Internet. *Revista Galega de Cooperación Científica Iberoamericana, 22*, 23-33.

Owens, E. W., Behun, R. J., Manning, J. C., & Reid, R. C. (2012). The impact of Internet pornography on adolescents: A review of the research. *Sexual Addiction & Compulsivity, 19*, 99-122.

Palfrey, J. (2008). *Enhancing Child Safety & Online Technologies: Final Report of the Internet Safety Technical Task Force.* Cambridge (MA): Berkman Center for Internet & Society at Harvard University.

Peter, J. & Valkenburg, P. M. (2006). Adolescents' exposure to sexually explicit material on the Internet. *Communication Research, 33*(2), 178–204.

Peter, J., & Valkenburg, P. M. (2011a). The influence of sexually explicit Internet material on sexual risk behavior: A comparison of adolescents and Adults. *Journal of Health Communication, 16*, 750-765.

Peter, J. & Valkenburg, P. M. (2011b). The Use of Sexually Explicit Internet Material and Its Antecedents: A Longitudinal Comparison of Adolescents and Adults. *Archives of sexual behaviour, 40*, 1015-1025.

Sabina, C., Wolak, J. & Finkelhor, D. (2008). The Nature and Dynamics of Internet Pornography Exposure for Youth. *CyberPsychology & Behavior*, 11(6), 691-693.

Sánchez-Chávez, N. P., Reyes-Hernández, U., Reyes-Hernández, D., Quero-Hernández, A., Reyes-Gómez, U. & Colón-Cuesta, F. (2007). Entorno de la Consulta de Pornografía y su repercusión en Relación a la Sexualidad en un Grupo de Adolescentes Masculinos. *Boletín Clínico Hospital Infantil del Estado de Sonora, 24*(1), 3-8.

Staksrud, E., Livingstone, S. & Haddon, L. (2009). *What Do We Know About Children's Use of Online Technologies? A Report on Data availability and Research Gaps in Europe* (short version). London, UK: London School of Economics and Political Science.

Svedin, C. G., Åkerman, I., & Priebe, G. (2011). Frequent users of pornography. A population based epidemiological study of Swedish male adolescents. *Journal of Adolescence, 34*(4), 779-788.

Thornburgh, D. & Lin, H. S. (2002). *Youth, pornography, and the Internet.* Washington, DC: National Academy Press.

Veldman, I. (2007, June). *Cyberporn: The Forbidden Fruit in Current Research*. Paper presented at the 7th Twente Student Conference on IT, Enschede, Nederlans.

Wolak, J., Mitchell, K., & Finkelhor, D. (2006). *Online Victimization of Youth: 5 Years Later.* Alexandria, VA: National Center for Missing & Exploited Children.

Wolak, J., Mitchell, K. J., & Finkelhor, D. (2007). Unwanted and wanted exposure to online pornography in a national sample of youth Internet users. *Pediatrics, 119*, 247-257.

Ybarra, M. L. & Mitchell, K. J. (2005). Exposure to Internet pornography among children and adolescents: a national survey. *CyberPsychology & Behavior, 8*(5), 473-486.

Ybarra, M. L., Mitchell, K. J., Hamburger, M., Diener-West, M., & Leaf, P. (2011). X-rated material and perpetration of sexually aggressive behavior among children and adolescents: is there a link? *Aggressive Behavior, 37*(1), 863-874.

(Artículo recibido: 21-06-2011, revisado: 26-7-2012, aceptado: 1-8-2012)