



Boston University School of Public Health



A trend analysis of U.S. adolescents' intentional pornography exposure on the internet, 2000-2010

Emily F. Rothman, ScD
Boston University School of Public Health

Kimberly J. Mitchell, PhD
University of New Hampshire

ACKNOWLEDGEMENTS:

For the purposes of compliance with Section 507 of PL 104-208 (the "Stevens Amendment"), readers are advised that 100% of the funds for this program are derived from federal sources (National Center for Missing & Exploited Children and the Office of Juvenile Justice & Delinquency Prevention). The total amount of federal funding involved in these three projects is \$1,383,667 (\$300,000 for YISS-1, \$348,767 for YISS-2 and \$734,900 for YISS-3). Points of view or opinions in this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.

Abstract

Purpose. To assess trends in intentional pornography exposure (IPE) on the internet among U.S. adolescents between 2000 and 2010.

Methods. The Youth Internet Safety Survey (YISS) is a series of nationally representative cross-sectional studies that took place in 2000 (N=1,501), 2005 (N=1,500) and 2010 (N=1,560). Participants were individuals ages 10 through 17, who had used the internet at least once a month for the past six months, and a caregiver.

Results. In 2010, 13% of U.S. youth reported IPE at least once in the past year. There was a modest increase in the percentage of youth that reported IPE between 2000 and 2010 (RR_{adj} 1.3, 95% CI 1.1, 1.6). Virtually all of the increase took place in the first five years. The IPE increase was primarily driven by those ages 16-17 years old (RR_{adj} 1.6, 95% CI 1.2, 2.2). Only 2% of youth ages 10-11 years old reported IPE in 2010. In stratified analyses, increases in IPE from 2000 to 2010 were observed for both boys and girls, though very few girls reported IPE. From 2000 to 2010, increases in IPE were observed for White youth but not Black or Hispanic youth.

Conclusions. Although there was a small increase in the proportion of youth reporting past year IPE from 2000 to 2010, the supposition that adolescents became exponentially and continually more likely to see pornography as adult internet access increased was not supported. Concerns about a sizable proportion of early adolescents seeking out pornography may be unwarranted.

Keywords: pornography, sexually explicit material, sexual behavior, adolescent health

Implications and Contribution

This is the first trend analysis of the proportion of U.S. youth who intentionally view pornography. This study found that from 2000 to 2010, there was a minor increase in the percentage of youth that sought pornography, from 8-13% with the largest increase occurring in the first five years.

According to the General Social Survey, the proportion of U.S. adults age 18 or older who have seen at least one x-rated (*i.e.*, pornographic)* film or video in the past year has remained relatively stable at 26-34% of men and 34-38% of women between 1973-2010, despite the advent of the internet [1, 2]. Because there is no comparable nationally-representative survey of youth that has included a question about pornography, to date there has been no information available about trends in U.S. adolescent pornography viewing. However, the supposition that an ever-increasing proportion of U.S. youth are viewing pornography every year--because of improved internet access—has become the basis for policy. In 2016 the state of Utah passed a resolution recognizing pornography as a public health crisis, in part, because:

“due to advances in technology and the universal availability of the internet, young children are exposed to...pornography at an alarming rate” and “the average age of exposure to pornography is now 11 to 12 years of age.”

-Utah 2016 General Session, S.C.R. 9

Research suggests that between 42% and 70% of U.S. youth younger than 18 years old have seen pornography, either intentionally or unintentionally, at least once [3-5], and 8% of U.S. youth age 10-17 years old report having sought out pornography intentionally in the past year [6]. Estimates of intentional internet pornography exposure among adolescents from other nations vary in part because of assessment differences. For example, 1% of girls and 29% of boys in Switzerland report intentional internet pornography exposure in the past 30 days [7], 71% of boys and 40% of girls in the Netherlands report the same in the past six months [8], and from 2-11% of girls and 38%-57% of boys in Australia and Greece report lifetime exposure [9,

* Some researchers prefer the term “sexually explicit media” to the term “pornography,” though both are widely used in the scientific literature. In this paper, we use the term “pornography” to be consistent with recent policy discourse in the United States and United Kingdom.

10] (for a full review of studies reporting prevalence estimates please see Peter & Valkenburg, 2016).

To our knowledge, there is no data source that would provide an estimate of the average age of first pornography exposure among youth in the United States. The idea that the average age of first pornography exposure among U.S. youth is 11 years old was originally posted online by TopTenREVIEWS and does not reference any source [11]. Nationally representative U.S. data do not support the statement; a 2005 survey found that 42% of internet-using youth ages 10-17 years old had ever seen pornography, but only 5% of girls and 11% of boys 12-13 years old [3].

Although the average age of first exposure to pornography in the U.S. and elsewhere remains unknown, there are reasons to be concerned about minors' exposure to pornography. Several longitudinal research studies have found that adolescent pornography viewing predicts a host of subsequent risky sexual behaviors and attitudes, including sexual harassment perpetration, having sexual intercourse [12], decreased sexual satisfaction [13], sexual preoccupation [14], more permissive sexual norms [15], sexual aggression perpetration [16], and other sequelae such as worse academic performance [17]. However, some longitudinal studies have yielded mixed or null results, including a study of Dutch adolescents and adults that did not find uniform support for the hypothesis that exposure to sexually explicit media would result in body dissatisfaction [18]; a separate four-wave study of Dutch adolescents that found pornography use predicted boys' subsequent sexually permissive attitudes, but not girls' [15]; and a 2006 longitudinal study of U.S. youth that found exposure to violent pornography was associated with self-reported sexual aggression two years later, but that exposure to non-violent pornography was not [19]. However, some members of the public remain concerned about the effects of pornography on children, and believe that: (1) The advent of the internet dramatically

increased adolescent exposure to online pornography; and (2) Youth are seeing pornography at younger and younger ages [20].

To our knowledge, this is the first study to assess ten-year trends in online intentional pornography exposure (IPE) in U.S. adolescents, ages 10-17 years old. The study was designed to assess whether the proportion of youth who sought out pornography increased between 2000 and 2010, which was a period of rapid internet expansion [21]. A secondary objective was to determine if the putative trend would vary by youths' age, race, parents' marital status, household composition, parents' level of education, and annual household income.

Methods

The Youth Internet Safety Surveys (YISS-1, YISS-2, and YISS-3) were conducted to quantify and detail problematic internet experiences including unwanted sexual solicitations, harassment, and exposure to pornography. Respondents were youth 10-17 years old who had used the internet at least once a month for the past six months, and a caregiver. Data collection for YISS-1, YISS-2, and YISS-3 occurred between: August, 1999 and February, 2000; March and June, 2005; and August, 2010 and January, 2011, respectively.

A national sample of households that had been pre-screened for another survey was used in YISS-1, while YISS-2 and YISS-3 samples were largely recruited through random digit dialing. Response rates across the three studies reflect increasing rates of cell phone-only households and greater reliance on voice-mail and caller-id. As such, more calls were needed to identify eligible households in YISS-2 and YISS-3, and an increasing percentage of households reached were ineligible across the YISS studies (28%, 72%, and 88% for YISS-1, YISS-2, and YISS-3 respectively). Once eligible households were reached, the refusal rate was 18% for YISS-1 and 46% for both YISS-2 and YISS-3 (see [22] for detailed information on YISS methodology).

Procedures

Human subject participation in each YISS study was approved by the University of New Hampshire IRB. Interviewers spoke with an adult and determined whether an eligible child lived in the household. In households with more than one eligible youth, the one who used the internet the most often was chosen as the respondent. After receiving informed consent, interviewers asked questions about the selected child's internet use, and then asked permission to interview the child. Interviewers told parents that the youth interview would be confidential, would include questions about "sexual material your child may have seen on the internet," and that youth would receive \$10 for participating. After receiving parental permission, interviewers spoke with the youth and asked for permission to conduct an interview. Interviewers assured youth that they could skip any question they did not want to answer and end the interview any time. Interviews were scheduled at the convenience of youth and at times when they were able to talk freely and confidentially. The average youth interview lasted 30 minutes.

Sample

Females made up approximately half the sample across all surveys and approximately 90% of the sample was 12-17 years old (see Table 1). White youth made up a slightly smaller proportion of the YISS-3 sample compared to YISS-1 and YISS-2. The YISS-3 sample also included a greater percentage of youth from high-income households. This reflects some of the demographic differences found in landline telephone surveys: low-income families are increasingly more likely to live in cell-phone-only households [23]. There were significant changes from 2000 to 2010 in the intensity of youth internet use and ways that youth used the internet (See Table 1). Across all of the YISS samples, well-educated and high-income families, and White youth are over-represented compared to the national average, but the skewed distribution reflects the population of youth internet users at the time of data collection [24].

Measures

Intentional pornography exposure (IPE) was captured with the question: “Sometimes when kids are curious about sex they go to X-rated web sites that show pictures of naked people or people having sex. In the past year, how many times have you gone to X-rated sites on the internet on purpose? Would you say....” Response options were Never, 1 time, 2 times, 3 to 5 times, and 6 or more times and recoded to reflect any versus no intentional exposure.

Unintentional exposure to pornography was defined as a positive response to one or both of the questions: (1) “In the past year when you were doing an online search or surfing the Web, did you ever find yourself in a Web site that showed pictures of naked people or of people having sex when you did not want to be in that kind of site?” (2) “In the past year, did you ever open a message or a link in a message that showed you actual pictures of naked people or of people having sex that you did not want?”

Internet usage patterns. Youth were asked how many days they used the internet in a usual week. Final responses were coded to reflect either frequent use, defined as seven days per week, or fewer. Intensity of internet use was also measured by asking youth how many hours they were online on a usual day when they used the internet. Responses of ≥ 2 hours per day versus fewer were coded to reflect more intense internet use for the purposes of analyses. Youth also reported on how important the internet was in their lives on a scale of 1 (not at all) to 5 (extremely). Responses were coded to reflect high importance (very or extremely) versus less. Youth also reported on how much experience they had using the internet, on a scale of 1 (beginner) to 5 (expert). Responses were coded to reflect more experience (score of 4 or 5) versus less. Youth were also asked “During the past year, have you used the internet... 1) from a computer at your home, 2) from a computer at your school, 3) from a computer at a friend’s home, and 4) from a cell phone (in 2005 and 2010 only).

Demographic information. Caregivers reported on the youths' gender, age, household education and income in the year prior to the study. Youth reported information on race and ethnicity.

Analyses

The prevalence of past year IPE was calculated for all youth, and then for youth stratified by demographic subcategories. The relative risk (RR) of IPE for youth was assessed using Poisson regression with robust error variance comparing rates from 2000 to 2005, 2005 to 2010, and 2000 to 2010. All regression models controlled for potential confounders, including all other demographic characteristics, internet use characteristics, and self-reported experience using the internet. For each RR, 95% confidence intervals were calculated. Differences were determined to be statistically significant if p-values were <0.05 . Missing data were conservatively coded as "symptom absent."

Results

All participants

The descriptive results presented in Table 2 show that the percentage of YISS participants reporting any IPE in the past year was 8% in 2000, 13% in 2005, and 13% in 2010. There was a 30% increased likelihood of past year IPE in 2010 as compared to 2000 (RR_{adj} 1.3, 95% CI 1.1, 1.7) controlling for all potential confounders (Table 2). There was no change in the percentage of participants reporting IPE between 2005 and 2010. In stratified analyses, no differences in IPE were observed between 2005 and 2010 by age, gender, race and ethnicity, family structure, parental marital status, highest level of education of a household member, the amount of unwanted internet exposure, frequency of internet use, intensity of internet use, importance of internet to the participant, or self-reported internet experience.

By age

None of the increase in the percentage of youth reporting IPE between 2000 and 2010 occurred in those 10-13 years old. From 2000 to 2005, the only statistically significant increase in IPE by age subgroup was for those ages 16 to 17 years old (RR_{adj} 1.7, 95% CI 1.2, 2.2). Overall, over the course of the 2000-2010 decade, there was a 60% increase in IPE among 16 to 17 year olds, from 13% to 22% (Table 2). There was also a non-significant but notable trend in IPE among those 14 to 15 years old between 2000 and 2005 (from 10% to 15%) (Table 2).

By gender and race/ethnicity

From 2000 to 2010, boys and girls both experienced a 30% increase in IPE, although the increase was only statistically significant for boys (Table 2). For both boys and girls, the major increase in IPE occurred between 2000 and 2005, when boys' IPE increased from 13% to 22% (RR_{adj} 1.5, 95% CI 1.2, 1.9), and girls' IPE increased from 2% to 4% (RR_{adj} 1.3, 95% CI 1.0, 1.9). In terms of race and ethnicity, there were no increases in IPE reported by Black or Hispanic youth from 2000 to 2005, or from 2005 to 2010. White youth were 50% more likely to report IPE in 2005 as compared to 2000 (RR_{adj} 1.5, 95% CI 1.2, 1.9), and over the decade 2000 to 2010 White youth experienced a 30% increase in IPE (from 8% to 13%).

By household income and education

In 2000, youth from the highest income households, those with annual incomes of \$75,000 or more, were most likely to report IPE (10% as compared to 6-8% of youth from less wealthy households). Youth in these most households steadily increased IPE from 2000 to 2010 (from 10% to 12% to 15%; RR_{adj} 1.2, 95% CI 0.8, 1.7). In contrast, between 2000-2005, youth from middle income households, where the annual household income was \$50,000-74,999, experienced a sharp increase in IPE (RR_{adj} 1.9, 95% CI 1.2, 3.1), but between 2005 and 2010, a decrease of 50% (RR_{adj} 0.5, 95% CI 0.3, 0.8). Youth from the lowest income households also experienced an increase in IPE between 2000 and 2005 that rebounded back in 2010 such that

there was no difference in their IPE for the decade-long period of 2000 to 2010. There were no substantial differences in IPE trends for youth living in households with a parent who had graduated from college as compared to those living with parents who had less education between 2000 and 2005, or 2005 and 2010; over the decade of 2000 to 2010, youth from households where at least one parent had graduated from college increased their IPE from 8% to 14% (RR_{adj} 1.5, 95% CI 1.1, 2.0), and those whose parents had less education increased their IPE from 8% to 11% (RR_{adj} 1.1, 95% CI 0.7, 1.5).

By family structure and parental marital status

The percentage of youth reporting past year IPE increased for those living with both biological parents and for those living in households with a different family structure (e.g., single parent). Similarly, there were approximately equivalent increases for youth whose parents were married and those with parents who were not married.

By unwanted internet exposure

Some youth reported that they had unintentional exposure to pornography as well as intentional exposure. For those with no unintentional exposure, IPE increased by 40% from 2000 to 2010 (RR_{adj} 1.4, 95% CI 1.0, 1.9). For those who did experience unintentional exposure to pornography, the IPE also increased 40% from 2000 to 2010 (RR_{adj} 1.4, 95% CI 1.0, 1.8). In each year, those with unintentional exposure to pornography reported substantially higher levels of IPE than their counterparts who had not unintentionally been exposed to pornography.

Discussion

The results of this study indicate that the percentage of U.S. youth who were viewing pornography increased when internet access was rapidly expanding between 2000 and 2010. We found that youth were 30% more likely to report intentionally viewing pornography on the internet in the past year in 2010 as compared to 2000. However, the percentage of U.S. youth

who were seeking out pornography was small. The 30% increase represents a shift from 8% of 10-17 year old youth in 2000 to 13% of youth in that same age group a decade later. If the trend continues at the same rate, in 2020, 17% of youth will report past year intentional pornography use. Because the bulk of the literature on adolescents and pornography suggests that pornography use is associated with earlier sexual behavior, more permissive sexual attitudes, and sexual aggression [5], public health experts have reason to participate in efforts to curtail adolescent pornography use. On the other hand, larger proportions of U.S. youth consider suicide (18%), experience dating abuse victimization (20%), use marijuana (21%), and have physical fights (23%) each year than seek out pornography [25], suggesting that efforts to minimize adolescent access to pornography should not override efforts to prevent these other more common adolescent public health priorities.

Alarm about pre-adolescent children trying to view pornography may be unnecessary. This study found that only 2% of 10-11 year olds sought out pornography in 2010. A prior study found that 14% of 10-12 year old youth *unintentionally* viewed pornography in 2010 [26]. While the proportion of pre-adolescent children who have access to tablet computers and mobile phones has increased since 2010, it may continue to be rare that young internet users view pornography. Indeed, following typical child development, pre-adolescents are likely more supervised when using the technology than mid- and late-adolescents who are using technology with less oversight and more independence [27]. Virtually all of the increase in intentional pornography exposure over time among youth in this sample occurred in the eldest subgroup (16-17 years old). It is developmentally normal for older adolescents to become interested in sexual media, so understanding which subgroups of 16-17 year olds are at risk for harmful sequelae of online pornography exposure could be an important first step before spending resources on developing overly-broad prevention initiatives. Given the dearth of comprehensive

sex education programs available to adolescents in public schools [28], it could be that investments in sexual and reproductive health-promoting curricula would have larger health dividends than investment in anti-pornography programming.

Although we observed an increase in intentional exposure to pornography between 2000 and 2010, the increase was concentrated between the years 2000 and 2005. There was no increase between 2005 and 2010. The levelling off of intentional exposure to pornography after 2005 mirrors the trend in adolescent internet use during the 2000-2010 decade [29], and the trend in decreased unwanted online pornography exposure of 10-17 year old youth during the same time period [26]. The finding is somewhat puzzling, however, because in 2010 YISS respondents were substantially more likely to report being online seven days a week and for more hours per day than youth in 2005 or 2000. One possibility is that virtually all U.S. adolescents have had the option of seeking out online pornography since 2000 because they had access to the internet at school, libraries and peers' homes, even if they did not have computers at home. A second possibility is that after a certain point, youth pornography-seeking was not influenced substantially by the increasing availability of pornography online or increasingly lengthy periods of time online.

Continued monitoring of adolescent pornography use trends over time is important, particularly if policy or program funding decisions are based on the supposition that it is increasing. To our knowledge, there are presently no nationally-representative adolescent health surveys that include a question about pornography use in the U.S. Adding a question on pornography use to the Youth Risk Behavior Survey (YRBS) or another adolescent surveillance survey would be useful, particularly as new data emerge to support the contention that adolescent pornography use is associated longitudinally with sexual risk behaviors [5]. In addition, if the idea that pornography is a national public health threat continues to be raised in the political

sphere, physicians and other adolescent healthcare providers may need to be prepared to answer questions about the prevalence and consequences of pornography use.

This study was subject to several limitations. First, data were self-reported. Youth may have felt embarrassed to report that they sought out pornography and underreported their use. However, the stigma associated with pornography used has not worsened since 2000; arguably, the tendency to underreport pornography use should have lessened between 2000 and 2010 as it became more widely available via the internet. Therefore, while the prevalence of intentional pornography use may be underestimated at each time point, it seems unlikely that a self-report bias would have influenced the trend-over-time analysis towards the null. Second, this study only reported data on internet pornography exposure. Some youth may only be seeking out pornography on cable TV or in print, which would mean our results underestimate the proportion of youth intentionally viewing pornography. Third, participants who agreed to participate in the YISS may have been disproportionately more or less likely than non-respondents to intentionally view pornography. If youth who seek pornography were disproportionately less likely than other youth to agree to participate in the YISS, our results would underestimate the true proportion of adolescents who intentionally viewed pornography between 2000 and 2010.

Table 1. Demographic and internet use characteristics for the 2000, 2005, and 2010 YISS samples

Characteristics	Year 2000 (n=1501) % (n)	Year 2005 (n=1500) % (n)	Year 2010 (n=1560) % (n)	<i>p</i> value
<u>Demographic</u>				
Gender (male)	53 (790)	49 (738)	50 (775)	.12
Age				
10 to 11 years old	12 (177)	13 (197)	13 (192)	.02
12 to 13 years old	25 (381)	23 (337)	23 (347)	
14 to 15 years old	33 (503)	31 (462)	30 (462)	
16 to 17 years old	29 (439)	34 (504)	35 (533)	
Race /ethnicity				
White, non-Hispanic	73 (1091)	71 (1070)	67 (1048)	.001
Black, non-Hispanic	10 (153)	11 (161)	13 (208)	
Hispanic or Latino, any Race	7 (108)	9 (130)	10 (152)	
American Indian/Alaskan Native	2 (30)	1 (21)	3 (41)	
Asian	3 (38)	2 (33)	3 (48)	
Other (includes bi-racial)	2 (26)	3 (40)	2 (28)	
Don't know/not ascertainable	4 (55)	3 (45)	2 (35)	
Parental marital status				
Married	79 (1182)	76 (1139)	78 (1214)	.01
Living with a partner	1 (19)	3 (37)	2 (36)	
Separated	3 (37)	1 (22)	2 (29)	
Divorced	10 (154)	10 (147)	10 (148)	
Widowed	2 (35)	2 (29)	2 (31)	
Single, never married	5 (73)	8 (117)	6 (98)	
Youth lives w/both biological parents	63 (949)	62 (926)	66 (1029)	.04
Household education level				
Not a high school graduate	3 (37)	2 (30)	3 (41)	<.001
High school graduate	21 (320)	20 (305)	14 (210)	
Some college education	22 (336)	23 (344)	19 (299)	
College graduate	32 (474)	32 (481)	37 (577)	
Post college degree	22 (330)	22 (333)	28 (431)	
Annual household income				
Less than \$20,000	8 (119)	8 (123)	12 (192)	<.001
\$20,000 to \$50,000	38 (575)	27 (405)	18 (287)	
More than \$50,000 to \$75,000	23 (350)	24 (355)	16 (245)	
More than \$75,000	23 (347)	33 (494)	45 (700)	
Don't know/missing	7 (110)	8 (123)	9 (136)	
Internet use				
Uses internet 7 days/week	5 (227)	9 (389)	15 (709)	< .001
Uses internet 2+ hours/day	4 (199)	8 (352)	11 (486)	< .001
Internet very/extremely important	11 (491)	17 (786)	19 (875)	< .001
High internet experience	7 (303)	11 (505)	12 (533)	< .001
Location of Internet use				
Home	74 (1109)	91 (1363)	97 (1506)	<.001
Friend's home	69 (1028)	69 (1029)	70 (1088)	.72
School	73 (1100)	90 (1356)	89 (1392)	<.001
Cell phone	-	-	47 (740)	-

Table 2. Adjusted relative risk of U.S. youth intentional pornography exposure by year, stratified by descriptive characteristics

				Comparing 2000 to 2005	Comparing 2005 to 2010	Comparing 2000 to 2010
Intentional exposure to pornography (past year)	Year 2000 % (n)	Year 2005 % (n)	Year 2010 % (n)	Adjusted RR (95% CI) ^a	Adjusted RR (95% CI)	Adjusted RR (95% CI) ^a
All participants	8 (123)	13 (199)	13 (196)	1.5 (1.2, 1.8) ^{***}	---	1.3 (1.1, 1.7) ^{**}
<u>Age</u>						
10 to 11 years ^b	0 (0)	1 (3)	2 (4)	---	---	---
12 to 13 years	4 (16)	7 (23)	7 (26)	1.4 (0.7, 2.6)	1.1 (0.6, 1.8)	1.5 (0.8, 2.7)
14 to 15 years	10 (51)	15 (68)	11 (49)	1.3 (1.0, 1.9)	0.7 (0.5, 1.0) [*]	0.9 (0.6, 1.3)
16 to 17 years	13 (56)	21 (105)	22 (117)	1.7 (1.2, 2.2) ^{***}	1.1 (0.8, 1.3)	1.6 (1.2, 2.1) ^{**}
<u>Gender</u>						
Girls	2 (16)	4 (34)	5 (36)	1.4 (0.7, 2.5)	1.0 (0.6, 1.6)	1.3 (0.7, 2.5)
Boys	13 (106)	22 (165)	21 (160)	1.5 (1.2, 1.9) ^{***}	0.9 (0.7, 1.0)	1.3 (1.1, 1.7) [*]
<u>Race / ethnicity</u>						
White, non-Hispanic	8 (92)	13 (153)	13 (150)	1.5 (1.2, 1.9) ^{***}	0.9 (0.7, 1.1)	1.3 (1.0, 1.7) [*]
Black, non-Hispanic	8 (13)	11 (22)	12 (27)	1.2 (0.6, 2.3)	1.0 (0.6, 1.8)	1.2 (0.6, 2.5)
Hispanic, any race	9 (10)	16 (21)	12 (19)	1.7 (0.8, 3.6)	0.6 (0.3, 1.1)	1.0 (0.5, 2.2)
<u>Household income</u>						
< \$20K	8 (10)	15 (18)	9 (17)	1.7 (0.9, 3.6)	0.6 (0.3, 1.1)	1.1 (0.5, 2.2)
\$20 – \$49,999K	8 (48)	12 (49)	13 (37)	1.4 (0.9, 2.0)	1.0 (0.7, 1.4)	1.3 (0.9, 2.1)
\$50K - \$74,999K	6 (22)	14 (51)	7 (17)	1.9 (1.2, 3.1) ^{**}	0.5 (0.3, 0.8) ^{**}	0.9 (0.5, 1.7)
\$75K +	10 (34)	12 (60)	15 (107)	1.1 (0.7, 1.6)	1.1 (0.8, 1.5)	1.2 (0.8, 1.7)
<u>Family structure</u>						
Both biological parents	7 (68)	12 (112)	13 (132)	1.4 (1.1, 1.9) ^{**}	1.0 (0.8, 1.2)	1.4 (1.1, 1.9) ^{**}
Other	10 (55)	15 (87)	12 (64)	1.5 (1.1, 2.1) ^{**}	0.7 (0.5, 1.0) ^t	1.1 (0.8, 1.6)
<u>Parental marital status</u>						
Married	8 (95)	13 (148)	13 (153)	1.5 (1.2, 1.9) ^{***}	0.9 (0.7, 1.1)	1.3 (1.1, 1.7) [*]
Not married	9 (28)	14 (51)	12 (43)	1.6 (1.0, 2.4) [*]	0.8 (0.6, 1.2)	1.3 (0.8, 2.1)
<u>Household education</u>						
College graduate	8 (64)	14 (111)	14 (138)	1.6 (1.2, 2.1) ^{**}	1.0 (0.8, 1.2)	1.5 (1.1, 2.0) ^{**}
Less	8 (59)	13 (88)	11 (58)	1.4 (1.0, 1.9) [*]	0.7 (0.6, 1.0)	1.1 (0.7, 1.5)
<u>Unintentional pornography exposure</u>						
No	5 (58)	9 (89)	9 (112)	1.7 (1.2, 2.3) ^{***}	0.8 (0.6, 1.1)	1.4 (1.0, 1.9) [*]
Yes	17 (65)	21 (110)	23 (84)	1.2 (0.9, 1.6)	1.1 (0.9, 1.4)	1.4 (1.0, 1.8) [*]

RR = relative risk ratios; 95% confidence interval (CI) refers to the probability that a population parameter would be within the interval

^a Adjusted relative risks are based on multivariable logistic regression tests that control for other demographic characteristics and amount of internet use and experience.

^b Cell sizes were too small to permit regression analyses

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$. [†] $p \leq .10$.

Note: The rate calculations are based on the total number of youth in each category and survey year:

10- to 11-year-olds: Year 2000 n = 177, Year 2005 n = 197, and Year 2010 n = 192.

12- to 13-year-olds: Year 2000 n = 381, Year 2005 n = 337, and Year 2010 n = 347.

14- to 15-year-olds: Year 2000 n = 503, Year 2005 n = 462, and Year 2010 n = 462.

16- to 17-year-olds: Year 2000 n = 439, Year 2005 n = 504, and Year 2010 n = 533.

Girls: Year 2000 n = 708, Year 2005 n = 760, and Year 2010 n = 775.

Boys: Year 2000 n = 790, Year 2005 n = 738, and Year 2010 n = 785.

White, non-Hispanic: Year 2000 n = 1091, Year 2005 n = 1070, and Year 2010 n = 1048.

Black, non-Hispanic: Year 2000 n = 153, Year 2005 n = 161, and Year 2010 n = 208.

Hispanic or Latino: Year 2000 n = 108, Year 2005 n = 130, and Year 2010 n = 152.

< \$20K: Year 2000 n = 119, Year 2005 n = 123, and Year 2010 n = 192.

\$20 – \$49,999K: Year 2000 n = 575, Year 2005 n = 405, and Year 2010 n = 287.

\$50K - \$74,999K: Year 2000 n = 350, Year 2005 n = 355, and Year 2010 n = 245.

\$75K +: Year 2000 n = 347, Year 2005 n = 494, and Year 2010 n = 700.

Family structure

Both biological parents: Year 2000 n = 951, Year 2005 n = 926, and Year 2010 n = 1,029.

Other: Year 2000 n = 547, Year 2005 n = 574, and Year 2010 n = 531.

Parental marital status

Married: Year 2000 n = 1,182, Year 2005 n = 1,139, and Year 2010 n = 1,214.

Not married: Year 2000 n = 319, Year 2005 n = 361, and Year 2010 n = 346.

Highest level of household education

College graduate: Year 2000 n = 804, Year 2005 n = 814, and Year 2010 n = 1,008.

Less: Year 2000 n = 697, Year 2005 n = 686, and Year 2010 n = 552.

No unwanted exposure to pornography: Year 2000 n = 1125, Year 2005 n = 988, and Year 2010 n = 1199.

Yes unwanted exposure to pornography: Year 2000 n = 376, Year 2005 n = 512, and Year 2010 n = 361.

REFERENCES

- [1] Wright PJ. US Males and Pornography, 1973-2010: Consumption, Predictors, Correlates. *J Sex Res* 2013;50:60-71.
- [2] Wright PJ, Bae S, Funk M. United States Women and Pornography Through Four Decades: Exposure, Attitudes, Behaviors, Individual Differences. *Arch Sex Behav* 2013;42:1131-1144.
- [3] Wolak J, Mitchell K, Finkelhor D. Unwanted and wanted exposure to online pornography in a national sample of youth internet users. *PEDIATRICS* 2007;119:247-257.
- [4] Rideout V. Generation Rx: How young people use the internet for health information. Menlo Park, CA: Kaiser Family Foundation; 2001.
- [5] Peter J, Valkenburg PM. Adolescents and Pornography: A Review of 20 Years of Research. *J Sex Res* 2016;53:509-531.
- [6] Ybarra ML, Mitchell KJ. Exposure to internet pornography among children and adolescents: a national survey. *Cyberpsychol Behav* 2005;8:473-486.
- [7] Luder MT, Pittet I, Berchtold A, et al. Associations Between Online Pornography and Sexual Behavior Among Adolescents: Myth or Reality? *Arch Sex Behav* 2011;40:1027-1035.
- [8] Peter J, Valkenburg PM. Adolescents' exposure to sexually explicit material on the Internet. *Communication Research* 2006;33:178-204.
- [9] Tsaliki L. Playing with porn: Greek children's explorations in pornography. *Sex Education* 2011;11:293-302.
- [10] Flood M. Exposure to pornography among youth in Australia. *J Sociol* 2007;43:45-60.
- [11] Reviews TT. Internet pornography statistics. Available at: <http://www.toptenreviews.com/internet-pornography-statistics/> Accessed 08/15/2016 2016.

- [12] Brown JD, L'Engle KL. X-Rated: Sexual attitudes and behaviors associated with U.S. early adolescents' exposure to sexually explicit media. *Communication Research* 2009;36:129-151.
- [13] Peter J, Valkenburg PM. Adolescents' Exposure to Sexually Explicit Internet Material and Sexual Satisfaction: A Longitudinal Study. *Human Communication Research* 2009;35:171-194.
- [14] Peter J, Valkenburg PM. Adolescents' exposure to sexually explicit Internet material and sexual preoccupation: A three-wave panel study. *Media Psychology* 2008;11:207-234.
- [15] Doornwaard SM, Bickham DS, Rich M, et al. Adolescents' use of sexually explicit Internet material and their sexual attitudes and behavior: Parallel development and directional effects. *Dev Psychol* 2015;51:1476-1488.
- [16] Ybarra ML, Mitchell KJ. Prevalence rates of male and female sexual violence perpetrators in a national sample of adolescents. *JAMA Pediatr* 2013;167:1125-1134.
- [17] Beyens I, Vandebosch L, Eggermont S. Early adolescent boys' exposure to internet pornography relationships to pubertal timing, sensation seeking, and academic performance. *The Journal of Early Adolescence* 2014:0272431614548069.
- [18] Peter J, Valkenburg PM. Does exposure to sexually explicit Internet material increase body dissatisfaction? A longitudinal study. *Computers in Human Behavior* 2014;36:297-307.
- [19] Ybarra ML, Mitchell KJ, Hamburger M, et al. X-rated material and perpetration of sexually aggressive behavior among children and adolescents: is there a link? *Aggress Behav* 2011;37:1-18.
- [20] Exploitation NCoS. Pornography: A public health crisis. 2015:34.
- [21] Pew Research Center. Teen internet use over time. Available at:
<http://www.pewinternet.org/data-trend/teens/internet-use/> Accessed August 14 2016.

- [22] Mitchell KJ, Jones LM, Wolak J. The Youth Internet Safety Survey (YISS) Methodology Report. Available at: <http://unh.edu/ccrc/internet-crimes/papers.html>.
- [23] Hu SS, Balluz L, Battaglia MP, et al. The impact of cell phones on public health surveillance. Bull World Health Organ 2010;88:799-799.
- [24] Pew Research Center. Demographics of teen internet users. Available at: <http://www.pewinternet.org/Static-Pages/Trend-Data-for-Teens/Whos-Online.aspx> Accessed June 27 2011.
- [25] Kann L, McManus T, Harris W, et al. Youth Risk Behavior Surveillance: United States, 2015. MMWR Surveill Summ 2015;SS-6:1-174.
- [26] Mitchell K, Jones L, Finkelhor D, et al. Trends in Unwanted Exposure to Sexual Material: Findings from the Youth Internet Safety Studies. Available at: <http://www.unh.edu/ccrc/pdf/Unwanted%20Exposure%203%20of%204%20YISS%20Bulletins%20Feb%202014.pdf> Accessed August 15 2016.
- [27] Thornburgh D, Lin H. Youth, pornography and the internet. Washington, DC: National Academy Press, 2002.
- [28] Kirby D. Comprehensive sex education: Strong public support and persuasive evidence of impact, but little funding. Archives of Pediatrics & Adolescent Medicine 2006;160:1182-1184.
- [29] Calvert SL, Rideout VJ, Woolard JL, et al. Age, ethnicity, and socioeconomic patterns in early computer use - A national survey. Am Behav Sci 2005;48:590-607.