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Exposure to Internet Pornography among Children and Adolescents: A National Survey

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ABSTRACT

Estimates suggest that up to 90% or more youth between 12 and 18 years have access to the Internet. Concern has been raised that this increased accessibility may lead to a rise in pornography seeking among children and adolescents, with potentially serious ramifications for child and adolescent sexual development. Using data from the Youth Internet Safety Survey, a nationally representative, cross-sectional telephone survey of 1501 children and adolescents (ages 10–17 years), characteristics associated with self-reported pornography seeking behavior, both on the Internet and using traditional methods (e.g., magazines), are identified. Seekers of pornography, both online and offline, are significantly more likely to be male, with only 5% of self-identified seekers being female. The vast majority (87%) of youth who report looking for sexual images online are 14 years of age or older, when it is developmentally appropriate to be sexually curious. Children under the age of 14 who have intentionally looked at pornography are more likely to report traditional exposures, such as magazines or movies. Concerns about a large group of young children exposing themselves to pornography on the Internet may be overstated. Those who report intentional exposure to pornography, irrespective of source, are significantly more likely to cross-sectionally report delinquent behavior and substance use in the previous year. Further, online seekers versus offline seekers are more likely to report clinical features associated with depression and lower levels of emotional bonding with their caregiver. Results of the current investigation raise important questions for further inquiry. Findings from these cross-sectional data provide justification for longitudinal studies aimed at parsing out temporal sequencing of psychosocial experiences.

INTRODUCTION

AS THE INTERNET gains increasing prominence in the lives of young people,¹ researchers have begun investigating the influence that the Internet environment may be having on child and adolescent development.² Of particular interest is exposure to sexual material. Child and adolescent exposure to pornography is a controversial issue. Questions about the contribution of pornography to deviant sexual behavior, including sexual assault, negative

attitudes towards women, and the acceptance of deviant or aggressive sexual behavior among peers, have been studied for decades. Results are mixed, with some investigators arguing for clear and consistent effects of exposure to pornography and subsequent sexually aggressive attitudes and behaviors,³ while others describe null or inconclusive findings.^{4,5} With specific relevance to young people, there is the additional concern of negative effects on facets of sexual development, such as sexual callousness, for those who are exposed to pornography.⁶

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Sexual development

Adolescent sexual development is complex and dynamic. As children get older, they gain a greater sense of their sexual self,⁷ enhanced by an interplay of biological and social changes as the individual matures through childhood into adolescence. Although puberty begins at different ages, virtually all boys and girls have started the process by 14 years of age.⁷ Sexual interest increases with age and biological changes, with the average age of first sex experience in the United States being 15.8 years.⁸ Expression of sexual curiosity spans a continuum of behaviors, from talking about sex, looking at sexual materials, to actually engaging in sexual activity. Although sexual activity can represent risks in and of itself (e.g., sexually transmitted diseases), researchers and other adolescent health professionals have posited that exposure to pornography may be harm-promoting in other domains as well.

Pornography research

The majority of pornography studies have been conducted with adults.³⁻⁵ This is largely due to the ethical and legal considerations of exposing children and adolescents to potentially harmful material. A handful of adolescent studies suggest no relationship between pornography and behavior. For example, a retrospective study of adolescent sex offenders found no relationship between prior exposure to pornography and the number of victims.⁹ Additionally, in a more intensive interview with a sub-sample of youths, the majority of offenders denied that their use of pornography in any way led to the subsequent sex crime. Clearly, more research is needed about child and adolescent consumption of pornography. Importantly, as the Internet is used by more and more young people,¹ the effects of access to and exposure of online pornography on child and adolescent development will be a child and adolescent health issue of increasing importance.

Internet use among children and adolescents

More than 90% of young people between the ages of 12 and 18 years use the Internet in the United States.¹ A vast amount of information is now widely and easily accessible to anyone who has an Internet connection. Although positive aspects of the Internet are frequently cited, including the availability of important and sometimes sensitive health information^{10,11,13} the often unfettered access to web sites may lead to an overall increase in the numbers of young people seeking out porno-

graphic material. To safeguard against this type of exposure, filtering and blocking software has been developed to prevent access to specific sites, and several child-oriented organizations recommend the usage of such software on home computers. The use of blocking software on public computers such as those in public libraries remains controversial because of free speech issues.

Prevalence of intentional Internet exposures

Several studies have asked youth about purposeful exposure to sexual material online. A survey of young people attending a private, urban school in the Midwest reports that 21% have ever visited a pornographic site for at least 3 min.¹² A national telephone survey of young people between the ages of 12 and 17 found that 15% have lied about their age to gain access to a web site.¹⁰ Interestingly, this percentage is similar to the corresponding value observed for adults in the same survey.¹⁰ Males, older youths, those with greater months/ years of Internet experience, and those who use the Internet more intensively (i.e., 5+ h/day) are more likely to report purposefully seeking out these sites.^{10,12}

Adolescent beliefs about Internet exposures to sexual material

Although there are no studies about exposure to sexual material on the Internet and resulting behavioral changes, a national study of older teenagers illuminates concerns about changes in the attitudes and beliefs of young people.¹³ Over half (59%) of respondents believe that viewing Internet pornography may encourage young people to have sex earlier. Almost one in two respondents (49%) indicate that Internet pornography promotes negative attitudes towards women, with a similar percentage (49%) indicating that the images may promote the perception that unprotected sexual activity is "okay." Beyond perception and belief, no information is available about actual outcomes or linkages between purposeful exposure to Internet pornography and psychosocial or developmental challenge.

Gaps in current literature

Despite the vast amount of adult literature about intentional exposure to pornography,³⁻⁵ and the emerging reports of adolescent pornography seeking online,^{10,12-13} important questions remain. First, beyond demographic characteristics, what is the

profile of young person who seek out pornography? With the advent of the Internet, it is also important to begin understanding specific characteristics of children and adolescents who seek pornography online, and investigate whether they differ significantly from other young people. The Youth Internet Safety Survey, a cross-sectional, nationally representative telephone survey of young people between the ages of 10 and 17 years, provides a unique opportunity to compare online and offline pornography seekers with other youth in an effort to inform adolescent health and mental health professionals. This investigation will report important cross-sectional associations necessary to justify and inform future, more complex, longitudinal surveys.

MATERIALS AND METHODS

The Youth Internet Safety Survey (YISS) was a nationally representative telephone survey conducted to quantify the online experiences of Internet-using youth ($n = 1,501$).² It was conducted by researchers at the Crimes against Children Research Center at the University of New Hampshire. Data were collected between the fall of 1999 and spring of 2000. Study methods were approved and supervised by the University of New Hampshire's Human Subjects Committee and adhered to the research guidelines set forth by the Department of Justice.

Sampling method

The sample was identified using a national probability design. Phone numbers were generated by another nationally representative study of youth that was being conducted concurrently, the Second National Incidence Study of Missing, Abducted, Runaway, and Thrownaway Children (NISMAART-2).¹⁴ The phone numbers of households that were identified by NISMAART-2 as having a youth between the ages of 9 and 17 were forwarded to researchers of the YISS ($n = 6,594$). A sample size of 1,500 was needed to achieve a sampling error of $\pm 2.5\%$ at the 95% confidence interval. All phone numbers received were dialed and contact was made with 3,446 households. At the time the target sample size of 1,500 was reached, 82% of contacted and eligible households had agreed to participate.

The young person was encouraged to identify a time for the interview during which he or she could talk freely. Each participant received \$10 and information brochures about Internet safety as incentive for their participation.

Study population

One youth and one caregiver in each household were interviewed by telephone. Eligibility requirements for the young person included: being between the ages of 10 and 17 years, having used the Internet at least once a month for the previous 6 months (at any location), being English speaking, and having lived in the household for at least 2 weeks in the previous year. Caregivers were self-identified as the one most familiar with the young person's Internet use. Adult consent was required for the adult interview and both adult consent and child assent were required for the child interview.

The demographic characteristics of the sample population were generally higher than the average household in the United States, but were reflective of households with Internet access at the time of data collection.^{15,16} For example, more than three-quarters of adult respondents reported at least some college as the highest household education, and half of the households surveyed had an annual income of \$50,000 or higher.²

Measures

Pornography seeking. Youths were asked four questions about their pornography seeking behavior. Those who indicated they had visited an x-rated website on purpose were coded as reporting online-seeking behavior. Offline-only seeking behavior was reflected in a positive response to at least one of the three following actions: (1) seeking x-rated books or materials; (2) watching x-rated movies; or (3) calling a 900 telephone number. Youth who reported both online and offline seeking behavior were categorized as online-seeking youth. Three categories were created: (1) online-seeking, (2) offline-only seeking, and (3) non-seeking (reference group) youth.

Demographic characteristics. Parents reported the youth's sex, age, and household income. As puberty typically starts between ages 8 and 14 for girls, and ages 9 and 14 for boys,⁷ we dichotomized age to compare youth 13 years of age and younger with those 14 years of age and older. Income was collected and entered as one of four categories. To ensure cell stability, this indicator was dichotomized to compare the highest group, \$75,000 per year or greater, with all other households. Youth indicated the race and ethnicity with which they identified themselves. Race was categorized as White, Black, or other race. Ethnicity was a

dichotomous (yes/no) measure reflecting the report of Hispanic ethnicity.

Internet usage characteristics. Youths were asked to estimate the average amount of time per day and per week spent online. Due to indications of non-linearity, each indicator was dichotomized at one standard deviation above the sample mean (5+ days/week versus fewer; more than 2 h/day and greater versus fewer). Each respondent also was asked to rate the importance of the Internet in his or her life on a five-point Likert scale ranging from 5 (*Extremely important*) to 1 (*Not at all*). This was dichotomized at very or extremely important versus less. Self-rated Internet expertise was similarly dichotomized at "almost" or "very expert" versus less.

Respondents were asked to indicate the activity for which they used the Internet most. Twelve different activities were mentioned, including school assignments, checking prices, and creating/maintaining a web page. For the purposes of our analyses, activities were categorized into 4 different groups based upon their likelihood of interpersonal interaction: (1) e-mail, (2) instant messaging, (3) chat room, and (4) all other (reference group). Young people were also asked to identify the location at which they used the Internet most frequently. Five options were available, including home, school, library, someone else's home, and another place. To ensure cell stability this was categorized into three groups based upon the likely amount of monitoring: (1) library or school, (2) someone else's home or another place, and (3) home (reference group).

Unwanted exposure to sexual material. In contrast to intentional exposure, some young people reported unwanted exposure to sexual content while online in the previous year. The definition of unwanted exposure was established by Mitchell and colleagues.¹⁷ First, young people were asked three screening questions about whether they had received an email, clicked on a link, or gone to a website and seen pictures of naked people or people having sex when the child had not wanted to see that type of material. Next, those who indicated any Internet victimization were asked more detailed follow-up questions. Due to time constraints, an algorithm was created to determine which of the three main study outcomes (i.e., harassment, sexual solicitation, exposure to sexual material) were explored further with the child: harassment incidents were chosen first, sexual solicitation incidents were chosen second, and unwanted exposures to sexual

material incident were chosen third. If the child reported all three types of victimization, only the first two were queried. As a result, some unwanted exposure incidents were not the subject of more detailed inquiry and therefore not included in incidence rates. Post-hoc analyses indicated that 78 young people who reported an unwanted exposure were not counted in the estimate for unwanted exposure.

Parental Internet controls. Caregivers were asked about potential steps that they might have taken to safeguard their child from unwanted exposures online. These same safeguards may have affected the likelihood of intentional access to Internet pornography. Caregivers were asked whether they had a rule restricting their child from visiting pornographic web sites (yes/no). Additionally, they were asked whether in the previous year, they had at any time checked the history function to view the web sites their child had visited recently (yes/no). Caregivers were asked to indicate whether blocking or filtering software was used on the home computer. Given indications in previous studies that reports by young people (in comparison to parents) are more strongly associated with exposures online,^{2,17} we also included youth-report of filtering or blocking software on the home machine.

Caregiver-child relationships. Caregiver-child relationships were queried using nine questions. Based upon exploratory factor analysis (all eigenvalues ≥ 1), three different aspects of the relationship emerged: emotional bonding (i.e., how well caregiver and child get along, caregiver trust of child, discussing problems with caregiver when feeling sad or in trouble, and frequency of having fun together), parental monitoring (i.e., frequency with which caregiver knows where child is, and with whom child is spending time), and coercive discipline (i.e., frequency of 'nagging' child, taking away privileges, and yelling). A sum score was created for each of the three aspects of the caregiver-child relationship. Due to indications of non-linearity, all were then dichotomized at one standard deviation above the sample mean versus lower (high scores reflect a poorer rating).

Psychosocial characteristics. Clinical features of depression were measured using nine questions (yes/no) that were based upon the nine criteria for major depression in the DSM IV.¹⁸ All questions referred to the previous month except for anhedonia, which referred to all day nearly every day for the last two weeks. Youth who reported five or more

clinical features, one of which was anhedonia or dysphoria, and functional impairment in at least one area of life (i.e., school, personal hygiene, self-efficacy) were categorized as reporting a high level of depression.

Youth were asked five questions about their substance use behavior, namely whether and how frequently they had used: cigarettes, marijuana, inhalants, alcohol, and all other controlled substances. Youth who reported any drug use four or more times a week in the previous year were coded as seriously involved substance users.

Delinquent behavior was indicated if a youth endorsed at least one of the four following behaviors/experiences: (1) police contact (i.e., interaction with police that did not necessarily result in an arrest), (2) physically assaulting another person, (3) purposefully damaging property, or (4) stealing property.

Youth who reported at least one negative life experience in the previous year were compared to those indicating fewer: (1) caregiver divorce, (2) caregiver losing a job, (3) death in the family, or (4) move of residence.

Physical or sexual victimization was included in the analyses to reflect youth who indicated they had been hit, beat, kicked, physically abused in any way by a grown-up taking care of them, and/or forced or made to do sexual things by someone, including someone they didn't know or even someone they knew well.

Statistical analysis

Standard data collection procedures, including Computer Assisted Telephone Interviewing (CATI), were used during the survey process. For the purposes of the current analyses, all cases were required to have at least 90% valid data across all measures (i.e., 22 out of 24 variables). Seventeen cases were dropped as a result, leading to a final sample size of 1,484. Missing data and non-responses (i.e., don't know and refused) were imputed using best-set regression.¹⁹ For most variables, less than 1% of data were imputed; household income (6.7% imputed) and race (1.6% imputed) were exceptions. No significant differences between retained and not-retained cases were observed in reported intentional exposure to online pornography ($X^2(2) = .62, p > .05$). A dummy variable was created to adjust for potential and unanticipated differences in the results between cases with imputed data and all other cases.

First, chi-square tests were used to test significant difference in distribution across the three

groups of pornography exposure (i.e., no exposure, any online exposure, only offline exposure) based upon youth-reported characteristics.

Second, in order to identify a cross-sectional profile of pornography seeking youth, a parsimonious multinomial logistic regression model of influential characteristics was identified using likelihood ratio tests (LRT). A saturated model was created by including all characteristics of interest; then, each variable was tested for its contribution to the model by dropping it and then testing the statistical difference between the saturated model and the new model. Variables that did not significantly contribute to the model (i.e., $LRT p > .05$) were dropped. Those that indicated a large magnitude of association in the saturated model (i.e., of 3.0 or greater Conditional Odds Ratio [COR]) were retested at the final stage if they were dropped during the variable testing process. Those that continued to demonstrate a strong association (i.e., COR of 3.0 or greater), regardless of significance, were included in the model and left to the reader for interpretation and valuation. Robust standard errors were estimated given the clustering of answers within household.

The third step in the statistical methods was to identify significant differences in cross-sectional characteristics between youth who seek pornography online versus those who reported only offline-only seeking behavior. A parsimonious logistic regression model was created using likelihood ratio tests as described above. Again, variables that suggested a strong association were retested at the end of model building and if they continued to demonstrate strong association (i.e., COR 3.0 or greater), were included in the final model irrespective of statistical significance. Robust standard errors were estimated given the clustering of answers within household.

RESULTS

Children and adolescents between the ages of 10 and 17 who used the Internet were surveyed about their behaviors and experiences online and offline. Each respondent was asked whether he or she had intentionally viewed sexual material on the Internet, as well as using traditional media (e.g., magazines). Based upon self-report, young people were categorized into one of three groups: 1) non-seekers (neither intentional online nor offline exposure to pornography); 2) online seekers (any intentional online exposure to pornography); or 3) offline-only seekers (intentional exposure to pornography only via traditional, offline means). Fifteen percent of young, regular Internet users re-

ported intentional exposure to pornographic material in the previous year. Specifically, 8% ($n = 122$) reported online seeking, while an additional 7% ($n = 106$) indicated offline-only seeking behavior. Sixty-eight youth reported intentional exposure both online and offline and were thus categorized as online seekers. Self-reported youth characteristics were examined for significant differences across all three groups using chi-square tests; results are found in Table 1 and detailed below.

Demographic characteristics

The age distribution was significantly different across the three groups of youth ($p < .001$). Eighty-seven percent of offline-only seekers were 14 years or older compared to 74% of non-seekers and 60% of online seekers. The percentage of males across the three groups of pornography-seeking behavior also differed significantly ($p < .001$); 87% of online seekers were male compared to 79% of offline-only seekers and 47% of non-seekers. Youth were similar in terms of annual household income, race, and ethnicity.

Internet usage characteristics

Almost all characteristics of Internet use differed based upon the report of intentional exposure to pornography. For example, most frequent Internet activity was significantly related to the report of pornography seeking behavior ($p < .05$). Seventeen percent of online seekers used the Internet most frequently to visit chat rooms as compared to 11% of offline seekers and 8% of non-seekers. On the other hand, the percentage of youth who used the Internet most frequently for instant messaging was relatively similar, with 12% of online seekers reporting such behavior versus 9% of offline seekers and 10% of non-seekers. Both frequency and intensity of Internet use significantly differed across youth with various pornography seeking behavior. Fifty-six percent of online seekers used the Internet for an average of 4 days or more, compared to 35% of offline seekers and 41% of non-seekers ($p < .01$). Almost 20% of offline and online-only seekers reported using the Internet for an average of 2 hours or more as compared to 12% of non-seekers ($p < .05$). Self-ratings of Internet expertise ($p < .001$) and the importance of the Internet ($p < .05$) significantly varied across groups of youth, with 49% of online seekers reporting themselves as almost expert or expert as compared to 29% of offline seekers and 32% of non-seekers, and 30% of online seekers reporting the Internet very impor-

tant to themselves versus 22% of offline seekers and 19% of non-seekers.

Parental Internet controls

None of the four measures of parental Internet controls significantly differentiated youth by their self-report of pornography seeking behavior. Similarly high percentages (85–93%) of caregivers reported a household rule about disallowing Internet pornography sites across the three groups of young people ($p > .05$). When asked whether a filter or blocking software was installed on the computer, 27% of caregivers and 16% of youth online seekers, versus 22% of caregivers and 19% of youth offline-only seekers, and 23% of both caregivers and youth non-seekers responded positively ($p > .05$). A non-significant but positive trend was observed for the report of checking the history function; 53% of caregivers of online seekers compared to 43% of non-seekers and 39% of offline-only seekers responded positively ($p > .05$).

Caregiver-child relationships

Ratings for all three aspects of the caregiver-child relationship were significantly different across the three groups of pornography seeking youth. Almost one-third of online seekers rated their emotional bond with their caregiver as poor compared to 15% of offline seekers, and 10% of non-seekers ($p < .001$). One quarter of online as well as 23% offline seekers reported low caregiver monitoring as compared to 9% of non-seekers ($p < .001$). Frequent coercive discipline was most commonly reported by offline seekers, with 31% of youth indicating such caregiver behavior, as compared to 23% of online seekers and 17% of non-seekers ($p < .001$).

Psychosocial challenge

All indications of psychosocial challenge significantly differed based upon self-report of pornography seeking behavior among young, regular Internet users. Overall, 25% of youth in the survey reported an unwanted exposure to sexual material at least once in the previous year. When examined by pornography-seeking behavior, 53% of online seekers reported unwanted exposure versus 35% of offline-only seekers and 22% of non-seekers ($p < .001$). Fifty percent of online seekers indicated physical or sexual victimization versus 37% of offline seekers and 31% of non-seekers ($p < .001$). Delinquent behavior was reported four times more often by pornography seekers, with 48% of online

seekers and 42% of offline seekers reporting this behavior in the previous year, as compared to 11% of non-seekers ($p < .001$). Higher percentages of young people reported seriously involved substance use who also reported pornography seeking versus non-seeking, with 37% of online-seekers versus 26% of offline-only seekers and 10% of non-seekers reporting such use ($p < .001$). Twice as many online seekers (11%) reported clinical features of major depression compared to offline (4%) and non-seekers (5%) ($p < .05$). Two in five offline-only seekers (42%) reported at least one negative life experience in the previous year versus 31% of online seekers and 27% of non-seekers ($p < .01$).

A cross-sectional profile of youth characteristics associated with intentional exposure to pornography

In order to identify a cross-sectional profile unique to young people who consume pornography, a parsimonious multinomial logistic regression model of related youth characteristics was estimated. Characteristics that significantly contributed to the overall model were retained, producing a regression model of variables that together helped explain the conditional odds of reporting online seeking behavior and offline-only seeking behavior versus non seeking behavior. All variables in the model were adjusted for all others listed in the model. Results are displayed in Table 2 and described below.

Males were significantly more likely to report pornography seeking than females. Indeed, boys were more than 7 times as likely to report online-seeking ($p < .001$) and 4 times as likely to report offline-only seeking ($p < .001$) as compared to otherwise similar females. Older youth also were significantly more likely to report intentional exposure. Youth 14 years and older were almost three times as likely to report online seeking behavior compared to otherwise similar, younger youth ($p < .001$). No significant differences in age were noted between youth who reported offline-only seeking and non-seeking behavior.

All Internet usage characteristics failed to significantly differentiate reports of pornography seeking behavior. On the other hand, the caregiver-child relationship was an important influencer in estimating the likelihood of reporting pornography exposure. Youth who reported a poor emotional bond with their caregiver were twice as likely also to report online-seeking behavior versus otherwise similar youth who reported a strong emotional bond ($p < .01$). Frequent coercive discipline was significantly related to 67% higher adjusted condi-

tional odds of reporting offline-only seeking behavior versus non-seeking behavior ($p < .05$).

Indications of psychosocial challenge were significantly related to increased adjusted conditional odds of both online and offline-only seeking behavior. Delinquent behavior was associated with a 4-fold increase in adjusted conditional odds of reporting either online-seeking behavior ($p < .001$) or offline-only seeking behavior ($p < .001$) compared to non-seeking behavior after adjusting for all other influential characteristics. The report of substance use was related to more than a two-fold increase in adjusted conditional odds in disclosing online ($p < .001$) as well as offline-only ($p < .01$) seeking behavior compared to otherwise similar youth who reported negligible substance use. Young people who reported unintentional exposure to sexual material online were more than 2.5 times as likely to report intentional exposure online compared to otherwise similar young people who did not report unintentional exposure ($p < .001$).

Differences in youth characteristics among youth who report online and offline-only seeking behavior

In order to understand the cross-sectional differences in youth characteristics among young regular Internet users who reported online seeking behavior versus offline-only seeking behavior, a parsimonious logistic regression model was identified ($n = 228$). Variables retained in the model together helped explain the difference in the odds of reporting online versus offline-only behavior. Results are displayed in Table 3 and discussed below.

Fifty-four percent of all self-identified pornography seekers in the sample looked for sexual images online. Demographic characteristics, Internet usage characteristics, aspects of the caregiver-child relationship, parental Internet controls, and psychosocial characteristics each significantly discriminated online seekers and offline seekers. Hispanic youth were almost three times as likely to report online seeking versus offline seeking behavior versus otherwise similar youth of non-Hispanic ethnicity ($p = .02$). Older youth were significantly more likely to report online versus offline seeking behavior after adjusting for all other significant characteristics, with those 14 and older almost 2.5 times as likely as younger youth to report online-seeking behavior ($p = .03$). Unsurprisingly, youth who rated themselves as almost expert or expert at using the Internet were twice as likely to indicate online versus offline pornography seeking behavior, after adjusting for all other significant characteristics ($p = .03$). Youth who reported frequent Internet use also were

TABLE 1. COMPARISONS OF DEMOGRAPHIC AND INTERNET USE CHARACTERISTICS BY SELF-REPORTED PORNOGRAPHY-SEEKING BEHAVIOR (N = 1,484)

	No purposeful exposure (85%, n = 1256)	Offline exposure only (7%, n = 106)	Online exposure (8%, n = 122)	Statistical comparison
Demographic characteristics				
Race				
White (reference group)	77.3% (971)	73.6% (78)	76.2% (93)	$\chi^2 (4) = 1.9$
Black	10.8% (135)	11.3% (12)	9.0% (11)	
Other	11.9% (150)	15.1% (16)	14.8% (18)	
Older age (14 years and older)	60.0% (753)	73.6% (78)	86.9% (106)	$\chi^2 (2) = 40.0^{***}$
Male	47.3% (594)	79.3% (84)	86.9% (106)	$\chi^2 (2) = 101.9^{***}$
Household income	23.0% (289)	21.7% (23)	27.9% (34)	$\chi^2 (2) = 1.6$
Hispanic ethnicity	7.3% (91)	4.7% (5)	8.2% (10)	$\chi^2 (2) = 1.2$
Internet usage characteristics				
Most frequent log in location				
Home (reference group)	65.6% (824)	51.9% (55)	67.2% (82)	$\chi^2 (4) = 9.0$
School/library	22.9% (288)	30.2% (32)	20.5% (25)	
Other house/place	11.5% (144)	17.9% (19)	12.3% (15)	
Most frequent Internet activity				
All other (reference group)	55.7% (699)	57.6% (61)	48.4% (59)	$\chi^2 (6) = 15.5^*$
E-mail	26.7% (335)	21.7% (23)	22.1% (27)	
Instant messaging	9.9% (124)	9.4% (10)	12.3% (15)	
Chat room	7.8% (98)	11.3% (12)	17.2% (21)	

Frequency of use (4+ days/week)	40.8% (512)	34.9% (37)	55.7% (68)	$\chi^2 (2) = 12.4^{**}$
Internet expertise (almost expert/expert)	31.7% (398)	29.3% (31)	49.2% (60)	$\chi^2 (2) = 16.1^{***}$
Importance of Internet to self (very/extremely important)	19.1% (240)	21.7% (23)	30.3% (37)	$\chi^2 (2) = 8.8^*$
Intensity of use (More than 2-3 h./day)	12.3% (154)	19.8% (21)	18.0% (22)	$\chi^2 (2) = 7.5^*$
Parental Internet controls				
Rule about no pornography sites	88.7% (1114)	84.9% (90)	92.6% (113)	$\chi^2 (2) = 3.4$
Check the history function	42.8% (538)	38.7% (41)	52.5% (64)	$\chi^2 (2) = 5.2$
Filter/block (parent report)	22.5% (282)	21.7% (23)	27.1% (33)	$\chi^2 (2) = 1.4$
Filter/block (youth report)	22.5% (282)	18.9% (20)	16.4% (20)	$\chi^2 (2) = 2.9$
Caregiver-child relationship				
Frequent coercive discipline	17.2% (216)	31.1% (33)	23.0% (28)	$\chi^2 (2) = 14.1^{***}$
Poor emotional bond	10.0% (125)	15.1% (16)	30.3% (37)	$\chi^2 (2) = 44.8^{***}$
Low monitoring	8.6% (108)	22.6% (24)	25.4% (31)	$\chi^2 (2) = 48.0^{***}$
Psychosocial characteristics				
Physical or sexual victimization	31.1% (390)	36.8% (39)	50.0% (61)	$\chi^2 (2) = 18.8^{***}$
Negative life experience (2+)	27.2% (341)	41.5% (44)	31.2% (38)	$\chi^2 (2) = 10.3^{**}$
Delinquent behavior	11.1% (139)	41.5% (44)	47.5% (58)	$\chi^2 (2) = 162.3^{***}$
Seriously involved substance use	9.7% (122)	26.4% (28)	36.9% (45)	$\chi^2 (2) = 89.6^{***}$
Clinical features of depression	4.6% (58)	3.8% (4)	10.7% (13)	$\chi^2 (2) = 8.8^*$
Unwanted exposure to Internet pornography	21.8% (274)	34.9% (37)	52.5% (64)	$\chi^2 (2) = 60.9^{***}$

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

TABLE 2. PARSIMONIOUS MULTINOMIAL LOGISTIC REGRESSION OF PORNOGRAPHY-SEEKING BEHAVIOR AMONG YOUNG REGULAR INTERNET USERS ($N = 1,484$)

	<i>Offline exposure only (n = 106)</i>		<i>Online exposure (n = 122)</i>	
	<i>ACOR (95% CI)</i>	<i>P-value</i>	<i>ACOR (95% CI)</i>	<i>P-value</i>
Demographic characteristics				
Male	4.06 (2.42, 6.80)	<.001	7.41 (4.07, 13.49)	<.001
Older age (14–17 years)	1.46 (0.90, 2.37)	0.13	2.79 (1.51, 5.14)	<.001
Caregiver-child relationship				
Poor emotional bond	0.77 (0.41, 1.44)	0.41	2.02 (1.19, 3.42)	<.01
Frequent coercive discipline	1.67 (1.03, 2.71)	0.04	0.77 (0.45, 1.31)	0.33
Psychosocial characteristics				
Delinquent behavior	3.94 (2.47, 6.27)	<.001	4.17 (2.61, 6.65)	<.001
Seriously involved substance use	2.12 (1.23, 3.66)	<.01	2.60 (1.57, 4.29)	<.001
Unintentional exposure to Internet pornography	1.43 (0.92, 2.22)	0.11	2.63 (1.71, 4.07)	<.001

ACOR (adjusted conditional odds ratio) refers to the conditional odds of reporting that specific type of seeking behavior versus non-seeking behavior, taking into account the likelihood of falling into the other two seeking behavior categories.

twice as likely to report online-seeking behavior compared to otherwise similar youth who use the Internet less frequently ($p = .02$). Associated with Internet use, one aspect of parental Internet controls significantly differed between online and offline-only seekers. Young people whose caregivers reported household rules about not visiting Internet pornography websites were 3.5 times as

likely to cross-sectionally report online seeking behavior compared to otherwise similar young people without such a household Internet rule ($p = .01$). All other things being equal, those who rated their emotional bond with their caregiver as poor were more than twice as likely to be online seekers versus offline seekers ($p = .03$). On the other hand, youth who reported frequent coercive discipline were 65%

TABLE 3. PARSIMONIOUS LOGISTIC REGRESSION MODEL OF ONLINE SEEKING (54%) VERSUS OFFLINE-ONLY SEEKING (46%) AMONG YOUNG REGULAR INTERNET USERS WHO INTENTIONALLY SEEK EXPOSURE TO PORNOGRAPHY ($N = 228$)

	<i>AOR (95% CI)</i>	<i>P-value</i>
Demographic characteristics		
Hispanic	3.32 (1.22, 9.06)	0.02
Older age (14 years and older)	2.35 (1.11, 4.95)	0.03
Internet characteristics		
Internet expertise (almost or expert)	2.05 (1.09, 3.87)	0.03
Frequency of use (4+ days/week)	2.11 (1.13, 3.92)	0.02
Caregiver-child relationship		
Poor emotional bond	2.41 (1.10, 5.29)	0.03
Frequent coercive discipline	0.34 (0.17, 0.68)	<.01
Parental Internet controls		
Rule about no pornography sites	3.53 (1.36, 9.18)	0.01
Psychosocial characteristics		
Clinical features of major depression	3.51 (0.97, 12.66)	0.06

AOR (adjusted odds ratio) refers to the odds of reporting that specific type of seeking behavior versus non-seeking behavior, taking into account the likelihood of falling into the other two seeking behavior categories.

less likely to indicate online versus offline pornography seeking behavior ($p < .01$). A nonsignificant trend was also observed for those who reported clinical features of depression to be 3.5 times as likely to also report online versus offline-only seeking behavior ($p = .06$).

DISCUSSION

Using data from the Youth Internet Safety Survey, youth-reported pornography seeking behavior was examined for cross-sectional differences in individual, Internet usage, and psychosocial characteristics. In this study, we take a 'non-traditional' look at characteristics related to intentional exposure to pornography. Instead of focusing on beliefs and behaviors related to sex or women,³ an analysis of personal characteristics is offered. This initial investigation reports cross-sectional linkages, the first step in investigating longitudinal, developmental trajectories of youth sexual development and exposure to Internet pornography.

Demographic characteristics of pornography seekers

As reported by previous studies,^{10,12} seekers of pornography, both online and offline, are significantly more likely to be male. In fact, almost one-quarter of all males report at least one intentional exposure in the previous year as compared to 5% of all females. There is a dearth of research information about this small but perhaps significant group of females; more research is needed.

Overall, older youth are more than twice as likely as younger youth to report an intentional pornographic exposure (i.e., 20% of youth between 14 and 17 years of age, versus 8% of youth between the ages of 10 and 13). Among older youth, online exposures are favored over traditional venues, whereas younger youth report traditional exposures more frequently than those found on the Internet. Findings may be an indication that the majority of youth who seek pornography are simply age-appropriately curious about sex. Perhaps the age differential in terms of online exposure may be an indication that controls Internet pornography sites have enacted, specifically the necessity of a credit card number for access to the web site, have helped keep young children out of x-rated web sites. It is also true that older youth are more independent with their Internet use, enabling more freedom to explore. On the other hand, younger people may be more likely to not disclose their Internet seeking behavior, although why this bias

wouldn't also affect the report of offline-only seeking behavior is not clear.

Online versus offline seekers

Important differences in psychosocial functioning between young people who view pornography online versus offline (e.g., magazines) are noted. Results suggest that those who use the Internet also may be experiencing emotional challenge. These young people are 3.5 times as likely also to report clinical features of major depression and 2.4 times as likely also to report a poor emotional bond with their caregiver. It is unlikely that exposure to pornography is a direct cause of these challenges. Given reports that young people who are depressed become socially isolated²⁰ however, it is possible that these young people are choosing the Internet versus traditional methods because of the decreased social demands. On the other hand, some online exposures may be more explicit or in some other way disturbing, and this may contribute to one's depression. Further research is warranted.

Pornography exposure and aggression

Risk associated with the consumption of pornography is a complex issue. A meta-analysis of naturalistic studies of non-offending men reports that for the majority of men, pornography exposure, even at very frequent levels, are not linked to increased levels of sexual aggression.³ Among men who have "predisposing risk levels" towards aggressive sexual behavior, those who frequently consume pornography have more than four times greater levels of sexual aggression compared to their peers who infrequently seek out pornography.³ Indeed, what many agree upon is that where an association between pornography and sexual deviance does exist, it is likely with a person who has more global challenge.⁴ This is especially pertinent to the current findings as those youth who report intentional exposure, both online as well as offline-only, to pornography are significantly more likely to cross-sectionally report delinquent behavior and substance use. Future research should focus on longitudinal studies that parse out temporality of these characteristics. It is possible that young people who are delinquent seek out pornography as a 'symptom' of their behavior. Also, pursuing the role of alcohol is necessary based upon current findings and the results of a survey of sex-offending adolescents that suggests increased alcohol use is significantly related to a greater number of victims.⁹

Replacing or increasing

The Internet represents a new mode of delivery of pornographic material. Has this potentially greater availability of pornography led to an overall increase in intentional exposure among adolescents, or instead, has it simply replaced another mode (e.g., magazines, movies) that would have been used if the Internet not been available? In the current sample, 4.5% of young regular Internet users report *both* online and offline-only seeking behavior, 3.6% report only online behavior, and 7.2% report offline only behavior. These results suggest that more youth are accessing pornography offline versus online. Being cross-sectional, these findings cannot speak to trends in behavior over time however, and it is possible that overall, fewer young people sought out pornography before it was available online. Further research is needed.

Parental involvement

Among adolescents who report intentionally looking at pornography, the report of household rules delineating no pornographic web sites is related to a three-fold increased odds of reporting online seeking behavior compared to offline-only seeking behavior. It is possible and likely that this is a reflection of household rules *following* an incident (i.e., a caregiver discovers the young person has gone to websites and *then* institutes a household rule).

Web site filters and other parental controls are oft-cited remedies for caregivers hoping to shield their youth from unwanted exposures. None of the three safeguards examined in the current study however (i.e., rules, blocking software, checking the history function), differentiate between pornography-seeking and non-seeking youth. Certainly parental involvement is important, but additional actions may be necessary. This may be especially true for those adolescents who report poor caregiver-child relationships along with pornography-seeking behavior. Intervention and prevention efforts aimed at adults are necessary but not sufficient. Efforts directly aimed at children and adolescents are also needed.

Limitations

This investigation is the first to scientifically compare youth who intentionally seek sexual material online and offline. It is not however, without limitations. There were a unequal number of ques-

tions about offline versus online exposures. Three questions were asked about traditional exposures to pornography as compared to one question about online exposures. This may have led to an overrepresentation of offline versus online seeking behavior. If this led to misclassification, the results presented in the current investigation may be an attenuated reflection of the true associations between online seeking behavior and the personal characteristics examined. Overall, 15% of young people report some form of purposeful exposure to pornography, 8% of whom report online seeking. This one-year prevalence rate is lower than previous reports (i.e., 15% by Lenhart et al., 2001¹⁰; 21% by Stahl & Fritz, 2002¹²), perhaps because of the ordering of the questions. As the survey was designed to identify unwanted exposure to sexual material, this outcome was queried before intentional exposure. It may also be because the wording of the questions about sexual material were clear about their intent compared to other surveys that have used less pointed questions and instead chosen proxies by asking e.g., whether the youth has lied about their age. Perhaps asking the question clearly leads to response bias for youth who do not want to admit specifically to seeking sexual material. What is sacrificed in sensitivity however, is gained in specificity. We can be reasonably confident that youth who respond in the affirmative truly have intentionally sought out sexual material online. Further, because questions about both online and offline exposure were equally explicit, it is unlikely that differential reporting resulted.

Additional limitations that need to be kept in mind when interpreting the data include the fact that the survey is not representative of all young people; only Internet users were included in the survey, possibly undercounting the number of young people who intentionally seek offline exposure to pornography. Second, this survey is cross-sectional, thereby precluding temporal references. It cannot be said therefore, that seeking pornography lead to later delinquency for example, or that delinquency led to seeking pornography. Third, the measure of exposure is a dichotomous (yes/no) indicator. It is possible that intensity of exposure reveals differences in psychosocial challenge and this is an important area of future research. Fourth, the data were collected between the fall of 1999 and spring of 2000. It is possible that youth behavior has changed online as the number of youth accessing the Internet has increased. Based upon reports of general Internet use however (e.g., e-mailing, instant messaging), it is less likely that behavior has changed and more that access has increased.

Lastly, there is a potential bias in the sampling frame, as potential households were identified as part of a larger study. All phone numbers were forwarded to YISS researchers to minimize bias however, including those households that declined to participate in the NISMART-2 study.

Implications

Instead of an avalanche of young children turning to the Internet as a venue for easy access to pornography, the current findings suggest that the vast majority of minors who use the Internet to look for sexual images are likely 14 years of age and older. Younger children who have looked at pornography are more likely to report traditional exposures, such as magazines or television. Based upon the current findings, concerns about a large percentage of extremely young children using the Internet to expose themselves to sexual images before they are developmentally ready, may be overstated.

Results from the current study suggest that among young, regular Internet users, those who report intentionally seeking pornography may be facing multiple challenges, including delinquent behavior and substance use. Further, there is an increased trend for youth who report clinical features of depression to be more likely to report online-seeking versus offline-only seeking behavior. Thus, intentional exposure to pornography may be one behavior among many for young people struggling in their adolescence. Child and adolescent health professionals, and others interacting with youth should be sensitive to the possibility that at least for some young people, seeking out pornography either online or offline, has implications beyond their sexual development.

Future studies should focus on parsing out whether online pornography seeking represents a shift in behavior, or is leading to an overall increase in the number of youth who are accessing pornography. Additionally, the results of this study need to be replicated; longitudinal studies are also called for to parse out the temporality and contribution of events. For example, does intentional exposure of pornography actually *lead* to delinquent behavior or is it a 'symptom' of a young person acting out?

Adolescents who use the Internet to look at sexual material may be manifesting age-appropriate sexual curiosity. Based upon the cross-sectional profile of young people who report pornography-seeking behavior, however, it also appears that the behavior may be a marker for greater challenge for some young people. Results of the current investi-

gation have raised important questions for further inquiry.

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