Available online at www.sciencedirect.com
ScienceDirect
Journal of Adolescence 32 (2009) 601–618
Journal of Adolescence
www.elsevier.com/locate/jado

Social bonds and Internet pornographic exposure among adolescents

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Abstract

Concern has grown regarding possible harm to the social and psychological development of children and adolescents exposed to Internet pornography. Parents, academics and researchers have documented pornography from the supply side, assuming that its availability explains consumption satisfactorily. The current paper explored the user's dimension, probing whether pornography consumers differed from other Internet users, as well as the social characteristics of adolescent frequent pornography consumers. Data from a 2004 survey of a national representative sample of the adolescent population in Israel were used ($n = 998$). Adolescent frequent users of the Internet for pornography were found to differ in many social characteristics from the group that used the Internet for information, social communication and entertainment. Weak ties to mainstream social institutions were characteristic of the former group but not of the latter. X-rated material consumers proved to be a distinct sub-group at risk of deviant behaviour.

Keywords: Information and communication technologies; Adolescents; Pornography; Deviant behavior; Youth at risk; Internet

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0140-1971/$30.00
doi:10.1016/j.adolescence.2008.06.004

Introduction

The ease of access and the abundance of pornographic content on the Internet tend to magnify anxiety about the harmful influence of Internet pornography on minors. Pornography is perceived as more accessible to minors via the Internet than in its traditional forms (Beaver, 2000; Buzzell, 2005). Such exposure of children and adolescents is particularly worrying in that it can exercise a negative effect on their development, motivating greater acceptance of sexual permissiveness, sexual activity at an early age, acceptance of negative attitudes to women, and rape myths (Barak, Fisher, Belfry, & Lashambe, 1999; Greenfield, 2004; Malamuth, Addison, & Koss, 2000; Malamuth & Impett, 2001; Lo & Wei, 2002).

The public discourse on this exposure to pornography involves issues of child protection (Helsper, 2005; Mitchell, Finkelhor, & Wolak, 2003). One central focus of studies on the issue has been "chance" or unwanted Internet exposure to pornographic material (Greenfield, 2004; Livingstone & Bober, 2005; Mitchell et al., 2003). An implicit assumption is that the wide availability of X-rated material on the Internet and through commercials results in involuntary exposure to this content (Mitchell et al., 2003). Less is known about the characteristics of adolescents who search for pornography deliberately. None of the few studies that have investigated the characteristics of heavy Internet users of X-rated material attempted to differentiate between them and users of the Internet for other purposes (e.g., Chiou & Wan, 2006; Ybarra & Mitchell, 2005; Yoder, Virden, & Amin, 2005). As the negative consequences of exposure to pornography depend on frequency of use, characteristics of adolescents at risk of deliberate exposure to pornography need to be identified, and distinguished from those of other youth who use the Internet for more socially acceptable purposes. This study departs from previous studies, which focused on the supply side, and highlights the characteristics of the consumers, their similarity to or dissimilarity from other types of Internet users, and their similarities or differences in respect of youth who engage in deviant behaviour. Identifying specific characteristics of youth who consume pornography might help us learn how to reduce this problematic behaviour in the future.

Literature review

Children and adolescents are the most frequent users of information and communication technologies (ICT) in the home. A US study found that 87% of youth aged 12–17 go online, as against 66% of all American adults (Lenhart, Madden, & Hitlin, 2005). Similarly in Israel, 67% of youth go online but only 56% of the adult population does so (Israel, Central Bureau of Statistics, 2004). For many adolescents the Internet is the main source of information and entertainment, and an important tool for communication (Lenhart et al., 2005; Livingstone & Helsper, 2007; Mesch & Talmud, 2006). Public and academic discourse on the relationship between youth and ICT is ambivalent. Many commentators are enthusiastic, maintaining that Internet applications provide children with new opportunities for creativity and active learning (Livingstone & Helsper, 2007); and social policy emphasizes the development of skills such as computer literacy, which are believed to be necessary for an increasing number of occupations. But others are concerned about the negative effect of the Internet on teenagers. Because access can seldom be regulated effectively, youth are at risk of being exposed to inaccurate information and abusive content, including pornography (Holloway & Valentine, 2003).

Pornography is the term most often used for sexually explicit content that is primarily intended to sexually arouse the audiences (Malamuth & Impett, 2001). The literature suggests a number of negative effects of frequent and long-term exposure to this material. First, it leads to more liberal sexual attitudes and greater belief that peers' are sexually active, which increases the likelihood of first intercourse at an early age (Flood, 2007). Second, adolescents exposed to sexual behaviours outside cultural norms may develop a distorted view of sex as unrelated to love affection and intimacy, and a desire for emotionally uncommitted sexual involvement (Byrne & Osland, 2000). Third, youth exposed to pornography may develop attitudes supportive of "rape myth", which ascribe responsibility for sexual assault to the female victim (Flood, 2007; Seto, Maric, & Barbaree, 2001).

The potential negative consequences and the existence of a large number of pornographic websites have stimulated public concern. While sexually explicit material comprises only a small fraction of online content, that fraction is highly visible and accounts for significant web traffic (Chen, 2000). The perception that availability and easy access to Internet pornography leads to an increase in the consumption of pornographic material is not always supported by research. A study using the General Social Survey of public opinion in a randomly selected sample of the adult US population explored the link between technology and pornography consumption, and found that adult consumption of pornography had decreased over time. While 31% reported going to the movies to watch an X-rated movie in the 1970s, and 32% watched an X-rated VCR in the 1980s, only 25% visited pornographic sites in 2000. In all the cases pornographic use was associated with demographic characteristics such as gender and socioeconomic status; men and low income individuals were more likely to consume pornography than women and middle class individuals. The results indicate that consumption of X-rated material is not random (Buzzell, 2005).

Although pornography in cyberspace is attracting increasing attention from scholars, research literature is sparse. A large proportion of the existing studies focus on content analysis of pornographic materials posted and distributed through the Internet (Gosset & Byrne, 2002; Greenfield, 2004; Helsper, 2005). Knowing the content helps to shed light on types and scale of availability, but knowledge of how and by whom Internet pornography is used is not provided in these studies.

Others adopt an *opportunity perspective*, whereby individuals are passive consumers of the media. This approach posits that pornography is available, and to be exposed by chance to this material is highly likely (Livingstone & Helsper, 2007; Ybarra & Mitchell, 2005). Concern is expressed that children and young adolescents reaching it by chance are disturbed and upset by premature exposure to sexually explicit content (Livingstone & Helsper, 2007; Ybarra & Mitchell, 2005).

Public concerns deriving from the opportunity perspective are reinforced when certain technological characteristics of the Internet are considered. The Internet has been portrayed as conducive to deviant behavior because of its use in isolation from others, as opposed to consumption of other media, which is in the presence and even with the collaboration with others. The relative anonymity of the medium may promote activities that an individual does not usually engage in when he/she is part of a group, where members tend to conform to culturally accepted behavior (Pardum, L'Engle, & Brown, 2005).

It is reasonable to assume that opportunity does not adequately explain deliberate pornographic consumption. An important observation from the Uses and Gratifications theory is that media consumers are active in their choices of media content (LaRose, Lai, Lange, Love,

& Wu, 2005). The web is an excellent example of a medium that people actively use, and they are not exposed by chance but because they select specific sites. Navigating the web involves actively choosing to point to and click on links that appear on most pages. Certainly, users have different social and psychological needs that motivate their choices. These needs compel people to seek information or enter into communication, and they have expectations about what they will gain from such activity. Owing to these motives and expectations people select particular media channels, sources and content. Different people will use the same channels, sources, and content for quite diverse reasons and with contrasting expectations. There is now a growing literature in which uses and gratification theory has been applied to Internet use, as well as accounts holding that the nature of media uses and gratification changes in the online environment (Johnson & Kaye, 2003). As motivations differ from individual to individual, an important research question is

RQ1: Do adolescents who frequently search the Internet for X-rated material differ from adolescents who frequently use the Internet for communication, information search, and skill-learning purposes?

From uses and gratifications theory it can be expected that

H1: Individuals reporting frequent search of X-rated material on the Internet will differ from individuals using the Internet for other purposes such as communication, information search, and skill learning.

Social bonding and the search for X-rated material

An appropriate perspective in our quest for the variables that presumably distinguish young people in their Internet use is social bonding. This theory posits a consistent value system in society, to which all are exposed (Hirschi, 1969). At the same time opportunities for deviant behaviour are abundant and accessible to everyone. In these circumstances the relevant research question is not why individuals engage in deviant behaviour, but what factors influence individuals to refrain from doing so. By this approach, the social value system is defied by deviants because their attachment, that is, the bonds that tie them to the value system of mainstream society, is weak. The consequences of rejecting accepted social norms and beliefs, namely damaging social relationships with friends, family and parents, does not deter them. The most important bonds that tie individuals to society are attachment to social institutions and belief in the value systems of society. The absence of these bonds in deviants distinguishes them from non-deviants (Hirschi 1969, 1983; Stack, Wasserman, & Kern, 2004). Studies have reported a link between low social bonding and youth risk behaviours such as smoking, drunk driving, drug abuse, gambling, academic dishonesty and illicit sex (Cochran, Wood, Sellers, Wilkerson, & Chamlin, 1998; Evans, 1993; Love, 2006; Strand & Garr, 1994). Furthermore, according to this perspective lack of social bonding results in low self-control. According to Gottfredson and Hirschi (1990), individuals with low self-control are versatile: those who perform one deviant act will tend to perform other deviant acts as well. Thus the theoretical argument proposes that youth who are likely to be heavy consumers of pornography might not differ in their characteristics from others who are involved in delinquent activities such as theft and violent behaviour. Of particular importance to this study is a recent research project in which a positive relationship was found between involvement in illicit sexual behaviors (such as use of pornography and indecent exposure) and delinquent acts (Love, 2006).

Attachment refers mainly to one's interest in significant others. Acceptance of social norms and the development of social consciousness depend on attachment to significant others, in particular family and school, which are seen as central social institutions. According to this perspective, despite the abundance of opportunities for deviance individuals will eschew it because of the consequences that the act will most probably produce, placing the relationship between parents and children in jeopardy. In partial support of this argument, a study that compared deliberate exposure to X-rated material online with exposure to X-rated material offline in a sample of adolescents in the USA found that online seekers were more likely to report lower levels of emotional bonding to their parents (Ybarra & Mitchell, 2005). Yet the conclusions of that study are limited, as pornography seekers were not compared with adolescents using the Internet for socially acceptable purposes. Hence, following social bonding theory, to the extent that pornography seekers differ from non-pornography seekers, this study hypothesizes

H2: Adolescents who report low commitment to parents and family will be more likely to use the Internet to search for X-rated material, and less likely to use this technology for learning skills, seeking information, and communication purposes.

Regarding the bond to school, the theory argues that poor school performance and poor experiences with classmates lead to dislike of school, that is, low school attachment, which leads to rejection of teachers and authority. Low evaluation of important role models results in acts of deviance outside school, as the disrespectful individual does not feel committed to authority figures and feels free to engage in deviant activities (Cullen & Agnew, 2003).

H3: Adolescents who report low attachment to school are more likely to be involved in frequent search for pornographic material and less likely to use the technology for learning skills, information search, and communication.

According to social bonding theory another important bond is belief: a society's value system entails belief in social rules and respect for the people and institutions that enforce them. Individuals in society tend to live in common social settings that share similar human values. If such beliefs are weak or non-existent, people are more likely to engage in deviant behaviour. Following this perspective, this study hypothesizes

H4: The lower the support for pro-social attitudes, the higher the frequency of search for X-rated material on the Internet.

Additional variables

Gender is a variable that affects Internet use in general and pornography search in particular. Previous studies have shown that males are more likely to search for instrumental information such as news and financial matters, and to engage in online commerce. Women are more likely to seek health and religious information and to communicate with family and friends (Howard, Rainie, & Jones, 2002). This difference proved to hold for pornographic consumption too, as a much higher percentage of females expressed negative attitudes, and reported less exposure to, pornographic content on the Internet than males (Troeen, Spitznogle, & Beverfjord, 2002). Differential socialization to gender roles often implies a sexual double standard, whereby sexual interest expressed by men is evaluated positively and by women negatively (Marks & Fraley, 2005).

Accordingly,

H5: Controlling for the strength of bonds to parents, school and society, boys will report more frequent search for X-rated materials than girls.

Studies on deviance have reported a relationship between religiosity and pornography. A firm link has been found between religiosity and condemnation of pornography (Lambe, 2006; Sherkat & Ellison, 1997). To the extent that attitudes predict behaviour it can be assumed that condemnation of pornography, which is more common among religious individuals, leads to abstaining from searching for pornography. Furthermore, adolescents attending religious schools might be under closer surveillance in their behaviour than those attending secular schools, and in that case seeking online X-rated material may sever the bonds that tie religious students to their schools (Cullen & Agnew, 2003; Stack et al., 2004). Thus, the negative effect of religiosity on online X-rated material seeking might result from membership of a community in which deviant behavior is condemned, and individuals refrain from participation in such behaviors to avoid informal and formal social sanctions. Accordingly,

H6: Religiosity will be negatively related to frequent search for X-rated material on the Internet and positively related to other uses of this technology.

In sum, as availability of and accessibility to pornographic material is extensive, the goal of the present study is to investigate whether adolescents who search for pornographic content are similar to or different from adolescents who use the Internet for other purposes. Relying on uses and gratification theory we assume that the Internet user is active in searching for content and that this content will differ according to certain motivations. Furthermore, we expect that one major difference between pornographic and non-pornographic consumers will be found in the quality of their social bonds. The social bonds of pornographic consumers are expected to be weaker, in contrast to those of consumers of information, communication, entertainment and learning, and similar to those of adolescents who engage in other deviant activities.

The Israeli context

In Israel, Internet use is rapidly expanding. In 1998 only 11% of Israeli households reported having access to the Internet; the figure had risen to 58% by 2004 (Committee for Information and Knowledge Society of Israel, 2006). Adolescents' use of the Internet has expanded even faster. While in 2001 only 35% of the adolescent population had access to the Internet, by 2004 65% had access to it. As to purpose, the overwhelming majority of adolescent Internet users reported that it was mainly for social purposes (Mesch & Talmud, 2006). In Israel, as elsewhere, adolescents represent a significant proportion of Internet users and thus call for special attention.

Methods

Sample

Data for the current study were collected between June and October 2004 from the national Israeli Youth Survey conducted annually by the Minerva Center for Youth Studies at the

University of Haifa. The annual survey covers a representative sample of 1000 households in Israel. Sampling begins with a random selection of 60 localities in Israel with a population of 2000 or more. Then, according to the size of the adolescent population in each, neighborhoods are selected, also at random. The number of neighborhoods in each locality is determined by the juvenile population size (13–18 years old) in it. At least one neighborhood is randomly selected in settlements with a low proportion of adolescents and more than one in the larger urban areas. Next, in each neighborhood 15 households are randomly selected. The selected neighborhoods represent all geographic areas of Israel, and also different sizes of settlements from big cities to small towns and villages. The survey covers social and demographic characteristics of the youth, social attitudes, attitudes to school, and information on Internet access and frequency of use.

Procedure

The interviews were conducted face to face in the respondent's house by trained interviewers. Of the 1000 adolescents contacted, 987 agreed to participate in the study. Respondents' average age was 15.52 years (SD 1.66); girls and boys were almost equally represented (52% boys). In terms of nationality, 79% were Israeli Jews and 21% Israeli Arabs. In socioeconomic status, average father's education was 12.63 years (SD 3.50) and average mother's education was 12.52 years (SD 3.37). Regarding family status, 86.8% reported that their parents were married and 13.2% of parents were separated or divorced. Access to the Internet was reported by 66.7% of the adolescents, and this sub-sample was used for the purposes of the current study. The survey included measures of frequency and types of daily Internet use.

Instruments

Several dependent variables based on items seeking frequency of Internet use for different activities were created. *Pornography consumption*: Adolescents were asked how often they used the Internet to visit pornographic websites or to watch pornographic material (photographs and short movies). Answers were on a five-point scale where high scores indicated high frequency and low scores indicated never or almost never. In the analysis two different operationalizations of the variable were conducted in order to increase the robustness of the results. In one case the variable was treated as continuous, and Ordinary Least Squares regression was used in the multivariate analysis. In the second case, given the skewed distribution of the variable, a dummy variable was created. The three highest values of the variable (very frequent and frequent) were coded as one, and non-use or rare use was coded as zero. This operationalization allowed a clearer distinction between non-use and exposure by chance and frequent search; logistic regression modelling was used in the multivariate analysis.

To investigate the extent that adolescents who were heavy consumers of Internet pornography differed from or were similar to adolescents who used the Internet for other purposes, other Internet uses were considered. *Communication purposes* were defined by means of an item probing the extent of Internet use for sending and receiving emails, *information search* was measured by an item probing the extent of visiting websites for information search, *entertainment* purposes were measured by an item probing the extent of Internet use for downloading music and clips, and *skill*

learning was measured by an item probing extent of Internet use for practising and learning computer skills as preparation for a profession in the computer-related job market.

For the four items, responses were given on a five-point scale, from 0 (never) to 4 (always).

Frequency of Internet use was measured by an item that asked how many hours on average the Internet was used on a regular day. Time was measured in hours as a continuous variable.

According to social bonding, lack of attachment results in versatile deviant behavior, implying that those involved in deviant acts such as frequent exposure to pornographic material might be involved in other types of deviance as well, including aggressive behaviour. To test this possibility we included a measure of Violent behaviour, defined by means of three items. Youth were asked to indicate how far they concurred with statements determining their involvement in the previous year in aggressive behaviour at school, such as cursing, hitting, and assaulting other students. An explorative factor analysis (varimax rotation) showed that the items represented one dimension. A scale was constructed summing all the items and taking their average for each respondent. The reliability of the scale was acceptable (alpha = .725).

To test the study hypotheses a number of independent variables were used in the analysis. Religiosity was measured by two different measures. One was created from an item that asked the adolescent about the type of his/her school. Religious school was coded as one and non-religious school was coded as 0.[1] A measure of subjective self-definition was used, whereby respondents were asked to define themselves as non-religious, secular, traditional, or religious. The measure was introduced as continuous, where high scores indicated adherence to religious practices.

Commitment to family was measured by a series of items asking the adolescent to evaluate his/her relationship with each parent and to indicate how close he/she felt to them; how tight-knit the family was, how supportive of each other its members were, how much they listened to and loved one another. Responses were on a five-point scale, with higher scores indicating high commitment to the family. A scale was created by taking the average score for each individual. Internal reliability of the scale was high (alpha = .89).

Pro-social attitudes were measured by four items asking how important it was for the respondent to obey the law, to help others in need, to be loyal to friends, and to contribute to society. Answers were given on a five-point scale, where high scores indicated high level of agreement. A scale was created by taking the average score for each individual. Internal reliability was alpha = .68.

Attitudes to school. Respondents were asked how far they agreed with seven items: school provided positive values; teachers constituted a role model; the material studied was important; school taught students how to think; teachers treated students fairly; I appreciate my teachers; ''The material is taught in an interesting way''. A scale was created by taking the average score for each individual. Internal reliability was alpha = .88.

Regarding socio-demographic variables for the analysis, age was measured in years; gender was coded 1 for a male respondent and 0 for a female respondent; nationality was coded 1 for a Jewish

[1] Israeli state education consists of two separate systems: secular and religious schools. The two types of state school enjoy equal status. By law, parents can choose, at no cost, either type school for their children. Once the choice is made, placement at a specific elementary school is determined by area of residence. Currently about 21% of the entire Israeli Jewish school population is registered at state religious schools.

respondent and 0 for an Arab respondent. Parental marital status was coded 1 when the parents were married and 0 otherwise.

Results

The analysis focus on three major issues: (1) the connection of social involvement and pro-social attitudes to pornography; (2) the extent that Internet use is generalized or specialized, such that individuals using it for pornographic purposes differ from or are similar to those who use it for other purposes; (3) whether Internet users for pornographic purposes are different from or similar to users who engage in other deviant behaviours such as aggression.[2]

Data analysis evinced differences in the extent of Internet uses,[3] showing that 15% of respondents who were Internet users reported frequent or very frequent searching the web for pornographic material. As to other frequent Internet uses, 64.2% reported using it frequently or very frequently for communication purposes, 66.4% for information search, 77.3% to listen to or download music, and 26% to acquire computer skills.

To explore the extent that search for X-rated material and other uses are related, we present the correlation matrix and descriptive statistics for the study variables. The results of the correlation matrix appear in Table 1.

As this study concerned a young group of the population, an important question was the extent that patterns of Internet use were related to age. According to the correlation matrix, neither type nor frequency of Internet use was related to age, indicating that during adolescence Internet use appears to be age-invariant. One salient finding in the correlations of the different types of use was the lack of association between Internet use for information search and for pornographic consumption. An important inference from this is that information search and pornography search are two independent activities, probably conducted by different individuals. The other correlations of different uses were statistically significant although of different magnitudes. The largest correlations were use for communication and music consumption and use for information and music consumption. Use for pornographic consumption was correlated with use for communication, music, and learning skills, but the size of these correlations was much smaller. These results indicate that while some of the uses are associated with pornographic consumption the correlation is far from perfect, suggesting the possibility of differences between pornographic consumption and other uses. This possibility was tested by multivariate analysis, first to identify the extent that social bonding variables were related to pornographic use. In the first model religiosity was determined as attending a religious school and social integration was measured by pro-social attitudes, including abiding by the law.

[2] Causality does not concern this paper and I believe that aggressive attitudes and behaviour are not a result of pornography. The interest in this study is in testing the hypothesis that social similarities exist between consumers of Internet pornography and participants in deviant behaviour in general. Aggressive behaviour is used in this study as one manifestation of deviant adolescent behaviour.

[3] This was shown by a comparison of scores collapsing the responses of the three highest categories, very frequent and frequent, with those reporting non-use or infrequent use for any given purpose.

Table 1
Correlation matrix and descriptive statistics for study variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.Communication	1.0														
2. Information	**.25**	1.0													
3. Music downloads	**.40**	**.40**	1.0												
4. Pornography	**.17**	−.01	**.12**	1.0											
5. Skills	**.17**	**.31**	**.21**	**.29**	1.0										
6. Age	−.04	−.01	.03	.03	−.03	1.0									
7. Parental education	**.07**	.07	**.09**	.03	−.06	−.02	1.0								
8. Religiosity	**−.08**	−.01	−.06	**−.11**	.02	.06	**−.07**	1.0							
9. Secular school	−.01	−.02	.02	**.09**	−.01	−.01	−.01	**−.32**	1.0						
10. Commitment family	−.04	**.11**	.01	**−.11**	**.16**	−.08	−.06	.01	.04	1.0					
11. School attachment	−.11	.06	−.05	**−.14**	**.15**	−.07	−.05	**.08**	**−.08**	**.13**	1.0				
12. Pro-social attitudes	−.04	**.18**	−.01	**−.19**	**.13**	−.01	−.01	**.08**	−.05	**.17**	**.29**	1.0			
13. Internet use	**.25**	**.12**	**.15**	**.12**	**.12**	.02	−.03	.01	.03	**−.12**	**−.10**	−.04	1.0		
14. Violent attitudes	.03	−.04	−.01	**.28**	**.08**	−.03	**−.09**	.02	−.07	−.07	**−.13**	**−.28**	**.09**	1.0	
15. Violent behavior	**.15**	−.04	.03	**.36**	**.14**	−.02	−.02	−.01	.05	**−.12**	**−.11**	**−.24**	**.16**	**.48**	1.0
Mean	2.72	2.82	3.18	.93	1.45	15.53	13.25	1.77	.88	11.37	19.67	14.11	3.94	7.02	5.30
SD	1.37	1.17	1.13	1.32	1.42	1.67	3.56	.87	.31	3.40	4.92	1.86	4.42	2.90	2.10

Note. Values in bold are significant at $p < .05$, two-tailed.

Table 2 presents the results for two models in which pornographic consumption was treated as a continuous variable, and two models in which it was treated as a dummy variable. In each model alternative measures of religiosity and pro-social attitudes were used. The results of model A show that the most important variable affecting pornographic consumption was gender. Boys were more likely than girls to report higher levels of pornographic consumption. The effect of gender was the strongest in this model. In addition, adolescents attending secular schools proved more likely to report seeking X-rated materials than those attending religious schools. Other variables that measure social bonding were significant as well. The lower the commitment to the family and the lower the support of pro-social attitudes, the higher was the likelihood of seeking pornographic material on the Internet. Frequency of Internet use was likewise related, indicating that adolescents visiting pornographic websites were more likely to be heavy Internet users. In model B, self-definition of religiosity (instead of type of school attended) and attitudes to school (instead of pro-social attitudes) were introduced. This was to allow exploration of alternative specifications of the concepts so as to increase the robustness of the findings. Model B in Table 2 shows the results of the OLS regression. Again, the effect of gender was significant and by far the largest. The new specification of religiosity, as self-defined instead of attending a religious school, was significant, indicating that the more religious the adolescents defined themselves, the less likely they were to visit pornographic websites. The higher the commitment to the family and the more positive the attitudes to school and teachers, the less the individual would habitually visit pornographic websites. Strong social bonds proved significant even under a different specification.

Table 2
Multivariate analysis predicting pornographic search.

	Model A: OLS			Model B: OLS			Model C: logistic regression			Model D: logistic regression		
	B	SE	Beta	*B*	SE	Beta	*B*	SE	Odds	*B*	SE	Odds
Boy	1.11	.09	.42**	1.15	.09	.45**	2.13	.23	8.46**	2.25	.25	9.52**
Age	−.07	.02	−.09	.01	.02	.01	.03	.06	1.03	.06	.06	1.06
Jewish	.16	.11	.05	.04	.12	.01	.26	.27	1.29	.08	.29	1.09
Parents married	.02	.02	.03	.02	.02	.03	.04	.07	1.04	.03	.06	1.03
Parents' education	.02	.10	.00	−.01	.10	−.04	.16	.23	1.18	.09	.24	1.09
Secular School	.55	.14	.14**	–		–	1.53	.38	4.64**	–	–	–
Religiosity	–		–	−.60	.21	−.10**	–	–	–	−1.93	.78	.14**
Commitment to family	−.09	.05	−.06+	−.10	.04	−.08*	−.15	.10	.85	−.16	.10	.84
Pro-social attitudes	−.08	.03	−.06*	–	–	–	−.10	.05	.90**	–	–	–
Attachment to school	–	–	–	−.11	.04	−.09*	–	–	–	−.22	.10	.79**
Frequency of Internet use	.02	.01	.09**	.02	.01	.07*	.05	.02	1.05*	.05	.02	1.05*
Constant	.84	.66					−3.64	1.46	.02*	−3.91	1.14	.020
Adj. *R* square	.24				.25		NR^2		.29	NR^2		.30

**$p < .01$, *$p < .05$, +$p < .10$.

Because the range of responses of the dependent variable was limited in its distribution, we specified a slightly different definition in which frequency was dichotomized into two categories: high search and no search for X-rated material on the Internet. The logistic regression analysis was conducted under the same rationale as with OLS regression. Model C shows again that gender is the largest effect increasing the likelihood of frequency of visiting pornographic websites. Religiosity and expression of pro-social attitudes decreased the likelihood of visiting these sites. The effect of commitment to family in this model proved non-significant.

The next model, D, presents the result when type of school attended was replaced by subjective religious definition and pro-social attitudes by attachment to school. The results again show that gender, religiosity, and attachment to school were all negatively related to the likelihood of visiting regularly pornographic websites.

Note that all the models contain several non-statistically significant variables. Quite different from what one might expect, age was not found related to pornography use, indicating that it is not a developmental imperative and that factors related to social integration are more important. However, visiting pornographic websites was related to the frequency of Internet use. Heavy Internet users were also heavy consumers of pornographic material.

The results as they stand do not indicate whether pornography users differ from other frequent Internet users. For this reason in the next model we compared the characteristics of frequent users of pornographic websites with those of heavy Internet users for other purposes, namely communication, information search, listening to music, and learning computer skills. This is shown in Table 3.

The results evince some salient similarities and differences. Only in the case of pornography consumption are all the measures of social bonding statistically significant. Only in this type of use do all measures show the same direction: the higher the social bonds, the lower the likelihood of Internet use for pornography consumption. Regarding communication purposes and entertainment (listening to music), none of the measures of social bonding is statistically significant, indicating that this Internet use is more generalized, and it is difficult to distinguish or create a profile of the user. In the case of information search and learning Internet skills, pro-social attitudes are statistically significant, indicating that this use is particularly frequent among adolescents who report having positive attitudes to society and school. As may be expected, all types of use are associated with daily frequency of use. But the effect of this variable is the lowest in the case of pornography consumption. This result indicates that not heavy Internet use per se leads to excessive consumption of pornography, but the type of use and the extent of social involvement.

A number of differences according to ethnicity should be mentioned. Jewish and Arab adolescents do not differ in the likelihood of pornographic consumption. However, while Arab adolescents are more likely to use the Internet for information search and for learning new computer skills, Jewish adolescents are more likely to use the Internet for communication purposes.

To summarize the results, we saw that adolescent heavy users of the Internet for pornography were more likely to report weaker social integration in terms of religious beliefs, school, society and family. Furthermore in the effect of these variables they differed from other adolescents who used the Internet for communication, information search, listening to the music, and learning purposes. The final question is whether adolescents who use the Internet for pornographic purposes possess similar characteristics to adolescents who engage in other types of deviant

Table 3
OLS regression analysis predicting pornography consumption, and Internet use for communication, information search, entertainment and learning.

	Pornography			Communication use			Information search			Listening to music			Learning skills		
	B	SE	Beta	*B*	SE	Beta	*B*	SE	Beta	*B*	SE	Beta	*B*	SE	Beta
Boy	1.11	.09	.42**	.15	.11	.05	.03	.09	.01	.15	.09	.06	.54	.10	.19**
Age	−.07	.02	−.01	−.05	.03	−.05	.03	.02	.05	.01	.02	.02	−.03	.03	−.04
Jewish	.16	.11	.05	.41	.14	.12**	−.45	.11	−.16**	−.03	.11	−.01	−1.23	.13	−.35**
Parents married	.02	.02	.03	−.03	.03	−.04	.05	.02	.07	−.01	.02	−.02	−.02	.02	−.01
Parents' education	.02	.10	.01	.13	.12	.04	.23	.10	.08*	.23	.10	.08**	−.04	.12	−.01
Religious school	.55	.14	.14**	−.02	.17	−.05	.01	.14	.01	.13	.14	.03	−.06	.16	.01
Religiosity	−.34	.23	−.058	−.37	.27	−.05	.09	.22	.02	−.20	.23	−.03			
Commitment to family	−.09	.04	−.068*	.02	.05	.01	.07	.04	.06	.03	.04	.03	.09	.05	.06
Pro-social attitudes	−.08	.02	−.119**	−.07	.03	−.01	.10	.02	.16**	.04	.02	.06	.08	.03	.10**
Attachment to school	−.08	.04	−.068*	−.06	.06	−.04	.01	.05	.01	.07	05	.06	.11	.05	.07*
Frequency of Internet use	.02	.01	.092**	.08	.01	.26**	.04	.01	.18**	.04	.01	.17**	.05	.01	.17**
Constant	.84	.66		2.66	.77		1.12	.63		2.17**	.65		1.43**	.74	
Adj. *R* square	.26			.08			.08			.02			.23		

**$p < .01$, *$p < .05$, +$p < .10$.

behaviour, namely self-reported aggression at school. Note that the argument here is not that exposure to pornography on the Internet is a cause of aggressive behaviour. The purpose here was to test the hypothesis that adolescents using the Internet for pornographic consumption engage in a deviant behaviour, and that commonality exists in the underlying factors affecting deviant behaviour. Aggressive behaviour and seeking X-rated material on the Internet are characteristics of troubled adolescents: those who are conspicuous pornography users are more similar to other types of adolescents showing deviance than to normative youth.

Table 4 presents the results of two models of pornography consumption and two models of aggressive behaviour at school. The difference is that different specifications of the diverse variables measuring social bonds such as religiosity and pro-social attitudes were used. A comparison of model A (pornographic consumption) and model C (aggressive behaviour) shows that commitment to family and pro-social attitudes were negatively related to both pornographic consumption and aggressive behaviour. Both of these behaviours were associated with gender, with boys more likely to engage in them; also, higher frequency of Internet use is seen to be characteristic of adolescents who engaged in aggressive behaviour and consumed pornography alike. The only difference in the models is the effect of attending a religious school, which was negatively related to pornography consumption and was not statistically significant in the case of violent behaviour. Replacing pro-social attitudes by school attitudes, and attending a religious school by a subjective definition of religiosity, yielded the same results. We may conclude that in relation to social involvement in society, lack of social integration in society is a risk factor of both frequent search for X-rated material on the Internet and aggressive behaviour at school.

The findings provide partial support for the hypothesis of the study. H2 suggested that high commitment to parents and family will be positively associated with communication use, information search, music and skill learning, and negatively associated with X-rated material search. Low commitment to family was found related to X-rated search but not associated with other Internet

Table 4
Results of OLS regression predicting pornographic consumption and aggressive behaviour.

	Model A: pornography consumption			Model B: pornography consumption			Model C: aggressive behaviour			Model D: aggressive behaviour		
	B	SE	Beta	*B*	SE	Beta	*B*	SE	Beta	*B*	SE	Beta
Boy	1.11	.09	.42**	1.14	.09	.45**	.30	.07	.15**	.35	.07	.19**
Age	−.07	.02	−.09	.09	.02	.01	−.02	.02	−.04	−.02	.02	−.03
Jewish	.16	.11	.05	.04	.12	.01	−.16	.09	−.06	−.18	.09	−.07
Parents married	.02	.02	.03	.02	.02	.03	.01	.02	.03	.01	.02	.02
Parents' education	.02	.10	.07	−.01	.10	−.06	−.05	.08	−.02	−.10	.08	−.04
Religious school	.55	.14	.14**	−.61	.21	−.10**	.15	.11	.05			
Religiosity				−.61	.21	−.10**				−.06	.16	−.01
Commitment to family	−.09	.05	−.06+	−.09	.04	−.07*	−.09	.04	−.10**	−.11	.03	−.12**
Pro-social attitudes	−.08	.02	−.11**				−.09	.02	−.18**			
Attachment to school				−.11	.04	−.09**				−.10	.03	−.10**
Frequency of Internet use	.02	.01	.09**	.02	.01	.08*	.08		.14**	.03	.09	.17**
Constant	.84	.66		.03	.48		1.51	.52		.23	.38	
Adj. *R* square	.24			.26			.10			.10		

**$p < .01$, *$p < .05$, +$p < .10$.

uses. In a similar vein, H3 and H4 were only partially supported as individuals using the Internet to search for X-rated material reported low school attachment and low commitment to pro-social attitudes, but other uses were not related to these variables. H5 was supported as the findings indicated that search for X-rated material was more common among boys than girls. H6 was partially supported, indicating that attending a religious school and self-reported religiosity were negatively related to search for X-rated material but not to other Internet uses. The results indicate that social bonds variables are able to identify the group of adolescents who are frequent users of the Internet for pornographic search.

The main implications of the results are that despite the wide availability of pornographic material on the Internet its consumption at high frequency is more a characteristic of troubled adolescents who lack a sense of being part of the society and positive attitudes to school, and report problematic relations with their families. These findings did not hold for adolescents who used the Internet for more normative and everyday purposes.

Discussion

As a large percentage of the adolescent population is online and pornographic material is easy to access, there is academic and public concern that exposure to this material can have negative effects on adolescents. Exposure of children and adolescents to this material may motivate greater acceptance of sexual permissiveness, sexual activity at an early age, acceptance of negative attitudes to women and sexual aggression (Barak et al., 1999; Greenfield, 2004; Lo & Wei, 2002; Malamuth & Impett, 2001). Previous studies were conducted on chance exposure of individuals to pornography, without comparing respondents with control groups who use the Internet for other purposes or with individuals showing other deviant behaviours. The current study expands our knowledge of this important social issue in three ways. First, it focuses not on chance but on deliberate exposure. Second, frequent Internet users for pornography consumption are compared with frequent users for communication, information, entertainment and learning purposes. Third, frequent Internet users for pornography are compared with youth who engage in other deviant activities for similarities and differences.

Our results show that the percentage of adolescents who use the Internet for pornography consumption is lower than that of those who use it for other purposes, indicating that they may represent a different and particular non-normative group among the adolescent population. The availability and ease of access to Internet pornography provide an opportunity structure, but the realization seems to be associated with individuals' choices, which are associated with differences in self-control resulting from a low quality of social bonding.

The results show some support for the uses and gratification theory of media choice. Individuals use media in an active form, based on different motivations and needs. Marked differences are evident at least in the background characteristics of youth who use the Internet for pornography consumption and for other purposes. Two factors seem highly relevant for pornography consumption. First, gender is very important, and this social characteristic is salient as differentiating different uses. Males are more likely than females to search the Internet for pornography. Using the Internet for communication, information search, and entertainment is not gender-dependent. Although gender is important in Internet use for learning, its effect is much

greater on pornography than on learning computer skills. Gender differences may be the result of the existence of a double standard of sexual attitudes and behaviour in society. For most countries, it has traditionally been more socially acceptable for men than for women to use pornography. Socialization of gender sexuality seems often to include pornography as a source of sexual information for men but not for women (Hald, 2006). The commonalities found between youth who are heavy consumers of pornography and youth involved in aggressive behaviour suggest that existing gender differences might be associated with participation in different subcultures. Troubled boys might be participating in delinquent subcultures that emphasize the achievement of masculine status through sexual achievement and consumption of pornographic material (Flood, 2007).

The second factor is social bonding, as adolescents using the Internet for pornography appear less socially integrated and more socially marginal. They express less commitment to their families, fewer pro-social attitudes, and less attachment to school than their fellows who do not use the Internet for that purpose. Frequent users for communication, information, entertainment and learning purposes are no different from less frequent users in the strength of their social bonds.

After portraying the dissimilarity of young users for pornographic and for non-pornographic purposes, our next task was to find out whether the former were similar to adolescents who engaged in other deviances, such as aggressive behaviour. The purpose here was not to detect a causal mechanism linking pornography consumption and aggressive behaviour; in keeping with the long-standing tradition in the social sciences, we recognize that aggressive behaviour is the result of the action of multiple factors, and the contribution of the media has always been modest – at least compared with other factors such as social and economic exclusion. The results show the existence of a common component of aggressive behaviour and pornography consumption. One important factor is that in both cases gender has a significant effect as boys are more likely to be involved in both aggressive behaviour and pornography consumption. Social integration is related to both behaviours as youth who report higher commitment to their families are less likely to be frequently involved in either of them. Attitudes to school and society are important too, and youth who express pro-social attitudes and positive attitudes to school are also less likely to engage in these two deviant behaviours. The results indicate that youth lacking social integration and positive attitudes to society are at risk of deviant behaviours, and these share more aspects among themselves than they do with other types of Internet users. The results provide support for the social bonding perspective, which assumes that weak attachments to social institutions lead to low self-control. Gottfredson and Hirschi (1990) propose a versatility argument, suggesting that individuals who commit one deviant act will be more likely to commit other deviant acts as well. Consistent with this argument, we found that weak social ties were predictors of both aggressive behaviour and pornographic consumption, indicating the existence of a common set of characteristics of these risk activities. The results have clinical implications as they suggest that youth that are frequent users of the Internet for pornography may be involved in other risk behaviours. Thus, preventing risk behaviour among youth, including exposure to pornography, should address improving attachments to school and family.

This study investigated the characteristics of adolescents at risk of deliberate consumption of online pornography. For the design of intervention programs for at-risk youth it is important to gather information on the link between online and offline pornographic consumption. Future research should be directed to gather information on similarities and differences in youth

exposed to online and offline pornography and if these represent a single or different groups of youth at risk.

An important limitation of the current study is that the link between the two deviant activities is unclear. Individuals not attached to social institutions are likely to belong to delinquent subcultures in which there is pressure to gain masculine status through gender stereotypes including sexual double standards, an obsessive focus on bodies and sexual acts, and consumption of pornography. Alternatively, being involved in consumption of pornographic material, considered a non-normative activity at least among adolescents, may lead to the assumption of a deviant role and detachment from social institutions as the adolescent hides this activity from others. Future studies should use a longitudinal design to uncover the mechanism linking the two behaviours.

Acknowledgment

An earlier version of this paper was presented at the Cyber safety Conference, Oxford University, September 2005. The author would like to thank the Oxford Internet Institute and the Center for the Study of Society (University of Haifa, Israel) for their support in data collection and analysis. I appreciate the comments of William Dutton and Vicki Nash in an earlier version of the manuscript.

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