

Clustering of Internet Risk Behaviors in a Middle School Student Population

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ABSTRACT

BACKGROUND: Internet safety is a growing public concern especially among adults and youth who live in an “instant messaging” world of technological communication. To better understand how early adolescents are using the Internet, a study was undertaken to more clearly identify the online general use, safety knowledge, and risk behaviors of middle school students.

METHODS: This exploratory study adapted from Finkelhor et al’s (2000) Youth Internet Safety Survey to identify the usage and characteristics of online youth, solicitation of youth, and searching for pornography or delinquent behaviors. The 404 students who were recruited from public and parochial schools consisted of both boys and girls with a mean age 12 years.

RESULTS: These students reported the beginnings of high-risk Internet behavior, specifically, giving out personal information, using the Internet to harass or embarrass another person, and for a small number of students, chatting with strangers and starting relationships. The students who posted their picture online were more likely to have sent their picture to someone, made rude comments to others, played online jokes, harassed or embarrassed someone, and sought out pornographic sites.

CONCLUSIONS: Findings suggest that middle school students who are early adolescents are beginning risky behaviors on the Internet. Risk-taking behavior is not unique to adolescents, but the consequences can be detrimental to their development. Educators, clinicians, health care providers, and other professionals need to be informed of Internet behaviors in order to assess for children at risk, to make referrals, intervene, and to educate parents.

Keywords: Internet safety; middle school students; risky online behaviors.

Citation: Dowell EB, Burgess AW, Cavanaugh DJ. Clustering of Internet risk behaviors in a middle school student population. *J Sch Health*. 2009; 79: 547-553.

Accepted on June 5, 2009

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The Internet has become an essential part of daily life. While the Internet is an expedient mode of communication and has provided access to a wealth of information, it can also be detrimental to the well-being of children due to numerous online hazards.¹ Online activity exposes children and adolescents to a wide variety of criminal acts including exposure to deviant sexual content and identity theft, to name a few. Developmentally, risky behavior is part of a youth's growth and, for some, the level of risk-taking behavior increases as they age. Historically, educators, clinicians, and health care providers have dealt with youth risk behaviors in the health arena of smoking cigarettes, substance use, and sexual experimentation. The Internet has now moved risk-taking behaviors into the behavioral health arena.

National studies have found that the majority of today's youth are using the Internet as a healthy venue for social interaction, sharing of ideas, artistic creations, photography, school work, online journaling, or blogging.²⁻⁴ However, studies have also reported that youth who spend time online are exposed to a variety of sexual and violent material, including the risk of meeting dangerous people. Youth online behaviors have been examined such as blogging,^{4,5} Internet harassment or bullying,^{4,5} pornography,⁶ and exposure to online predators for exploitation purposes.^{7,8} Gender differences suggest girls to be the majority of teen bloggers.² In contrast, boys tend to play more online games, participate in video-sharing Web sites such as YouTube and are more likely to watch videos online.²

Most youth studies of Internet behaviors are with high school teenagers. In the National Juvenile Online Victimization study (N-JOV), 99% of the youths were 13-17 years old ($M = 14$ years) and none were younger than 12 years.⁹ The early adolescent student group has been neglected. To contribute to the database for this age group, this study addressed the following research questions:

1. What are the Internet use behaviors of middle school students?
2. What Internet risk-taking behaviors are reported by middle school students?

METHODS

Instruments

The chief instrument used in this study was an adapted form of the Youth Internet Safety Survey (YISS) telephone survey developed by Finkelhor, Mitchell, and Wolak (2000). The YISS was developed for use with youth (ages 10-15 years), and piloted with both adults and youth.¹⁰ The YISS has been used in telephone interviews of a national sample including 1501 youth who came from households with an

annual income greater than \$50,000.^{7,10} The YISS has been used to demonstrate the Internet usage and characteristics of youth and their parents, Internet victimization or solicitation of youth, any pornographic seeking or delinquent behaviors, and the relationships between caregiver and youth.^{10,11} In our study the YISS was adapted for pen-and-pencil administration instead of telephone. A sociodemographic data sheet that identified such areas as age, ethnicity, and family background was also used to collect basic information from middle school students. The survey for this study was administered during one 45-minute morning class period.

Procedure

Prior to the beginning of data collection with middle school students, permission was obtained to conduct this research from the first author's institutional review board (IRB). Contact was then made with public and parochial middle school officials regarding their interest in participating in the study. Once the schools agreed to participate, a formal meeting was held with each school's principal to review the details of the study, including informed consent, student confidentiality, and an examination of the questions to be asked in the study. An information sheet describing the purpose of the study and an informed consent form was sent home to all sixth-, seventh-, and eighth-grade parents regarding participation in the study. A signed consent form agreeing to allow participation was required from both parent and student before that child was allowed to participate in the study.

RESULTS

Descriptive and correlational statistical analysis was used with this study's sample. Interestingly, when variables were examined by type of school (public versus parochial) there were no significant differences noted between the 2 schools. However, when variables were run by gender, significant differences were noted regarding online behaviors between the boys and the girls.

Subjects

Four hundred and four students were recruited for this study from school A, a public school, and school B, a parochial school, both are located in a socioeconomic middle- to upper-middle-class suburban area located in the Northeast region of the United States. School A ($n = 245$) represented 60.6% of the sample and school B ($n = 159$) represented 39.4%. The total student sample consisted of both boys 47.2% ($n = 192$) and girls 52.4% ($n = 212$). The mean age for the boys was 12.81 ($SD = 1.03$, range 9-15) and 12.74 years

Table 1. Demographics

	Boys (n = 192)	Girls (n = 212)	χ^2/F
Age			
Mean/SD	13.60/1.00	13.48/0.98	$F = 1.52$
Range	12-16	12-16	1,402
Race:			
Caucasian	86.9%	88.6%	$\chi^2 = 2.55$
African-American	3.6%	3.3%	$df = 3$
Hispanic	0	0.9%	
Other	9.4%	7.0%	

(SD = 0.89, range 11-15) for the girls, no significant differences were found. For the total population, Race consisted of 87.6% Caucasian, 3.4% African-American, 0.4% Hispanic, and 8.1% Other (Table 1). Thirty-six percent of the population was enrolled in Grade 6, 30.9% in Grade 7, and 32.4% in Grade 8.

School and Friend Items

Students were asked to rate their feelings about school on a scale of 1-5, with 1 being strongly disagree and 5 being strongly agree. The girls rated significantly more positive feelings about school (M = 3.36, SD = 0.74) than the boys (M = 2.84, SD = 0.91), $F(1, 400) = 39.00$, $p < .001$. In contrast, the boys reported having significantly more friends at school (a variable that was capped at 50) (M = 17.08, SD = 14.63) than the girls (M = 13.69, SD = 12.41), $F(1, 391) = 6.15$, $p < .05$.

There were no significant differences between the boys and girls, or type of school, on time spent with friends. Just under half (40%) of the students reported spending time with their friends 2-3 times a week; 27.9% reported spending time with their friends greater than 2-3 times a week; 21.6% once a week; and 10.4% reported spending time with their friends less than once a week. When asked to rate the type of student they saw themselves as (above average, average, or below average), 50.5% of boys and 40.5% of the girls rated themselves as above average, 47.6% of the boys and 58.4% of the girls rated themselves as average, and only 1.7% of boys and 0.9% of girls rated themselves as below average students. Again, no significant differences were found between the genders.

Internet Use

Home was the major location of computer use (96.3%) with only 2.5% students reporting use of a school computer, 0.2% reporting use of a library computer, and 0.2% reporting using the computer at "other" places. When asked the number of days a week they accessed the Internet, results indicated the girls (M = 5.30, SD = 1.73) spent significantly more time on the Internet a week $F(1, 397) = 10.49$, ($p < .001$) than the boys (M = 4.68, SD = 2.10).

Girls reported significantly more e-mail addresses than the boys $F(1, 383) = 7.58$, $p < .05$ with the number of e-mail address averaging for girl at 2.09 (SD = 2.26) and boys averaging 1.49 (SD = 2.10), this question was capped at 10 e-mail addresses. Girls reported their 2 most popular Internet activities as using Instant Messaging (IM) (71.2%) and visiting Web sites (33.9%) while the boys' top 2 online activities were playing games online (47.6%), and using IM (46.1%). While both chose using IM as 1 of their top 2 favorite pastimes on the Internet, the girls used IM significantly more than the boys ($\chi^2 = 26.34$, $df = 1$, $p < .001$) and the boys played games online significantly more ($\chi^2 = 35.20$, $df = 1$, $p < .001$). There were no significant differences between the girls (M = 1.14, SD = 1.59) and the boys (M = 0.93, SD = 1.49) on number of hours per day they accessed the Internet.

Students were asked to rate the importance of the Internet on a scale of 1-5. There were gender differences with the girls reporting the Internet as being significantly more important to them $p < .001$ (girls M = 3.14, SD = 1.03 versus boys M = 2.69, SD = 1.03), $F(1, 401) = 19.78$). When asked about their level of experience using the Internet (scale 1-5), there were no significant differences (girls M = 3.87, SD = 0.83 versus boys M = 3.81, SD = 0.88), between the boys and girls.

When asked if they have ever been in trouble at home due to the Internet, a small percentage of both boys (16.4%) and girls (12.7%) answered the question affirmatively, with the trouble for the boys was accessing a porn site (26.7%) while girls reported spending too much time online (30.8%).

Internet Risk Behaviors

Posting Personal Information. There were a series of questions that asked students about personal information and the Internet. Both boys (31.1%) and girls (27.0%) reported posting personal information online. One fifth of students (20.3%) posted their e-mail address in their social network profile, 20% reported they had posted a picture of themselves on the Internet, while 13.1% indicated they had posted their last name on the Internet, 7.7% posted the name of their school, 3.0% posted their phone number, and 1.2% posted their home address. Girls reported posting of their last name significantly more than the boys ($p < .05$, $\chi^2 = 4.14$, $df = 1$).

Inappropriate Web Sites. When the students were asked, if they were ever exposed to any inappropriate images while searching the Internet, 42.0% of the boys and 40.6% of the girls reported affirmatively. When asked if they had ever opened a link only to find an inappropriate picture, 18.3% of the boys and 17.9% of the girls indicated this had occurred. When asked if someone had ever asked them to talk about sex

while online, 8.5% of both boys and girls indicated this occurred. When asked if they had ever *sought out the topic of sex* online gender was significant with 22.3% of the boys versus 6.1% of girls responding *yes they had sought out the topic of sex* ($p = <.001$, $\chi^2 = 22.07$, $df = 1$).

Online Harassment. Almost a third, 29.5% of the boys and 27.8% of the girls reported they had *posted rude comments online*. For the boys, 28.9% said they had *played a joke online to be annoying*, and 1.6% did it to annoy a family member. For the girls, 29.2% played an online joke on someone they knew, and 2.3% did it to a family member. When asked if they had ever *played a joke to annoy a stranger*, 6.9% reported they had. When asked if they had ever *harassed or intentionally embarrassed anyone online*, 6.2% of students said they had to someone they knew, and 0.7% had harassed a stranger.

Clustering of Internet Risk Behaviors

Picture Posting Online. The 20% (81 of 404), of middle school students who posted their picture on the Internet were more likely than those who did not post their picture to (Table 2).

- post the name of their school ($p = <.001$, $\chi^2 = 24.89$, $df = 1$),
- post their e-mail address ($p = <.05$, $\chi^2 = 3.88$, $df = 1$),
- send their picture to someone they had met online ($p = <.001$, $\chi^2 = 13.23$, $df = 1$),
- receive an e-mail or IM from a stranger ($p = <.001$, $\chi^2 = 24.97$, $df = 1$), and
- feel more threatened while on the Internet ($p = <.001$, $\chi^2 = 29.20$, $df = 1$).

Picture Posting Online and Online Harassment. Students who posted their picture online reported playing more online jokes or annoying Internet activities on friends and family members than those

Table 2. Middle School Student Internet Behaviors

	Boys n = 190	Girls n = 211	χ^2	df
Posted personal information	31.0%	27.0%	0.79	1
Posted e-mail address	24.2%	17.0%	3.14	1
Posted picture of self on Internet	20.1%	20.2%	0.01	1
Posted last name	16.8%	9.9%	4.13*	1
Sent picture to someone they met online	2.6%	2.8%	0.01	1
Posted home phone number	3.1%	2.8%	0.03	1
Posted name of school	8.9%	6.6%	0.38	1
Posted home address	2.1%	0.4%	2.16	1

* $p < .05$.

who did not post their picture. The recipient of the online joke was someone known to the student but not a family member by 46.9% (38 of 81) versus 24.7% (79 of 320) for students who did not post their picture ($p = <.001$, $\chi^2 = 21.65$, $df = 2$). Harassing or embarrassing someone using the Internet by students who posted their picture on the Internet was also statistically significant ($p = <.001$, $\chi^2 = 18.75$, $df = 2$). While none of the students who did not post their picture harassed or embarrassed a stranger, 3 of the 81 students who posted their picture (3.7%) did. Harassing or embarrassing someone they knew occurred in only 4.7% (15 of 319) of the nonposting students and 12.3% (10 of 81) of ones who posted their picture ($p = <.001$).

Picture Posting Online and the Topic of Sex. These same students who posted their picture online were also more likely to seek the topic of sex or sex sites while on the Internet ($p = <.001$, $\chi^2 = 28.68$, $df = 1$), talk about sex ($p = <.01$, $\chi^2 = 7.38$, $df = 1$), and ask for sex information while online ($p = <.01$, $\chi^2 = .26$, $df = 1$). Accidentally coming across sex talk was not significantly different for those who posted and those who did not ($p = <.286$) (Table 3).

Filters/Blocks. While there were more girls (60.2%) with a computer filter or block versus 49.2% of boys, boys (32.6%) were significantly more likely to manipulate or override the filters/blocks ($p = <.001$, $\chi^2 = 15.64$, $df = 1$) than the girls (15.7%). And as a group those students who had posted their picture online had a significantly higher number reporting that they were able to manipulate blocks and filters ($p = <.01$, $\chi^2 = 8.67$, $df = 1$).

DISCUSSION

The findings from this study suggest a descriptive profile of a middle school student's use of the Internet and the identification of a cluster of risky Internet behaviors used by these students.

Table 3. Children Who Posted Their Picture on the Internet

	No n = 320	Yes n = 81	χ^2	df
Posted name of school	4.3%	20.9%	24.89***	1
Posted e-mail address	18.4%	28.3%	3.88*	1
Sent picture to someone they met online	1.2%	2.4%	13.24***	1
Received IM/e-mail from stranger	40.5%	71.6%	24.97**	1
Felt threatened online	5.9%	26.2%	29.20***	1

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

Profile of Middle School Students

The profile of these middle school predominately early adolescent students include fairly equal numbers of boys and girls from a public and a parochial school and living in the Northeast. Most students were Caucasian and represented fairly equal ratios of students enrolled in grades 6, 7, and 8. Liking school was important to girls whereas boys reported having friends at school to be important. Spending time with friends was very important to both genders with almost two thirds of students spending at least 2-3 times a week with friends and only 10% spending less than 1 day a week with friends. Self-perception was high as most students perceived themselves as average or above with only a very small number seeing themselves as below average.

Boys in this study preferred directly socializing with peers, whereas girls preferred to socialize via their computers. Students overwhelmingly use a home computer, but girls spend more time than boys online. Both genders like to IM, but girls listed more email addresses suggesting they IM different groups of contacts. Parents tend to reprimand boys for accessing pornography sites, whereas girls are reprimanded for spending too much time on the computer.

Clustering of Risk Behaviors

A major finding of this study was the clustering of Internet risk behaviors reported by the 20% of students who posted their picture on the Internet. These risky behaviors included *posting of personal information* (name of school, e-mail address, sending a picture of self), *corresponding online with an unknown person* (met person offline, developed relationship), *online-initiated harassment* (playing jokes), *online-initiated sex sites*, and *overriding Internet filters or blocks*. Identifying these Internet-initiated risk behaviors is important for several reasons.

Early adolescents' may be vulnerable to an online stranger or predator. Recent research findings¹² have argued that the media reports about such crimes may engender exaggerated fears and that the publicity about online predators who prey on naive children using trickery and violence is largely inaccurate. The researchers suggest that Internet sex crimes involving adults and juveniles more often fit a model of statutory rape where adult offenders who meet, develop a relationship with, and openly seduce underage teenagers rather than the model of forcible sexual assault or pedophilic child molesting.¹² Our research supports the findings in the literature,^{12,13} suggesting that posting a single piece of personal information online does not, by itself, appear to be a particularly risky behavior. However, the clustering of several risky behaviors may place vulnerable youth in jeopardy when a picture is posted online.

Online-initiated harassment (playing jokes, making rude comments, intentionally embarrassing someone online, or bullying) is another risk behavior that middle school students are reporting. A recent study from a national cross-sectional online survey of 1588 youth between the ages of 10 and 15 years reported that 33% experienced online harassment in the past year with 9% reporting an incident on a social networking site specifically.¹³ The incidence of being bullied or harassed increased when using IM or having conversations in chat rooms. Although, when these researchers examined school bullying, 64% of youth who were harassed online did not report also being bullied at school. However, youth harassed online were significantly more likely to also report 2 or more detentions or suspensions and skipping school in the previous year. And youth who reported being targeted for Internet harassment were 8 times more likely than all other youth to concurrently report carrying a weapon to school in the past 30 days.¹³

Additional concerns related to risky online behaviors are just beginning to be reported in the literature and are directly linked to inappropriate pictures being found online. Specifically the type of picture an individual posts on the Internet may be used to judge the person negatively for employment or academic acceptance. Increasingly, college admissions staff and human resource departments are asking for access to personal Web pages to view what the applicant has posted. Although this study analyzed Internet behaviors of early adolescents, their beginning risky behaviors may have an influential impact at a later point in their development.

In the media there are increasing reports of adolescents exchanging inappropriate or sexualized photos over their cell phones and e-mail. In 1 New York case, a 15-year-old girl sent sexually explicit images of herself through a cell phone to a 16-year-old male which legally meant the boy was technically possessing child pornography. The crime may have gone unnoticed, but detectives said the youth did not keep the photos to himself but rather sent them to friends in his phone's address book, beginning a string of messages that landed on an unknown number of phones or computers. When 1 of the recipients contacted the 15-year-old girl, she and her parents went to the police. Her picture was released and once transferred to a telephone that can be transferred to an e-mail account, it could go anywhere in the world. The exchange of sexually charged images over a cell phone, known as "sexting" to some, is a growing trend among teens.¹⁴

Limitations

Limitations of this study included a small sample from 1 geographic area and use of an instrument, the YISS, that had been developed for use in telephone

surveying but in this study was used as a pencil-and-paper survey. Some of the students voiced their uncertainty about some of the language being used in the survey indicating that it was not the same language they used when online, for example the survey asked about e-mail addresses, but not IM accounts. Also, some of the wording had been changed by school staff, eg, the word “inappropriate” was substituted for the terms “sexual” and “pornographic.”

IMPLICATIONS FOR SCHOOL HEALTH PROFESSIONALS

A large body of health behavior research suggests that if an adolescent is participating in 1 health risk behavior, they are more likely to engage in additional health risk behaviors, eg, tobacco use correlates with alcohol consumption.^{15–18} This pattern also holds true for Internet risk behaviors in this study. Students who participate in 1 risk behavior suggest a strong likelihood of participation in additional Internet risk behaviors. Risk-taking behavior is not unique to early adolescents and adolescents, but the consequences—coupled with the risky behavior outcomes—can be detrimental to their development. The danger is that the combined risk behaviors increase the early adolescent’s potential for solicitation from an online predator who will exploit the youth who corresponds online with unknown people about sex or engage in patterns of risky off- or online behavior.¹²

As younger children go online with e-mail or IM accounts, social pages or blogs, and gain access to the World Wide Web with handheld or portable devices, the likelihood of taking risks in this new arena increases. Current research suggests that the majority of youth do not engage in risky Internet behaviors,^{19,20} a finding that occurs in our sample as well. Although there was a small group in our study reporting risky online behaviors such as sending personal information, including pictures online to people they did not know, and having contact with an online stranger, this small group does not appear to represent the typical middle school student’s Internet behavior. Rather, these youth and their risky online behaviors should raise a red flag for educators or counselors who should consider referring the child for preventive intervention.

Prevention efforts need to focus on adolescents, including early adolescents. Youth themselves as well as media and authorities that have their confidence are key in this endeavor. Prevention efforts need to be developmentally appropriate. Researchers have suggested programs for young adolescents might describe risky online situations and include practice exercises for refusal and resisting techniques.^{12,13} A focus also should be on the interactive aspects of Internet use, cyber bullying, harassment, and on not posting personal information.

The Internet has become an integral part of today’s daily life. Findings from this study indicate that a small group of early adolescent middle school students are beginning risky behaviors on the Internet. The numbers for the Internet risky behaviors were less than half of the sample, but these students are undertaking risks in a new environment that many adults and parents don’t fully understand. Further research and development of education tools that are age appropriate will be needed to better understand these early adolescents and their online risk-taking behaviors.

ACKNOWLEDGMENTS

This project was supported by Grant No. 2006-JW-BX-K069 awarded by the Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, US Department of Justice. Points of view or opinions in this document are those of the authors and do not necessarily represent the official position or policies of the US Department of Justice.

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