

Safety in Cyberspace

Adolescents' Safety and Exposure Online

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A survey was conducted among 692 Australian 13- to 16-year-olds to examine aspects of their Internet use and, in particular, their exposure to inappropriate material and behaviors online and their online safety practices. Significant differences were found in the amount of exposure to inappropriate material or behaviors online according to sex and frequency of usage, with males and more frequent Internet users showing greater exposure. No differences were found according to whether blocking or filtering software was installed. Significant differences in online safety practices were also found, with younger participants (13- to 14-year-olds) and those participants whose parents had not discussed Internet safety with them being less safety conscious.

Keywords: *Internet; youth exposure; safety*

Adolescents' Safety in Cyberspace

Young people are using the Internet in ever increasing numbers (Becker, 2000), with research suggesting that teens are even heavier users than are adults (Subrahmanyam, Kraut, Greenfield, & Gross, 2001). Australian youth, like their American peers, have readily available Internet access at

Authors' Note: The survey administered to the participants in this research also included sections on predictors of closeness of online friendships. The data relating to those sections will be considered in another report, which is currently in preparation. Correspondence concerning this article should be addressed to Michele Fleming, Centre for Applied Psychology, School of Health Sciences, University of Canberra, ACT, Australia, 2601; e-mail: Michele.Fleming@canberra.edu.au

home and at school. In the United States, approximately 21 million teenagers aged between 12 and 17 years use the Internet, which is 87% of this age bracket (Lenhart, 2005). A 2000 survey, conducted by the Australian Broadcasting Authority (2001), reported that 86% of Australian youth aged 13 to 18 years had access to the Internet. Young people are using the Internet for a diverse range of purposes including e-mail and chat; for homework tasks; to play games and listen to music; to get information about sports, entertainment and hobbies; to get health and medical information; and to shop (Pastore, 2002; Rosenbaum et al., 2000).

A number of commentators have expressed concerns about some aspects of Internet use by young people (Dombrowski, LeMasney, Ahia, & Dickson, 2004; Freeman-Longo, 2000; Greenfield, 2004; Mitchell, Finkelhor, & Wolak, 2001). Much of the concern has focused on possible grooming by sexual predators and the effect that exposure to pornography and sexual violence may have on children and teens. Suggestions for ways to protect young people include more discussions by parents with their children regarding Internet safety (Fleming & Rickwood, 2004), parental participation in Internet use with children (Greenfield, 2004), increased use of Internet blocks and filters (Dombrowski et al., 2004), and more community education (Stanley, 2001).

This study, conducted with Australian teenagers, examines the extent of teens' exposure to inappropriate material and behavior online and whether the use of blocking and filtering software reduces such exposure. Furthermore, the role that parental discussions about Internet safety might play in helping keep young people safe online is explored.

Parental Safety Discussions and Control of Internet Use

Kiesler, Zdaniuk, Lundmark, and Kraut (2000) found that teenagers are often viewed as the house "guru" for using the Internet and computer. Furthermore, Kiesler et al. reported that most of the parents in their study were proud of their teens' accomplishments with the computer and were far more willing to tolerate long hours spent in front of the computer than in front of the television set. This expertise on the part of young people, together with parental attitudes toward their children's use of computers, has potential implications for parental control and supervision over the way teenagers use the Internet.

An American study of 1,001 parents and 304 children aged 8 to 17 years found that more than 70% of parents were concerned that their children

would give out personal information online and would view sexually explicit material; however, almost 60% of parents thought that people worried too much about the possibility that their children would be taken advantage of by adults online (Turow & Nir, 2000). This rather ambivalent attitude may have implications for whether parents discuss Internet safety with their children. Turow and Nir found that although more than 60% of both parents and children reported that Internet safety discussions had taken place, when pairs of parents and children in the same family were interviewed, most did not agree about whether these discussions had ever taken place at all.

Some parents have taken the step of installing blocking or filtering software to try to limit their children's exposure to unwanted material. Reports of the degree to which Internet blocks and filters are used by parents vary. In a recent U.S. study, it was found that 54% of Internet-connected families with children aged 12 to 17 years used filters (Lenhart, 2005). This contrasts with the findings from another recent American study that indicated that 25% of 7th to 12th graders with home computers report that their parents used controls or filters on their computer (Rideout, Roberts, & Foehr, 2005). This discrepancy may well be due to the fact that the Lenhart study was based on parents' reports, whereas the Rideout et al. study was based on children's reports. Children may not know whether their parents have blocks or filters in place.

In the Australian Broadcasting Authority (2001) survey, 60% of parents of all children aged 5 to 18 years with Internet access considered blocking or filtering software to be effective (with 26% reporting that felt they did not have enough knowledge to judge its effectiveness), however, only 17% of parents reported using such software.

In Mitchell, Finkelhor, and Wolak's (2003) national survey of youth aged 10 to 17 years, 33% of parents with Internet home access reported the use of blocking or filtering software, and 31% of their children also reported the use of such software. However, as with lack of concordance found in Turow and Nir's (2000) study, Mitchell et al. found a correlation of only .43 between parent and youth reports. There was no significant difference in exposure to unwanted sexual material according to parents' reports of having such software installed. However, differences were found when the young people themselves reported on the installation of blocking or filtering software, with a significantly greater likelihood of exposure if they reported no such software installed in their household.

American research looking at the effectiveness of blocks and filters indicates that when such software is used, it is necessary to strike a balance between a reduction in access to unwanted sites and allowing access to

desired material (Richardson, Resnick, Hansen, Derry, & Rideout, 2002). Studies of Internet blocking and filtering software have found mixed results in terms of the effectiveness of such software, with some products sometimes failing to block inappropriate material and sometimes blocking legitimate sites (e.g., Commonwealth Scientific and Industrial Research Organisation, 2001; Consumers Union of U.S. Inc., 2001).

Online Exposure

Young people may visit violent or pornographic Internet sites by choice, but they may also be subjected to unpleasant materials and behaviors unwittingly. Research suggests that pornography, bullying, and violent media all have a variety of negative effects. In research with adults, violent pornography has been associated with violence against women (Donnerstein, 1984) and repeated exposure to nonviolent pornography has been linked to the promotion of more permissive sexual attitudes (Davis & Bauserman, 1993). In a meta-analysis of the effects of viewing pornography and its relationship with attitudes about sexual aggression, both violent and nonviolent pornography viewing was found to lead to a significant increase in attitudes supporting sexual aggression (Allen, Emmers, Gebhardt, & Giery, 1995). Pornography and other sexual media have also been found to influence the behavior and attitudes of young people. In a large representative sample of male college students, pornography use was found to predict sexual aggression (Malamuth, Addison, & Koss, 2000). Adolescent females' exposure to pornography has been linked to a belief that women's actions and dress lead to rape and to adolescent males' beliefs that males' sexuality and higher sexual needs lead to rape (Cowan & Campbell, 1995).

Being an adolescent victim of bullying has also been linked to numerous negative outcomes including increased depression (Coggan, Bennett, Hooper, & Dickinson, 2003; Mills, Guerin, Lynch, Daly, & Fitzpatrick, 2004), lowered self-esteem (Coggan et al., 2003; O'Moore & Kirkham, 2001), poor psychosocial quality of life (Wilkins-Shurmer et al., 2003), and suicidal ideation (Coggan et al., 2003; Mills et al., 2004). Online bullying is also likely to be detrimental to young people in much the same way that other forms of bullying negatively affect teens. Early research in this area has found a link between Internet bullying and increased depression (Ybarra, 2004).

Violent media, in particular violent television programs and violent video games, have been linked to increased hostile thoughts, increased aggression, and decreased prosocial behavior. Aggression viewed on television has been

found to be significantly positively correlated with aggressive and antisocial behavior (see Paik & Comstock, 1994, for meta-analysis) and negatively correlated with prosocial behavior (see Mares, 1996, for meta-analysis). Violent video games have also been associated with increases in hostile cognitions and behaviors and decreases in prosocial behaviors (see Anderson et al., 2004, for meta-analysis).

In Mitchell et al.'s (2003) national survey of youth aged 10 to 17 years who were regular Internet users, 25% had been exposed to unwanted sexual pictures in the past 12 months. The majority reported no negative effect of the exposure, but 24% of those exposed reported feeling very or extremely distressed by it. Boys were more often exposed to unwanted sexual material than girls, and more older teens than younger teens were exposed. If exposed, young people disclosed this information to no one 43% of the time, whereas 39% of the time, young people told their parents or their parents discovered the exposure.

An Australian study with youth aged 11 to 17 years found that 47% had been exposed to something they found "offensive or disgusting" such as violence, pornography, and nudity (Australian Broadcasting Authority, 2001, p. 6). When exposed to such material, participants reported either deleting the file or exiting the site, and 44% of those who had been exposed to unwanted offensive content reported the matter to their parents. In another Australian study of 16-to-17-year-olds, 84% of boys and 60% of girls indicated that they had been exposed to online sexual material unintentionally (Flood & Hamilton, 2003).

Even children as young as 8 years old report exposure to sexual and violent behavior and images. In a Dutch sample of 194 children aged 8 to 13 years, 4% reported experiencing pornography online, 4% had experienced violence online, and 1.5% had experienced sexual harassment (Soeters, 2001).

Given the widespread availability of pornographic images online, it is extremely likely that young people who spend more time online are going to be increasingly subjected to sexual images. One of the aims of this study is to determine whether frequency of Internet use is linked to greater exposure to sexual and violent images and behavior online.

Online Safety Practices

Young people are potentially vulnerable while online to the advances of sexual predators via sexual grooming. The grooming process has been described as a way of blurring the lines between appropriate and inappropriate behaviors. This process gradually moves that which a child or adolescent

may consider inappropriate to something that is considered as being appropriate or acceptable (Young, 1997). The predator attempts to gain the affection, interest, and trust of the victim and is sometimes considered to be a mentor to the young person (Conte, Wolf, & Smith, 1989; Young, 1997). It has been suggested that some children and adolescents are likely to find the attention appealing, as they have a strong desire to form relationships, to belong, and to gain attention, validation, and acceptance (Baumeister & Leary, 1995; Dombrowski et al., 2004). Young (1997) suggests that the process of normalizing sexual and inappropriate behaviors means that the victim is less likely to tell anyone, because they see the behavior as normal, and thus the predator does not have to resort to threats to keep the victim quiet and maintain the relationship. To achieve this online, a predator may first form an affectional bond with a vulnerable youngster, then progress from chatting to sexual comments, and then to the presentation of pornographic material designed to desensitize the victim. From this point, the predator might move on to sending gifts and ultimately to a face-to-face meeting.

Lenhart, Rainie, and Lewis (2001), in their telephone survey of American youth aged 12 to 17 years, reported that 60% had received an instant message (IM) or e-mail from someone that they had not met before, and 50% reported having sent an IM or e-mail to a stranger. Of concern is that 52% stated that they were not worried about this at all, and only 23% expressed any significant concern about it (Lenhart et al., 2001). Boys, older youth, and more frequent Internet users were all found to be more likely to have IMed or e-mailed a stranger. Furthermore, 22% of teens who used IM or e-mail had shared their password with a friend.

Findings from a large, nationally representative survey of 1,501 American youth aged 10 to 17 years who use the Internet indicated that 19% had been sexually solicited online in the previous 12 months (Finkelhor, Mitchell, & Wolak, 2000). Attempts were made to contact 1 in 7 of these young people by telephone, mail, or in person. In 66% of cases, the target was female, and 77% of those targeted were older than 14 years of age. In 65% of the cases, the perpetrator and victim had met in a chat room, whereas 24% had met through IMs (Finkelhor et al., 2000).

In an American study using a random national sample of 2,574 law enforcement agencies, the characteristics of 129 teenage victims of Internet-initiated sex crimes were examined (Wolak, Finkelhor, & Mitchell, 2004). Seventy-five percent of the victims were female, 76% of the victims were aged 13 to 15 years, and 76% met in a chat room. In 47% of the cases the offender offered or gave the victim money or gifts; in 48% of cases the offender sent pictures; in 52% of cases the offender was deceptive about

some aspect of self; and in an overwhelming 80% of cases the offender used the Internet to bring up sexual topics with the victim.

Children who are prepared to provide personal information to strangers are potentially the most vulnerable to online grooming by a sexual predator. In an American study of youth aged 10 to 17 years, it was reported that 45% were prepared to give out their name, address, and other information in exchange for a free gift valued at up to \$100 (Turow & Nir, 2000), with boys (54%) more likely to do so than girls (39%). In the age group from 13 to 17 years, 39% of youth reported that they had provided information about themselves to a Web site.

Overview and Hypotheses

The study of Internet practices by young people and the effects of Internet use on teens is in its infancy in Australia. This study offers a preliminary view of certain aspects of Internet use by Australian teenagers. The aim of this study is to investigate the rate of exposure to inappropriate or unpleasant material online and to examine whether there are differences in the amount of exposure according to sex, frequency of Internet use, and whether parents have installed blocking or filtering software. A further aim is to determine whether online safety practices vary according to young people's sex, age, and whether their parents have discussed Internet safety with them.

It is hypothesized that boys rather than girls, and high-frequency rather than medium- or low-frequency Internet users, will be more exposed to sexual and violent material and behaviors online. Furthermore, it is hypothesized that young people whose parents have installed blocking or filtering software will indicate less exposure compared to those youth whose parents have not installed such software. It is also hypothesized that males will have poorer online safety practices than females, and that younger teens will have poorer online safety practices than older teens. Finally, teenagers who have discussed Internet safety with their parents are expected to show better online safety practices than those who have not done so.

Method

Participants

Participants were recruited from four high schools in the Australian Capital Territory (ACT). The participants consisted of 709 students from

Years 8, 9, and 10. Of the 709 returned surveys, 17 (2.4%) were excluded due to large amounts of missing data, leaving a total of 692 participants. Of these, 464 were male and 228 were female. Ages ranged from 13 to 16 years ($M = 14.73$, $SD = 0.87$).

Measures

The research was conducted using a self-report questionnaire that consisted of demographic questions including sex, age, and availability of access to the Internet at home and school. All other measures are described below.

Main reason for using the Internet. Participants were asked to tick their *main* reason for using the Internet. Eleven options were provided: IMs, e-mail, chatting (in chat rooms), homework tasks, downloading music and/or videos, downloading and/or playing games, health and body, dating and relationships, TV and movie shows and/or stars, help seeking, and other.

Frequency of Internet use. Frequency of Internet use was measured by asking participants how many times they would go on the Internet "in an average week." Responses were coded as low (*never to once or twice weekly*), medium (*approximately 3-5 times per week*), or high (*every day or more*).

Age group. Two age groups were created, with 13-year-olds and 14-year-olds classified as younger teens and 15-year-olds and 16-year-olds as older teens.

Parental use of blocks or filters. Participants were asked "To your knowledge have your parents/guardians put any blocks or filters on your Internet access?" Response options were yes or no.

Internet safety discussions between parents and teens. This was measured by one item that asked "Do your parents/guardians discuss Internet safety with you?" Response options were *no*, *occasionally*, and *often*. Due to the very small number of respondents who answered *often*, a dichotomous yes or no variable was created, with both the *occasionally* and *often* responses recoded as yes.

Exposure to inappropriate material or behaviors online (exposure). Exposure was measured by six items that assessed how frequently participants were being exposed to sexual and violent material and behaviors online. Participants were required to indicate the frequency of their exposure to pornography, violent images, bullying, rude comments, sexual comments,

and other offensive material. Responses were recorded on a 4-point Likert-type scale, ranging from 1 (*never*) to 4 (*frequently*). The mean of the six items was used. This produced scores ranging from 1 to 4, with higher scores indicating more frequent exposure. This scale achieved a reliability coefficient alpha of .83.

Participants were also asked what they would *usually* do if they were exposed to something upsetting online. Six response options were offered: exit the site, log off, block the sender, tell a parent/guardian, tell a friend, and other.

Online safety practices. Online safety practices were measured by four items that assessed the degree to which participants were potentially vulnerable to the grooming process of online predators. Items included "I think it's OK to give out your password to someone you've only met online" and "I think it's OK to accept a gift or picture sent through the regular mail from someone you've only met online." Responses were recorded on a 4-point Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). A total score was calculated by averaging the scores for the four items. Possible scores ranged from 1 to 4, with higher scores indicating poorer online safety practices. Coefficient alpha for the scale was .67.

Procedure

Approval to conduct the research was obtained from the university's ethics committee and the local department of education. Four schools were approached and all four schools agreed to participate. Due to the time involved in completing the survey, some schools did not involve all classes in Years 8, 9, and 10. An information sheet and consent form were sent home to parents, and the students' consent was also required for participation in the research.

The questionnaire was administered by classroom teachers in each of the participating schools. Teachers were provided with standardized written instructions for the administration of the survey, which was conducted during normal class times.

Results

A total of 99.6% of males and 99.6% of females reported having school Internet access. The figures for home Internet access were only slightly lower, with 95.7% of males and 93.9% of females reporting home access.

Main Reasons for Internet Use

The top six main reasons cited for using the Internet were researching for homework tasks (34% of males, 36% of females), talking to friends via IM (28% of males, 37% of females), downloading and/or playing games (10% of males, 3% of females), talking to friends via e-mail (6% of males, 13% of females), downloading and playing favorite songs and videos (6% of males, 3% of females), and getting information about favorite TV shows and movies (4% of males, 2% of females).

Frequency of Internet Use

Eighteen percent of boys reported low-frequency Internet use, 30% reported medium-frequency use, and 52% reported high-frequency use ($n = 464$). For girls, the figures were 34%, 40%, and 26% for low-, medium-, and high-frequency use, respectively ($n = 228$).

Parental Use of Internet Blocking or Filtering Software

A total of 19% of teens reported that their parents had installed blocking or filtering software. A Pearson's chi-square test was conducted to test possible differences between the age groups in terms of whether parents used blocking or filtering software. No significant difference between age groups was found, $\chi^2(1, 673) = 0.04, p > .05$. Twenty percent of younger teens ($n = 261$) and 19% of older teens ($n = 412$) reported that their parents had installed blocking or filtering software.

A further chi-square test was conducted to determine whether there were differences in whether parents had installed blocking or filtering software according to sex of child. There was no significant difference according to whether the child was male or female, $\chi^2(1, 677) = 3.03, p > .05$. Seventeen percent of boys ($n = 455$) and 23% of girls ($n = 222$) reported that their parents had installed blocking or filtering software.

The lowest reporting of blocking or filtering software was by younger boys (16%) and the highest was by older girls (26%).

Parental Safety Discussions

A Pearson's chi-square test was conducted to test possible differences between the age groups in terms of whether parents had discussed Internet

Table 1
Percentage of Males and Females Reporting Exposure
to Inappropriate Material or Behaviors Online

Material or Behavior	% Males	<i>n</i>	% Females	<i>n</i>
Pornography	92.5	455	61.3	222
Violent images	76.9	454	55.0	222
Bullying	36.9	453	36.7	221
Rude comments	85.4	453	69.8	222
Sexual comments	82.5	452	62.2	222
Other upsetting material	51.1	453	45.9	222

safety with their teens. A significant difference between age groups was found, $\chi^2(1, 681) = 4.10, p < .05$, with 47% of the younger age group ($n = 265$) reporting that they had had Internet safety discussions with their parents, whereas only 39% of the older age group ($n = 416$) reported having done so.

A further chi-square test was conducted to determine whether there were differences in whether parents had discussed Internet safety with their teen, according to sex of child. There was a significant difference in whether parents had discussed Internet safety, according to whether the child was male or female, $\chi^2(1, 685) = 8.23, p < .01$. Fifty percent of girls ($n = 225$) but only 38% of boys ($n = 460$) reported that their parents had held Internet safety discussions with them.

The lowest reporting of safety discussions with parents was by older boys (44%) and the highest was by older girls (53%).

Exposure to Inappropriate Material or Behaviors Online

Both males and females reported exposure to violent and sexual material as shown in Table 1.

A total of 681 participants indicated what they would usually do if they came across something upsetting online. Eighty percent reported that they would exit the site, 12% that they would log off, 44% that they would block the sender, 8% that they would tell a parent, 19% that they would tell a friend, and 11% gave their response as "other."¹

A $2(\text{sex}) \times 2(\text{Internet blocks}) \times 3(\text{frequency of Internet use})$ ANOVA was conducted to evaluate the effects of these variables on exposure (see Table 2 for means and standard deviations). The results of the ANOVA

Table 2
Means and Standard Deviations for Exposure According
to Sex, Use of Internet Blocks or Filters, and Age Group

Group	Internet Blocks or Filters		Total
	No	Yes	
Female			
Low frequency	1.55 (0.57)	2.04 (0.77)	1.62 (0.62)
Medium frequency	1.75 (0.60)	1.89 (0.69)	1.79 (0.63)
High frequency	2.02 (0.59)	2.08 (0.55)	2.04 (0.57)
Total frequency	1.74 (0.61)	1.98 (0.66)	1.80 (0.63)
Male			
Low frequency	1.99 (0.62)	2.27 (0.89)	2.04 (0.68)
Medium frequency	2.18 (0.68)	2.00 (0.66)	2.14 (0.68)
High frequency	2.34 (0.67)	2.37 (0.66)	2.35 (0.66)
Total frequency	2.24 (0.67)	2.22 (0.72)	2.23 (0.68)
Total			
Low frequency	1.77 (0.63)	2.18 (0.84)	1.84 (0.68)
Medium frequency	2.02 (0.68)	1.95 (0.67)	2.00 (0.68)
High frequency	2.28 (0.66)	2.29 (0.64)	2.29 (0.66)
Total frequency	2.08 (0.69)	2.12 (0.71)	2.09 (0.69)

Note: Standard deviations are in parentheses.

indicated a significant main effect for sex, $F(1, 654) = .18.21$, $p < .001$, partial $\eta^2 = .03$, and a significant main effect for frequency of Internet use, $F(2, 654) = 5.91$, $p < .01$, partial $\eta^2 = .02$. There was no significant effect of whether parents had placed blocks or filters on their child's Internet access on the measure of exposure, nor were there any significant interaction effects.

Post hoc analysis, employing Bonferroni adjustment to control for Type I error rate, revealed that the group mean for exposure for low-frequency Internet use was significantly lower than for either medium- or high-frequency Internet use, and that the mean for medium-frequency use was significantly lower than for high-frequency use.

Online Safety Practices

A 2 (sex) \times 2 (age group) \times 2 (parent Internet safety discussions) ANOVA was conducted to evaluate the effects of these variables on online

Table 3
Means and Standard Deviations for Online Safety Practices
According to Sex, Age Group, and Parent Internet Safety Discussions

Group	Internet Safety Discussions		Total
	Yes	No	
Younger			
Males	1.78 (0.54)	2.01 (0.60)	1.90 (0.58)
Females	1.73 (0.45)	1.94 (0.59)	1.85 (0.54)
Total	1.76 (0.50)	1.98 (0.60)	1.88 (0.56)
Older			
Males	1.76 (0.56)	1.83 (0.51)	1.80 (0.53)
Females	1.75 (0.44)	1.76 (0.42)	1.75 (0.43)
Total	1.75 (0.52)	1.81 (0.50)	1.79 (0.50)
Total			
Males	1.77 (0.55)	1.88 (0.55)	1.84 (0.55)
Females	1.74 (0.44)	1.86 (0.52)	1.80 (0.49)
Total	1.76 (0.51)	1.87 (0.54)	1.82 (0.53)

Note: Standard deviations are in parentheses.

safety practices (see Table 3 for means and standard deviations). The results of the ANOVA indicated a significant main effect for age group, $F(1, 673) = 4.46, p < .05$, partial $\eta^2 = .01$, and a significant main effect for parent Internet safety discussions, $F(1, 673) = 8.93, p < .01$, partial $\eta^2 = .01$. No significant main effect of sex was found. There was a significant interaction effect between Age Group \times Parent Internet Safety Discussions, $F(1, 673) = 4.28, p < .05$, partial $\eta^2 = .01$. The interaction effect indicates that if parents had not discussed Internet safety with their teens, then they engaged in poorer safety practices, and that this effect was increased for the younger age group.

Discussion

The Internet is being used by youth at school and at home to remain socially connected, to assist with homework, and for entertainment. Unfortunately, in addition to fulfilling these positive functions, this study found that many young people were being exposed to pornography, violent images, and

bullying. Both boys and girls were found to be frequent Internet users, with 82% of boys and 66% of girls logging on at least 3 times per week.

Exposure

As hypothesized, boys were significantly more exposed to inappropriate material and behaviors online than were girls. This finding supports other research that has examined the level of exposure to unwanted sexual material by teenage boys and girls (e.g., Flood & Hamilton, 2003; Mitchell et al., 2003). However, this research extends existing research by looking at exposure as a composite of pornography, violent images, bullying, rude comments, and sexual comments.

Given the fact that boys are going online more than girls, this greater exposure to inappropriate material and behavior online by boys is not altogether surprising. However, it is likely that there are other reasons for this greater exposure by boys. Teenage boys may be attracted to more violent and pornographic sites. Certainly, males have been found to prefer violent video games more than do females (Barnett et al., 1997; Griffiths, 1997), and studies have found that Internet pornography is primarily viewed by males (Boies, 2002; Mehta & Plaza, 1997) and is more arousing to males than to females (Boies, 2002; Goodson, McCormick, & Evans, 2000). Thus, some of this exposure may not be unwitting but rather through choice.

According to teens, the number of parents who had installed blocking or filtering software was approximately one in five. This number is similar to that reported in the Australian Broadcasting Authority (2001) survey, which found 17% of parents reported the use of such software, and similar to the 25% reported by young people in the Rideout et al. (2005) study. It contrasts somewhat with the 31% reported by youth in the study by Turov and Nir (2000) and is substantially lower than the 54% reported by parents in Lenhart's (2005) study. Conceivably, the use of blocks and filters is much higher than youth imagine, as parents may not always advise their children that such software is in place. In this study, no sex or age differences were found regarding the use of such software.

Contrary to expectations, the use of blocking or filtering software did not lead to significant differences in exposure. This finding is inconsistent with the findings of Mitchell et al.'s (2003) study, in which teens' reports of the installation of such software predicted less exposure to unwanted sexual material. However, in the Mitchell et al. study, parents' reports of the installation of such software did not predict lower exposure to sexual material.

As hypothesized, higher frequency users were significantly more exposed than those who reported either medium- or low-frequency Internet use, and medium-frequency users were significantly more exposed than low-frequency users. If exposed, the vast majority (80%) of young people in this study said that they would exit the site, but very few (8%) reported that they would advise their parents of the incident.

Online Safety Practices

Unexpectedly, boys and girls showed no significant difference in their online safety practices. This is inconsistent with Turow and Nir's (2000) finding that boys were more likely than girls to provide private information in return for a gift. However, this study examined a wider range of safety practices that might explain the lack of sex differences. Consistent with our hypothesis, participants in the younger age group had significantly poorer safety practices than those in the older age group. Also as hypothesized, those teens whose parents had held Internet safety discussions with them had better safety practices than those teens whose parents had not. An interaction between age group and parental safety discussions was found, indicating that being younger and not having discussed Internet safety with parents led to the greatest likelihood of poor online safety practices. These findings point to a real need to discuss Internet safety with younger teens.

In this sample, more younger than older teens, and more females than males, reported having Internet safety discussions with their parents. This is a positive sign, as it appears that it is younger teens who are potentially less safety conscious online. Furthermore, although males have been found to be less safety conscious online (Turow & Nir, 2000), there were no sex differences in safety practices found in this study, and other research has found that it is young females who are the most likely victims of online sexual predators (Wolak et al., 2004).

Limitations

A limitation of this study is that despite the relatively large size of the sample, it represents quite a specific population, which limits the generalizability of the results. The ACT has a unique population makeup, having the highest mean income of any state or territory in Australia (Australian Bureau of Statistics, 2004a) and the highest level of Internet use in Australia

(Australian Bureau of Statistics, 2004b). These things are reflected in the very large number of youth in this sample having home Internet access.

A further limitation is that the measures of exposure and online safety practices were specifically constructed for the purposes of the research. Although the measures achieved acceptable levels of reliability, they have not yet been proven to be valid measures of the constructs they are measuring, beyond having good face validity. Further work needs to be done to determine their effectiveness at measuring the purported constructs.

Conclusion

The finding that the use of Internet blocking and filtering software did not affect the amount of exposure to inappropriate material and behavior online for these Australian youth may simply have been due to their lack of knowledge about whether their parents had installed such software. Future research may wish to examine whether such software is indeed installed before definitive comment can be made about its effectiveness. Nonetheless, the effectiveness of filtering software is to some extent determined by the terms and phrases that are restricted. Given the propensity for youth to constantly update language by the use of new words and phrases and alterations to the meaning of existing words and phrases, it would appear a difficult task to keep filtering software fully updated.

What is clear is that parents need to talk to their teenage children. It is through better parent-child communication that issues of Internet safety can be raised and aired. These discussions need to focus on ways young people can keep themselves safe from potential predators by the use of better safety practices. Teenagers need to be warned not to provide personal information about themselves or their families. The results of this study suggest that parents are not discussing Internet safety as much with males as with females, perhaps in the belief that it is only girls that are in danger online. However, all teenagers need to be aware of the dangers of exposure to violent and sexual images and that these images may affect their attitudes and behaviors. Younger teens in particular need to be advised about safe online practices, and indeed with younger teens it may be possible to impose some restrictions on their type and amount of Internet use. This, however, becomes difficult with older teens. Older teenagers increasingly need to use the Internet, indeed are expected to use the Internet for school research, and thus it becomes increasingly difficult to monitor and limit their Internet use. By

open and frank discussion between parents and teenagers of all ages, and by parents showing an interest in their children's worlds, parents can help keep young people safe in cyberspace.

Note

1. Responses to this item sum to more than 100%, as a number of participants indicated more than one "usual" strategy for dealing with upsetting material.

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