Available online at www.sciencedirect.com
SCIENCE DIRECT®
Journal of Adolescence 27 (2004) 319–336
Journal of Adolescence
www.elsevier.com/locate/jado

Youth engaging in online harassment: associations with caregiver–child relationships, Internet use, and personal characteristics ☆

Michele L. Ybarra[a,*], Kimberly J. Mitchell[b]

[a] *Johns Hopkins Bloomberg School of Public Health, USA*
[b] *University of New Hampshire, USA*

Accepted 11 March 2004

Abstract

To date, research focused on "traditional" (i.e. in-person) youth bullying behaviour has documented serious psychosocial challenges for those involved. How this literature translates to youth engaging in aggressive behaviours online has yet to be examined. Using the largest US sample of youth Internet users to date, psychosocial characteristics of youth engaging in Internet harassment were examined. Results from the nationally representative survey suggested that Internet harassment is a significant public health issue, with aggressors facing multiple psychosocial challenges including poor parent–child relationships, substance use, and delinquency. Comparisons to traditional bullies were made, with similarities and differences noted.

Keywords: Youth; Internet; Mental health; Bullying; Parent–child relationship

Introduction

As the numbers of youth online continue to increase (Grunwald & Associates, 1999), so too do the calls for health care professionals and others working with children to offer guidance about appropriate and safe Internet use for youth (Dorman, 1997). The Internet represents a change in

☆This research was commissioned by the National Center for Missing and Exploited Children, and supported by the Office of Juvenile Justice and Delinquency Prevention and the National Institute of Mental Health (#280-99-8023).
*Corresponding author. Internet Solutions for Kids, Inc., 74 Ashford, Irvine, CA, 92618, USA.
E-mail address: michele@isolutions4kids.org (M.L. Ybarra).

0140-1971/$30.00
doi:10.1016/j.adolescence.2004.03.007

technology that youth are rapidly adopting; indeed, a recent study of youth (12–18 years old) found 97% use the Internet (UCLA Center for Communication, 2003). The growth in the number of youth online may also signal an increase in the number of youth at risk for engaging in aggressive online social interactions. Although the majority of youth report positive experiences on the Internet (Finkelhor, Mitchell, & Wolak, 2000; National Public Radio/Kaiser Family Foundation/Kennedy School of Government, 2000), investigating the correlates of online aggressive behaviours is an important first step in directing both future research and intervention programs aimed at protecting vulnerable youth while online.

Online aggression

The Internet is a tool for anonymous communication. In most cases, online conversations lack visual confirmation of who the user to 'speaking' with. This has multiple implications, including the lack of non-verbal cues used to determine the emotional sentiment of what is being said, as well as the lack of traditional information we use to stereotype one another (McKenna & Bargh, 2000). Many have heralded the Internet as a venue for breaking down barriers and connecting people who might otherwise be marginalized (McKenna & Bargh, 2000). On the other hand, this anonymity may lead to heightened aggression and inappropriate behaviour (Postmes & Spears, 1998; Postmes, Spears, & Lea, 1998). Thus, the Internet may be conducive to Internet aggression for some who feel constrained by social expectations in traditional communication, but freed from these constraints in online conversations where the user cannot be seen nor the impact of his or her words on the other person be experienced. To this end, deviant behaviour online, including 'flaming wars' (e.g. insults or threatening language), has been the subject of multiple case studies (Ess, 1996; Suler & Phillips, 1998). Less direct attention however, has been paid to online communication towards and between young people. Emerging literature suggests that Internet harassment is a significant health and psychological issue for young people online (Finkelhor et al., 2000; British Broadcasting Corporation, 2002).

Online harassment

Internet harassment is an intentional and overt act of aggression toward another person online. Making rude or nasty comments toward someone, or intentionally embarrassing another user in retaliation for a perceived wrong are examples of Internet harassment. Though studies related to Internet harassment are few, research indicates 6% of youth who use the Internet have been harassed in the past year (Finkelhor et al., 2000). One-third (31%) of youth harassed online in the previous year who use the Internet however, reported feeling very or extremely upset (Finkelhor et al., 2000). One-third (32%) felt at least one symptom of stress following the incident (Finkelhor et al., 2000). For a further detail of the characteristics associated with victims of online harassment, readers are directed to the summary report of the Youth Internet Safety Survey (YISS) (Finkelhor et al., 2000), as well as an analytic comparison of targets, harassers, and target-harassers (similar to bully victims) by Ybarra and Mitchell (2004).

Specific activities may be associated with harassment. For example, based upon data from the United Kingdom (British Broadcasting Corporation, 2002), lifetime estimates for youth harassed via e-mail are 4%. Additionally, 7% of youth in the same study reported being the target of

harassment in Internet chat rooms. Beyond prevalence estimates, little information is available detailing correlates of youth online harassment.

Bullying

Despite the dearth of research related to youth online harassment, literature based on "offline" bullying can be used as a guide to study correlates of online harassers. Both online and offline bullying are rooted in aggression, though bullying is typically defined as acting out towards someone known to the aggressor, whereas Internet harassment may be directed at a victim unknown to the provoker.

Differences in personal characteristics have been noted for bullies. For example, males are significantly more likely than are females to bully (Kaltiala-Heino, Rimpela, Rantenen, & Rimpela, 2000; Nansel et al., 2001), and middle school youth report a higher frequency of bullying than do high school youth (Nansel et al., 2001). Slight differences by race and urbanicity of bullying are also reported (Nansel et al., 2001).

Negative psychosocial consequences of bullying behaviour have been noted for youth involved in bullying. Bullies are more likely than are non-bullies to report frequent alcohol use (Kaltiala-Heino et al., 2000; Nansel et al., 2001), cigarette smoking (Nansel et al., 2001), fighting (Ericson, 2001; Nansel et al., 2001), below average academic achievement, and early school termination (Ericson, 2001; Nansel et al., 2001). Bully victims, those bullying others as well as being bullied themselves, are more likely to experience academic challenge, problem alcohol and drug use, loneliness, and poor peer relations (Mynard & Joseph, 1997; Kaltiala-Heino et al., 2000; Ericson, 2001; Nansel et al., 2001). Depressive symptoms, excessive psychosomatic symptoms, and neuroticism are also significantly more likely to be reported by bully victims compared to both bullies and youth not involved in bullying (Mynard & Joseph, 1997; Kaltiala-Heino et al., 2000).

Caregiver–child relationships and online harassment

Possible associations between caregiver–child relationships and online harassers deserve special research attention given the abundance of literature reporting significant ties between poor caregiver–child relationships and an increased likelihood of externalizing behaviours by the child. For example, lack of emotional attachment and rejection are highly associated with bullying (Rigby, 1993), aggression (Barnow, Lucht, & Freyberger, 2001), and delinquent behaviour (Steinberg, 2000). Similarly, low caregiver monitoring is significantly associated with self-reported delinquency and police contact (Patterson & Stouthamer-Loeber, 1984; Ericson, 2001; Pettit, Laird, Dodge, Bates, & Criss, 2001), as well as an increased likelihood of violence over time (Brendgen, Vitaro, Tremblay, & Lavioe, 2001). Harsh and erratic discipline practices are also implicated in childhood delinquency (Patterson & Stouthamer-Loeber, 1984) and aggression (Barnow et al., 2001). In addition, relationships between caregiver and child, including discipline, monitoring, and measures of emotional attachment, mediate the effects of poverty and other demographic indicators strongly related to delinquency (Sampson & Laub, 1994; Steinberg, 2000; Barnow et al., 2001). Though associations between poor caregiver–child relationships and externalizing behaviours have been reported, how the literature translates to the Internet, a newly pervasive environment, is unknown.

Gaps in current literature

To date, no research has been published addressing the characteristics of youth engaging in online harassment behaviours. Given the increasing use of the Internet by youth and preliminary indications that being a target of online harassment can have a negative mental health impact, this is a compelling adolescent health issue. Using the largest, most detailed United States-based survey to date of young regular Internet users, the YISS, we endeavored to identify significant links between Internet harassment and caregiver–child relationships, delinquency, psychosocial challenges, and Internet use. Understanding characteristics associated with online harassers is important as a preliminary step in building a profile of online aggressors, who if similar to offline bullies, are likely facing multiple psychosocial challenges necessitating attention and care. It is also a necessary first step in directing future intervention efforts.

Methods

Sample

The YISS is a nationally representative telephone survey of youth who use the Internet regularly ($N = 1501$). It was conducted between September of 1999 and February of 2000. The survey was carried out in an effort to quantify the prevalence of unwanted exposure to sexual material, sexual solicitation, and harassment experiences among youth navigating the Internet in the previous year (Finkelhor et al., 2000; Mitchell, Finkelhor, & Wolak, 2001). It was approved and supervised by the University of New Hampshire's Human Subjects Committee and conformed to the rules mandated by research projects funded by the Department of Justice.

YISS respondents were regular Internet users (i.e. using the Internet at least once a month for the previous three months) between the ages of 10 and 17 ($M = 14.1$, S.D. = 2.0), along with one caregiver in the household. Caregiver report was gathered from the adult self-described as the one who knew the most about the child's Internet use (69.1% female). Youth participants were encouraged to choose a time that was convenient and allowed privacy to answer sensitive questions freely. Almost half of the youth respondents were female (48%) and almost half were 15 years or older (47%).

Phone numbers were generated to yield a nationally representative sample; additional selection criteria for Internet use yielded a sample that was representative of young regular Internet users across the United States. As shown in Table 1, household characteristics of the sample tended to be above the national average (US Census Bureau, 2000). They are typical, however, of Internet-using households during the time of data collection (National Public Radio/Kaiser Family Foundation/Kennedy School of Government. 2000; UCLA Center for Communication Policy, 2001). For example, Internet users tend to have higher incomes and more education than non-Internet users, and, among lower income groups, Internet users are more likely to be White. The large percentages of White youth and youth living in high-income households found in this sample parallel these findings.

Table 1
Sample characteristics for YISS respondents ($N = 1498$)

Youth characteristics	% (N)
Online harassment behaviour (at least one)	15% (219)
Age	
15–17 y.o.	47% (706)
13–14 y.o.	31% (457)
10–12 y.o.	22% (335)
White race	75% (1127)
Annual income of $75,000+	23% (347)
Household education of at least some college	24% (356)
Male	53% (791)
City or suburb of large city	36% (537)
Caregiver not married	21% (318)

Sampling method

The YISS sample was identified based upon a national probability design. Phone numbers were first generated for use in the Second National Incidence Study of Missing, Abducted, Runaway, and Thrownaway Children (NISMART-2), a nationally representative survey conducted by the Institute for Survey Research at Temple University in 1999 (Hammer, Finkelhor, & Sedlak, 2002). Sample selection procedures for the YISS have been detailed elsewhere (Finkelhor et al., 2000). In brief, a random digit dial sample of United States household phone numbers was generated for the NISMART-2 study using GENESYS, a commercial database maintenance and retrieval system. Households that were identified as having at least one child between 9 and 17 years during the NISMART-2 adult screening process were flagged for possible YISS selection. In total, YISS researchers received information on 6594 households from the NISMART-2 survey. This includes households in which an adult caretaker had refused to allow the youth to participate in NISMART-2.

In order to achieve a maximum expected sampling error of $\pm 2.5\%$ at the 5% significance level for YISS-related data analyses, it was determined that a sample size of 1500 was required. All 6594 phone numbers received by YISS from NISMART-2 were dialed. When the requisite number of surveys was reached, contact had been made with 3446 households. Seventy-five per cent of these households ($N = 2572$) completed the eligibility screen. Seventy per cent ($N = 1857$) qualified for study participation. One thousand five hundred and one eligible households completed both the adult and young people surveys, resulting in an 82% response rate (Finkelhor et al., 2000).

Measures

Online harassment

Youth were asked if they had engaged in two possible online harassment behaviours in the past year: (1) making rude or nasty comments to someone on the Internet, or (2) using the Internet to harass or embarrass someone with whom the youth was mad. Online harassment was

dichotomized (yes/no), with youth responding positively to at least one of the two questions compared to youth negatively responding to all two. Follow-up questions for one of the two behaviours included whether or not the youth knew the online target. Seventy-nine per cent of youth reported knowing the person they harassed or embarrassed.

Caregiver–child relationship

Youth respondents were asked to rate their daily interactions with their caregiver. Nine questions were asked and each response was measured on a four-point Likert scale ranging from 4 (very well) to 1 (very badly) on emotional indicators, and 4 (all the time) to 1 (never/rarely) for monitoring and discipline indicators. Three aspects of the relationship were queried: (1) emotional closeness (i.e. how well caregiver and child get along, caregiver trust of child, discussing problems with caregiver when feeling sad or in trouble, and frequency of having fun together), (2) monitoring (i.e. frequency with which caregiver knows where child is, and with whom child is spending time), and (3) discipline (i.e. frequency of 'nagging' child, taking away privileges, and yelling).

For the purposes of data reduction, three variables were created from the nine items by summing the 'scores' reported by the youth for each related item. A higher score reflected a poorer rating. Beyond face validity, these three indicators were chosen based upon the results of an confirmatory factor analysis. Using MPlus, a statistical software package designed to specifically conduct factor analysis of categorical variables (Muthen & Muthen, 1998), acceptable model fit for three factors was indicated (CFI = 0.94; TLI = 0.95; RMSR = 0.02; *Eigen values*: 1st factor = 3.7, 2nd factor = 1.4, 3rd factor = 0.97). After creating a sum score for the specific aspect of the caregiver–child relationship, each indicator was tested for linearity. Each of the three items were non-linearly related to the report of online harassment; we thus created three categories within each indicator: (1) poor score (i.e. 1 S.D. above the sample mean and higher), (2) average score (i.e. centred around the mean), and (3) strong score (1 S.D. below the sample mean and lower).

Psychosocial challenge

Youth-reported behaviour indicators were also included, based on previous bullying literature. Academic challenge was indicated if the youth reported receiving a failing grade at school within the previous year. Child victimization (Barnow et al., 2001; Shields & Cicchetti, 2001) was also included, with youth reporting physical or sexual abuse in the past year compared to youth reporting neither. Frequent substance use (Kaltiala-Heino et al., 2000) was defined by using a controlled substance four or more times a week in the past year. Nine DSM IV-based (American Psychiatric Association, 1999) questions related to current depressive symptoms were also included. A high level of depressive symptoms was indicated if a youth responded positively to five or more symptom questions. To acknowledge the growing literature documenting bully victims (Kaltiala-Heino et al., 2000; Ericson, 2001), a dichotomous measure of being a target of offline bullying was based on youth report of either being hit or picked on by another child in the past year. Lastly, the report of negative life events (i.e. a death in the family, moving to a new home, parents getting a divorce, and/or having a parent lose a job in the past year) occurring in the past year was dichotomized (yes/no) based upon whether any of the four life events were reported.

Four "offline" delinquent behaviours were asked of all youth: (1) taking something that did not belong to them, (2) damaging property, (3) being picked up by the police, and (4) physically assaulting another person within the previous year. Delinquent behaviour was dichotomized (yes/no) based on whether the youth had engaged in any of the four versus none of the four behaviours in the past year.

Internet use

Several Internet usage characteristics were included in the analyses. Average frequency and duration of Internet use were gathered via youth report, each split at the sample mean (frequency: four or more days versus fewer; duration: 3 h or more a day versus fewer). Youth were also asked for what activities they use the Internet most often; to this end, a three-category usage variable was created: (1) chat-rooms, (2) e-mail or Instant Messaging, and (3) all other activities (e.g. playing games, school assignments, downloading software). The location the child reported logging onto the Internet most frequently was dichotomized as logging on at home versus all other places. Additionally, youth were asked to rate the importance of the Internet to them based upon a five-point Likert scale (*not at all important–very important*). This was collapsed into three categories to ensure cell stability, ranging from 3 (*very/extremely important*) to 1 (*not at all/not very important*). Respondents were also asked to rate their expertise on the Internet. The five possible responses were again collapsed into three categories, ranging from 3 (*expert Internet navigator*) to 1 (*novice*). Finally, an indication for being a target of online harassment in the past year was dichotomized (*yes/no*) based upon whether the youth reported being bothered or harassed online and/or being threatened or embarrassed online in the past year.

Youth characteristics

Characteristics possibly related to both online harassment and caregiver–child relationships were adjusted for in the final analyses. Caregiver-reported variables include highest household education (high school education or less versus at least some college education), 1998 household income (below $75,000 versus higher), living location (city or suburb of a large city versus all else), youth sex, current marital status of the caregiver (married versus all other), and child age. Due to non-linear associations within outcome categories, age was categorized based upon the data distribution among online harassers: grade school (10–12 years old), middle school (13–14 years old), and high school (15–17 years old). Youth-reported race was categorized by White and non-White.

Statistical methods

Stata 7.0 (StataCorp, 2000) was used for analyses. Cases were required to have valid data for the majority of variables used in the models. Specifically, cases missing more than two data points in a subcategory of child characteristics (i.e. caregiver–child relationships, Internet usage, or personal characteristics) were excluded. Three cases were dropped due to this requirement, resulting in a final sample size of 1498.

In order to maximize the available data, missing values were imputed using best-set regression techniques (StataCorp, 2000). In most cases, this affected less than 1% of cases analysed. More than 1%, however, was missing for three indicators: household income (7.3% of values), average

number of days Internet is used (1.1% values), and the frequency of caregiver 'nagging' (1.1% of values).

Logistic regression analysis was first used to estimate unadjusted odds ratios for total effects. Next, demographic and personal characteristics were included to adjust for possible confounding. Lastly, a parsimonious model was identified based upon a leniently defined significant contribution to the model (likelihood ratio test, p-level of $\leqslant 0.10$). Odds ratios were adjusted for over-estimation of the relative risk where indicated (Zhang, 1998). Before variable testing, collinearity between measures was assessed based on variance inflation factors and all were found to be acceptable (mean Variance Inflation Factor = 1.18, range: 1.06–1.33).

Results

Descriptive analyses

Of the 15% of youth identified in the survey as Internet harassers ($N = 219$), 14% ($N = 215$) reported making a rude or nasty comment to someone online, and 1% ($N = 19$) admitted to harassing or embarrassing someone on the Internet in the previous year. Almost all youth who reported the latter also reported the former behaviour ($N = 15$, 79%).

Youth in the study sample reported being the target of aggression as well. Seven per cent ($N = 98$) of youth in the sample reported being harassed online in the past year. Of these, 72% were harassed by someone they met online and 28% by someone they knew in person (Finkelhor et al., 2000). Further, over one-third ($N = 492$) of youth reported being the target of traditional, in-person bullying behaviour in the previous year.

The majority of youth positively rated their emotional bond with their caregiver. For example, only 3% of young regular Internet users ($N = 42$) reported getting along with their caregiver somewhat or very poorly, whereas 12% of youth ($N = 177$) indicated they sometimes or rarely/never felt trusted by their caregiver. On the other hand, 44% of youth ($N = 658$) indicated sometimes or rarely/never having fun with their caregiver, with a similar percentage (44%, $N = 658$) reporting sometimes or never/rarely discussing an issue with a caregiver when they felt sad.

Poor parental monitoring was infrequently cited. Seven per cent of youth ($N = 105$) indicated that their caregiver sometimes or rarely/never knew where he or she was, and 9% ($N = 142$) reported their caregiver sometimes or rarely/never knew with whom he or she was with when not at home.

Nagging was the most commonly cited parental discipline behaviour, with 27% of youth in the sample ($N = 406$) reporting the occurrence most or all of the time. Additionally, 8% of youth ($N = 119$) reported their caregiver yelled at them and 4% of youth ($N = 67$) indicated privileges were restricted most or all of the time.

Characteristics of youth Internet harassers

A detailed description of youth characteristics based upon report of online harassment is found in Table 2. Odds ratios and 95% confidence intervals are adjusted for over-estimation of odds

Table 2
Unadjusted odds of Internet harassment behaviour in the previous year among young regular Internet users ($N = 1498$)

Youth characteristics	Not online harasser ($N = 1279$) % (N)	Online harasser ($N = 219$) % (N)	Odds ratio (95% CI)	p-Value
Caregiver–child relationship				
Emotional bond				
Very poor	19.1% (244)	44.3% (97)	2.57 (2.11, 3.00)[a]	<0.001
Average	48.8% (624)	40.2% (88)	1.70 (1.13, 2.58)	0.01
Very strong	32.1% (411)	15.5% (34)	1.00 (Reference)	
Discipline				
Frequently	16.2% (207)	32.4% (71)	2.20 (1.73, 2.70)[a]	<0.001
Average	42.4% (542)	40.2% (88)	1.43 (1.01, 2.03)	0.04
Infrequent	41.4% (530)	27.4% (60)	1.00 (Reference)	
Monitoring				
Infrequent	30.2% (386)	53.4% (117)	1.84 (1.59, 2.07)[a]	<0.001
Average	23.0% (294)	20.6% (45)	1.61 (1.06, 2.44)	0.03
Frequently	46.8% (599)	26.0% (57)	1.00 (Reference)	
Psychosocial indicators				
Victimization	1.3% (17)	6.4% (14)	5.07 (2.46, 10.44)	<0.001
Frequent substance use	9.9% (126)	31.5% (69)	4.21 (3.00, 5.91)	<0.001
High depressive symptomotology	5.6% (72)	15.5% (34)	3.08 (1.99, 4.77)	<0.001
Delinquency	12.6% (161)	36.5% (80)	2.70 (2.22, 3.19)[a]	<0.001
Target of traditional bullying	29.8% (381)	50.7% (111)	1.65 (1.43, 1.87)[a]	<0.001
Failing grade in school	32.5% (416)	39.3% (86)	1.34 (1.00, 1.80)	0.05
Life challenge	7.0% (90)	5.0% (11)	0.70 (0.37, 1.33)	0.27
Internet use				
Target of online harassment	4.3% (55)	19.6% (43)	5.44 (3.54, 8.35)	<0.001
Most frequent internet activity				
Chat room	7.9% (101)	16.4% (36)	3.56 (2.28, 5.58)	<0.001
E-mail/IM	33.5% (428)	49.3% (108)	1.63 (1.41, 1.84)[a]	<0.001
Other	58.6% (750)	34.3% (75)	1.00 (Reference)	
Self-rated expertise on internet				
Expert	29.1% (372)	53.9% (118)	2.37 (2.02, 2.63)[a]	<0.001
Average	46.4% (593)	39.7% (87)	1.61 (1.33, 1.83)[a]	<0.001
Novice	24.6% (314)	6.4% (14)	1.00 (Reference)	
Self-rated importance of internet to self				
Very/extremely important	18.3% (234)	31.5% (69)	2.02 (1.59, 2.48)[a]	<0.001
Average	36.2% (463)	39.7% (87)	1.74 (1.23, 2.45)	0.00
Not very important	45.5% (582)	28.8% (63)	1.00 (Reference)	
Duration: 3 or more hours per day	11.9% (152)	21.0% (46)	1.97 (1.37, 2.84)	<0.001
Access internet most often at home	62.6% (801)	75.3% (165)	1.82 (1.31, 2.53)	<0.001

Table 2 (*continued*)

Youth characteristics	Not online harasser ($N = 1279$) % (N)	Online harasser ($N = 219$) % (N)	Odds ratio (95% CI)	p-Value
Frequency: 4 or more days per week	37.9% (485)	63.9% (140)	1.62 (1.45, 1.77)[a]	<0.001
Personal characteristics				
Age				
13–14 y.o.	31.0% (397)	27.4% (60)	1.82 (1.36, 2.24)[a]	<0.001
15–17 y.o.	44.1% (564)	64.8% (142)	1.71 (1.51, 1.86)[a]	<0.001
10–12 y.o.	24.9% (318)	7.8% (17)	1.00 (Reference)	
White race	74.3% (950)	80.8% (177)	1.46 (1.02, 2.09)	0.04
Income ($75,000+)	22.1% (283)	29.2% (64)	1.45 (1.06, 2.00)	0.02
Household location (city or suburb)	35.0% (447)	41.1% (90)	1.30 (0.97, 1.74)	0.08
Male	52.8% (675)	53.0% (116)	1.01 (0.76, 1.34)	0.96
Household education (high school or less)	24.1% (308)	21.9% (48)	0.88 (0.63, 1.25)	0.49
Caregiver marital status (not married)	21.6% (276)	19.2% (42)	0.86 (0.60, 1.24)	0.42

Note: Odds ratios for youth-reported online harassment versus reporting no online harassment in the previous year.
[a] Odds ratios and 95% confidence intervals adjusted for over-estimation of odds ratio as approximation for relative risk (prevalence of characteristic among 'non-online harassment' greater than 10% *and* odds ratio greater than 2.5 or less than 0.5) (Zhang, 1998). p-Values remain unadjusted.

ratio as approximation for relative risk (prevalence of characteristic among 'non-online harassment' greater than 10% *and* odds ratio greater than 2.5 or less than 0.5) (Zhang, 1998). p-Values remain unadjusted. Table 3 displays a parsimonious model that includes all variables that together significantly explain the variance in online harassment. ''AOR'' refers to an adjusted odds ratio, an estimate of the odds of reporting online harassment behaviour versus reporting no online harassment behaviour, which was adjusted by all other variables listed in the model.

Caregiver–child relationships

Poor caregiver–child relationships were significantly related to online harassment (see Table 2). For example, 19% of non-harassers reported a very poor emotional bond with their caregiver versus 32% who reported a very strong emotional bond, as compared to 44% of harassers who reported a very poor emotional bond compared to 16% who reported a very strong emotional bond (OR: 2.57, CI: 2.11, 3.00). Frequent discipline was also associated with Internet harassment; 32% of online harassers reported very frequent discipline versus 27% who reported infrequent discipline, compared to 16% of non-harassers who reported very frequent caregiver discipline and 41% who reported infrequent discipline in the previous year (OR: 2.20, CI: 1.73, 2.70). Infrequent caregiver monitoring versus very frequent monitoring was also related to an 84% increase in the odds of reporting Internet harassment behaviour (OR: 1.84, CI: 1.59, 2.07).

After adjusting for significant personal characteristics and all other aspects of caregiver–child relationships respectively, youth-reported monitoring and emotional closeness remained significantly related to online harassment (see Table 3). Indeed, controlling for all other factors, youth with a poor caregiver–child emotional bond were still more than two times as likely (AOR: 2.05, CI: 1.24, 3.39) to engage in online harassment compared to youth with a strong emotional

Table 3
Parsimonious logistic model of online harassment behaviour ($N = 219$) in the previous year among regular Internet users ($N = 1498$)

Youth characteristics	Adjusted odds ratio (95% CI)	p-Value
Caregiver–child relationship		
Emotional bond		
Very poor	2.05 (1.24, 3.39)	0.01
Average	1.15 (0.73, 1.83)	0.55
Very strong	1.00 (Reference)	
Infrequent monitoring	1.54 (1.08, 2.19)	0.02
Frequent discipline	1.40 (0.95, 2.06)	0.09
Psychosocial indicators		
Delinquency	2.19 (1.46, 3.29)	<0.001
Target of traditional bullying	1.93 (1.37, 2.71)	<0.001
Frequent substance use	1.71 (1.13, 2.61)	0.01
Internet use		
Target of online harassment	3.91 (2.37, 6.43)	<0.001
Most frequent Internet activity		
Chat room	2.60 (1.54, 4.39)	<0.001
E-mail/IM	1.59 (1.09, 2.30)	0.02
Other	1.00 (Reference)	
Self-rated expertise on internet		
Average	2.33 (1.23, 4.42)	0.01
Expert	2.02 (1.55, 2.41)[a]	<0.001
Novice	1.00 (Reference)	
Internet use 4 or more days per week	1.73 (1.20, 2.51)	0.00
Internet very important to self	1.48 (1.02, 2.15)	0.04
Personal characteristics		
Age		
15–17 y.o.	2.28 (1.26, 4.13)	0.01
13–14 y.o.	1.59 (0.86, 2.96)	0.14
10–12 y.o.	1.00 (Reference)	
White race	1.45 (0.95, 2.22)	0.09

Note: Odds of youth-reported online harassment versus reporting no online harassment in the previous year. Significant factors identified based on likelihood ratio tests ($p \leqslant 0.10$) of significant model contribution.

[a] Odds ratios and 95% confidence intervals adjusted for over-estimation of odds ratio as approximation to relative risk (prevalence of characteristic among 'non-online harassment' greater than 10% *and* odds ratio greater than 2.5 or less than 0.5) (Zhang, 1998). p-Values remain unadjusted.

bond. Youth-reported low caregiver monitoring versus frequent monitoring was also associated with a 54% increased likelihood (AOR: 1.54, CI: 1.08, 2.19) of harassing others online.

Psychosocial challenges associated with Internet harassment

Indications of psychosocial challenge were associated with significantly elevated odds of harassing others online (see Table 2). For example, 6% of online harassers versus 1% of

non-harassers reported physical or sexual victimization by an adult in the previous year (OR: 5.07, CI: 2.46, 10.44). Additionally, 32% of harassers compared to 10% of non-harassers reported frequent substance use, representing a four-fold increase in odds (OR: 4.21, CI: 3.00, 5.91) of admitting to Internet aggression towards others. Similarly, over half of online harassers reported being the target of traditionally bullying as compared to 30% of non-harassers (OR: 1.65, CI: 1.43, 1.87). Youth-reported delinquency (OR: 2.70, CI: 2.22, 3.19), depressive symptomotology (OR: 3.08, CI: 1.99, 4.77), and receiving a failing grade at school (OR: 1.34, CI: 1.00, 1.80) were also related to elevated odds of harassing others versus not harassing others online.

Three psychosocial indicators were significantly influential in explaining the variance of harassment behaviour after adjusting for all other significant factors (see Table 3). Delinquent behaviour (AOR: 2.19, CI: 1.46, 3.29) and being the target of traditional bullying behaviour (AOR: 1.93, CI: 1.37, 2.71) were each associated with an almost two-fold increase in odds of Internet harassment towards others; frequent substance use was related to a 71% increased likelihood (AOR: 1.71, CI: 1.13, 2.61) of harassment compared to otherwise similar youth.

Internet usage characteristics associated with Internet harassment

Specific Internet usage characteristics were related to online harassment (see Table 2). Almost 20% of youth who reported online harassment behaviour versus 4% of youth who did not report harassing others online also indicated they had been the target of Internet harassment in the previous year. This represented a five-fold increase in the odds (OR: 5.44; CI: 3.54, 8.35) of reporting Internet harassment behaviour for youth who reported being the target of harassment versus not being the target of harassment online. Sixteen per cent of online harassers used the Internet most frequently for chat rooms versus 34% who reported using the Internet for all other activities (except e-mail and Instant Messaging), compared to 8% of non-harassers who used the Internet most frequently for chat rooms versus 59% who used the Internet for all other activities (except e-mail and Instant Messaging). This suggested youth who used the Internet most often for chat rooms were 3.5 times more likely (CI: 3.56, CI: 2.2.8, 5.58) than youth who used the Internet most often for all other activities (except email or Instant Messaging) to harass others online. Similarly, 54% of online harassers rated themselves as an Internet expert versus 6% who rated themselves as novices, compared to 29% of non-harassers who rated themselves as an Internet expert versus 25% who rated themselves as novices (OR: 2.37, CI: 2.02, 2.63). Self-rated importance of the Internet was associated with a two-fold increase in the odds of reporting Internet harassment behaviour (OR: 2.02, CI: 1.59, 2.48). Thirty-two per cent of online harassers indicated the Internet was very or extremely important to them versus 29% who said the Internet was not very important to them, as compared to 18% of non-harassers who indicated the Internet was very or extremely important to them versus 46% who reported the Internet as not very important to them.

These associations, though attenuated, remained significant even after controlling for all other significant factors (see Table 3). For example, self-rated Internet expertise, either as an expert or average user compared to as a novice, was significantly related to two times greater odds (AOR: 2.02, CI: 1.55, 2.14) of reporting aggressive behaviour towards others online, after controlling for other significant characteristics. Holding all other characteristics equal, the

adjusted odds of being a harasser online were almost four times as high (AOR: 3.91, CI: 2.37, 6.43) for youth who were the target of online harassment themselves. Finally, youth who estimated an average of four or more days a week on the Internet were 73% more likely (AOR: 1.73, CI: 1.20, 2.51) to also report engaging in online harassment after adjusting for other significant characteristics.

Personal characteristics associated with Internet harassment

Males and females were equally likely to report harassing another person online in the past year. Age, however, was significantly related to an increased likelihood of reporting harassment towards another person online. Thirty-one per cent of non-harassers were 13–14 years old versus to 25% who were 10–12 years old, as compared to 27% of harassers who were 13–14 years old versus to 8% of harassers who were 10–12 years old (OR: 1.82, CI: 1.36, 2.24). Youth who were 15–17 years old were similarly more likely than youth who were 10–12 years old to report engaging in online harassment activity (OR: 1.71, CI: 1.51. 1.86). Young people who self-identified as being of White race were 46% more likely than non-White students (OR: 1.46, CI: 1.02, 2.09) while those from households with an annual income of $75,000 or greater were 45% more likely than those from households with a lower annual income to report harassing others online.

Most youth characteristics examined significantly discriminated youth who reported harassing others online with youth who reported not harassing others online (see Table 2). In fact, all caregiver–child relationship indicators, Internet use characteristics, and most psychosocial indicators were associated with a significant difference in the odds of reporting Internet harassment. A cross-sectional profile of youth Internet harassers, based upon a parsimonious model of significant variables related to Internet harassment (see Table 3), suggests that the caregiver–child relationship as well as psychosocial challenge, including delinquent behaviours, involvement in traditional bullying, and high substance abuse, are together significantly related to the odds of reporting harassing others while online.

Discussion

Caregiver–child relationships

The emerging profile of youth who harass others online both shares characteristics previously reported for offline youth bullies and demonstrates unique correlates. For example, as reported in previous bullying literature (Rigby, 1993), a poor caregiver–child emotional bond is significantly more likely to be cited by Internet harassers (44%) than non-harassers (19%). After adjusting for all other significant characteristics, a poor emotional bond is associated with two-fold increased odds of online harassment behaviour. Poor caregiver monitoring is also implicated in increased odds of being a harasser, while a trend in increased likelihood is observed also for frequent parental discipline. This must necessarily be kept in mind for practitioners counseling parents on safe Internet practices, for parents of youth likely to harass others online are also more likely to have a poor relationship as perceived by the child. Youth-directed intervention and education then may be just as important.

Psychosocial challenges

Psychosocial challenges are noted among youth who reported harassing others. High substance use is frequently cited as a correlate of bullying (Kaltiala-Heino et al., 2000; Nansel et al., 2001). In the current survey, 32% of Internet harassers report frequent substance use as compared to 10% of non-harassers. Delinquency, such as property damage or a contact with police, is also significantly associated with elevated odds of harassment; 37% of harassers versus 13% of non-harassers report engaging in delinquent behaviour in the previous year. Additionally, as indicated in the bully victim literature (Kaltiala-Heino et al., 2000; Ericson, 2001), youth who are victims of bullies in offline environments are significantly more likely to harass others in online environments. In fact, just over half of Internet harassers (51%) report being the target of traditional bullying compared to 30% of non-harassers. Similarly, 20% of harassers versus 4% of non-harassers report being the target of Internet harassment themselves. Identifying youth harassing others online then is not simply an opportunity to educate about safe and appropriate Internet use, but also an opportunity to intervene about other adolescent health-related issues, such as traditional bullying and substance use, the youth may be facing.

Anonymity

The anonymity associated with online interactions may strip away many aspects of socially accepted roles, leading the Internet to act as a potential equalizer for aggressive acts. The current results suggest that the demographic profile of an online harasser is different from that of bullies and other youth with externalizing behaviours. Unlike traditional bullies who are significantly more likely to be male (Nansel et al., 2001), Internet harassers are just as likely to be female as male, and are more likely to be high school aged than middle school or grade school.

The Internet lacks non-verbal cues used in traditional communication to indicate one's emotional state. Some posit that this lack of direct feedback, as well as the anonymity and lack of repercussions can lead to more hostile and aggressive behaviour (Postmes & Spears, 1998; Postmes et al., 1998). This suggests that some youth who might otherwise not be inclined to respond aggressively in traditional interchanges feel less constrained by social norms online. For example, females who might act more submissive in a traditional setting may be less inhibited and feel able to assert themselves online, sometimes leading to acts of online harassment. McKenna and Bargh (2000) make an important counterpoint however, suggesting that the Internet equalizes the playing field in other and more positive ways. Socially marginalized groups, such as homosexual people, those with disability, and even those who feel less physically attractive, are able to communicate and find social support online that they are lacking in traditional relationships.

Internet use and online harassment

It is not surprising that specific Internet usage characteristics and activities are associated with increased odds of harassment. As reported previously (British Broadcasting Corporation, 2002), chat room and e-mail use are significantly related to online harassment. For example, 16% of harassers use the Internet most frequently for chat room use versus 8% of non-harassers. This

may be because youth are more able to interact with others and therefore faced with the opportunity to respond aggressively in these online environments compared to others such as those who use on the Internet for school research, downloading software, or maintaining a web page. What is unanticipated however, is the significance days of the week have over hours a day spent on the Internet after adjusting for all other significant characteristics. Sixty-four per cent of harassers use the Internet for 4 or more days per week compared to 38% of non-harassers, suggesting that frequent daily Internet use is related to elevated odds of Internet harassment, even after adjusting for all other significant characteristics. It is possible that some of the harassment behaviours are the result of 'web-rage' (i.e. frustration with web navigation and long wait times) felt by adolescents who have been on the Internet for an extended session. This may be an area of future research. Although current data can not speak to this issue fully, it is possible that taking a break from the computer periodically alleviates tension and the impulse to act out towards others for youth who would not otherwise interact aggressively.

Limitations

Although this is the first comprehensive review of youth engaging in Internet harassment in the United States, it is not without its limitations. First, the cross-sectional study design precludes temporal inferences. Thus, one cannot conclude that youth harass online *because* for example, they have experienced an online harassment themselves, but rather that the two characteristics are in some way related. Certainly, future studies could focus on longitudinal outcomes to begin parsing out the directionality of observed associations. Further, the current sample includes youth who use the Internet during late 1999–early 2000. How these results extend to youth accessing the Internet for the first time since the time of the study is unknown. Thirdly, the measures of online harassment are somewhat crude, since the study was not primarily designed to measure this behaviour. Because this is a new environment for social interaction, many validated questions applicable in offline studies do not translate to the Internet, nor do validated measures for online harassment exist to date. Given the extreme care taken in crafting the survey, including focus groups and expert consultation, however, the current measure affords a good first step in measuring externalizing behaviours online. Additionally, though missing data was largely not an issue for the current analyses, annual income was unreported in 7% of the sample. Values imputed based upon demographic characteristics reflect statistically probable estimations; though unlikely, it is not definitively known whether the true values differ in such a way that would have affected the final statistical model. Lastly, while it appears that Internet activities are associated with online harassment, the measures included were not sensitive enough to parse out the different types of chat rooms and other activities. Some are monitored by adults, provide a safe place for youth to meet others, and can even act as a form of group therapy. Future studies should include detailed measures of Internet activities to allow for differentiation that is more precise.

Implications

This study is the first of its kind to examine characteristics and correlates of youth who engage in online harassment. Findings from this paper are therefore useful in developing some suggestions for mental and somatic health care practitioners and educators who work with this

population. First, youth-targeted education by practitioners and educators is just as important, if not more so, than parent-targeted information because those youth needing the intervention are less likely to have a strong relationship with their parents. Youth reporting low emotional closeness with parents were almost 3 times more likely to engage in online harassment and those reporting low monitoring by parents were more than twice as likely to harass online. Second, prevention and intervention efforts should recognize the relationship between victimization and aggression in this online environment. Similar to the bully-victim pattern documented in the bullying literature, youth who engage in online harassment are almost four times as likely to also report being a *target* of online harassment in the past year compared to otherwise similar youth. Third, the lower prevalence rate of harassment online versus bullying in traditional settings suggests that the Internet could perhaps be used as a venue for support among young people who have been the target of Internet harassment and/or traditional bullying. By learning how to control their online environment, young people who are targets of aggression may learn how to minimize or avoid harassing situations and gain a sense of empowerment. Fourth, practitioners and educators should include online behaviour and experiences as part of their screening processes, especially for those youth with additional psychosocial challenges. Youth who report online harassment are more than twice as likely to have engaged in delinquent behaviour in the past year and almost twice as likely to report frequent substance use even after adjusting for other significant characteristics. Further, online harassers were almost twice as likely to have been a target of 'offline' bullying behaviour compared to otherwise similar youth. Identifying youth with multiple psychosocial challenges would provide professionals with an opportunity to intervene and educate about several issues and their inter-relationships instead of targeting them individually. Finally, practitioners and educators should target prevention and intervention efforts that are appropriate to this particular population. Online harassers are more likely to be older teens and just as likely to be females as males. Intervention efforts surrounding the better-understood bullying behaviour deal with a different vulnerable population, namely younger children and mainly males. Although online harassment has some similar correlates as bullying, materials and discussions must be tailored for this unique group of aggressive youth.

Conclusion

Despite limitations, the current study adds to previous literature in many notable ways. Findings are a first step in examining characteristics of Internet harassment and suggest that these youth may differ from offline bullies. Future studies targeted at parsing out temporality issues, as well as tracking potential psychosocial effects of being harassed on the Internet are warranted.

The results suggest that, similar to traditional bullies (Kaltiala-Heino et al., 2000; Nansel et al., 2001), youth who harass others online are reporting multiple psychosocial issues necessitating intervention. For example, holding all other influential characteristics equal, delinquent behaviour, being the target of traditional bullying, and frequent substance use are each related to an increased odds of reported online harassment in the previous year. Previous reports indicate that one-third of youth harassed online feel very upset or manifest symptoms of stress following the event. Internet harassment is indeed a health issue for both the harasser and the harassed. Mental health practitioners and health care providers interacting with youth may do well to

incorporate questions about online harassment and other Internet experiences in their standard well-being inquiries.

Acknowledgements

This research was supported in part by two grants: the Centers for Disease Control, Prevention Research Centers Grant #U48/CCU309674, and R49/CCR318627.

References

American Psychiatric Association (1999). *Diagnostic and statistical manual of mental disorders (DSM-IV)*. Washington, DC: American Psychiatric Association.

Barnow, S., Lucht, M., & Freyberger, H. J. (2001). Influence of punishment, emotional rejection, child abuse, and broken home on aggression in adolescent: An examination of aggressive adolescents in Germany. *Psychopathology*, *34*(4), 167–173.

Brendgen, M., Vitaro, R., Tremblay, R. E., & Lavioe, F. (2001). Reactive and proactive aggression: Predictions to physical violence in different contexts and moderating effects of parental monitoring and caregiving behavior. *Journal of Abnormal Child Psychology*, *29*(4), 293–304.

British Broadcasting Corporation (2002). Youngsters targeted by digital bullies. Available on the World Wide Web from: http://news.bbc.co.uk/hi/english/uk/newsid_1929000/1929944.stm

Dorman, S. M. (1997). Internet safety for schools, teachers, and parents. *Journal of School Health*, *67*, 355.

Ericson (2001). Addressing the problem of juvenile bullying. OJJDP Fact Sheet FS-200127.

Ess, C. (1996). *Philosophical perspectives on computer-mediated communication*. Albany, NY: State University of New York Press.

Finkelhor, D., Mitchell, K., & Wolak, J. (2000). Online victimization: A report on the nation's youth. National Center for Missing & Exploited Children. Available on the World Wide Web from:http://www.unh.edu/ccrc/Youth_Internet_info_page.html

Grunwald &Associates (1999). Children, families and the Internet: The groundbreaking nationwide survey of caregivers and their children. Available from the World Wide Web at: http://www.grunwald.com/survey/presentatio_download.html

Hammer, H., Finkelhor, D., & Sedlak, A. J. (2002). NISMART-2 household survey methodology technical report Washington, DC, US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Kaltiala-Heino, R., Rimpela, M., Rantenen, P., & Rimpela, A. (2000). Bullying at school—an indicator of adolescents at risk for mental disorders. *Journal of Adolescence*, *23*, 661–674.

McKenna, K. Y. A., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications for personality and social psychology. *Personality and Social Psychology Review*, *4*(1), 57–75.

Mitchell, K. J., Finkelhor, D., & Wolak, J. (2001). Risk factors for and impact of online sexual solicitation of youth. *Journal of the American Medical Association*, *285*(33), 3011–3014.

Muthen, L. K., & Muthen, B. O. (1998). *MPlus User's Guide*. Los Angeles: Muthen & Muthen.

Mynard, H., & Joseph, S. (1997). Bully/victim problems and their association with Eyseneck's personality dimensions in 8 to 13 year-olds. *Journal of Educational Psychology*, *67*(1), 51–54.

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. *Journal of the American Medical Association*, *285*(16), 2094–2100.

National Public Radio/Kaiser Family Foundation/Kennedy School of Government (2000). National survey of American adults on technology and National survey of American kids on technology. Available on the World Wide Web at: www.kff.org

Patterson, G. R., & Stouthamer-Loeber, M. (1984). The correlation of family management practices and delinquency. *Child Development*, *55*(4), 1299–1307.

Pettit, G. S., Laird, R. D., Dodge, K. A., Bates, J. E., & Criss, M. M. (2001). Antecedents and behavior-problem outcomes of parental monitoring and psychological control in early adolescence. *Child Development*, *72*(2), 583–598.

Rigby, K. (1993). School children's perceptions of their families and caregivers as a function of peer relationships. *Journal of Genetic Psychology*, *154*(4), 501–513.

Postmes, T., & Spears, R. (1998). Deindividuation and anti-normative behavior: A meta-analysis. *Psychological Bulletin*, *123*, 238–259.

Postmes, T., Spears, R., & Lea, M. (1998). Breaching or building social boundaries? SIDE-effects of computer-mediated communication. *Communication Research*, *25*, 689–715.

Sampson, R. J., & Laub, J. H. (1994). Urban poverty and the family context of delinquency: A new look at structure and process in a classic study. *Child Development*, *75*, 523–540.

Shields, A., & Cicchetti, D. (2001). Parental maltreatment and emotion dysregulation as risk factors for bullying and victimization in middle youthhood. *Journal of Clinical Child Psychology*, *30*(3), 349–363.

StataCorp (2000). *Stata statistical software: release 7.0*. College Station, TX: Stata Corporation.

Steinberg, L. (2000). Youth violence: Do caregivers and families make a difference? *National Institute of Justice Journal*, April, 30–38 (NCJ 181732).

Suler, J. R., & Phillips, M. A. (1998). The bad boys of cyberspace: Deviant behavior in a multimedia chat community. *Cyberpsychology and Behavior*, *1*, 275–294.

UCLA Center for Communication Policy (2001). The UCLA Internet Report 2001: Surveying the digital future, year two. Available on the World Wide Web at www.ccp.ucla.edu

UCLA Center for Communication Policy (2003). UCLA Internet Report-Year three. Available on the World Wide Web at: www.ccp.ucla.edu.

US Census Bureau (2000). United States Census 2000, available from the World Wide Web at: http://www.census.gov/main/www/cen2000.html, retrieved March, 2002.

Ybarra, M. L., & Mitchell, K. J. (Forthcoming, 2004). Youth Internet Users: Characteristics of harasser-targets and similarities with bully-victims. The Journal of Child Psychology and Psychiatry and Allied Disciplines.

Zhang, J. (1998). What's the relative risk? A method of correcting the odds ratio in cohort studies of common outcomes. *Journal of the American Medical Association*, *280*, 1690–1691.