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cyberbullying: an exploratory analysis of factors related to offending and victimization

Sameer Hinduja

*Florida Atlantic University, Jupiter,
Florida, USA*

Justin W. Patchin

*University of Wisconsin—Eau Claire,
Eau Claire, Wisconsin, USA*

Victimization on the Internet through what has been termed *cyberbullying* has attracted increased attention from scholars and practitioners. Defined as “willful and repeated harm inflicted through the medium of electronic text” (Patchin and Hinduja 2006:152), this negative experience not only undermines a youth’s freedom to use and explore valuable on-line resources, but also can result in severe functional and physical ramifications. Research involving the specific phenomenon—as well as Internet harassment in general—is still in its infancy, and the current work seeks to serve as a foundational piece in understanding its substance and salience. On-line survey data from 1,378 adolescent Internet-users are analyzed for the

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Address correspondence to Sameer Hinduja, Assistant Professor, Department of Criminology and Criminal Justice, Florida Atlantic University, 5353 Parkside Drive, Jupiter, FL 33458-2906, USA. E-mail: hinduja@fau.edu

purposes of identifying characteristics of typical cyberbullying victims and offenders. Although gender and race did not significantly differentiate respondent victimization or offending, computer proficiency and time spent on-line were positively related to both cyberbullying victimization and offending. Additionally, cyberbullying experiences were also linked to respondents who reported school problems (including traditional bullying), assaultive behavior, and substance use. Implications for addressing this novel form of youthful deviance are discussed.

I was talking to 2 girls who used to be my friends. Then (they) went on a chat I was also talking on and started saying horrible things about me. They used my screen name and everything. They even told one of my guy friends that I liked him since the day we met and he stopped talking to me. I was both depressed and angry. I wanted to die. I wanted to leave everything behind. I blocked them and signed off the Internet.¹

—13-year-old girl from West Virginia

INTRODUCTION

Adolescents at the turn of the twenty-first century are being raised in an Internet-enabled world where blogs, social networking, and instant messaging are competing with face-to-face and telephone communication as the dominant means and methods through which personal interaction takes place. Apart from the obvious benefits of information at one's fingertips, entertainment value, and speed of correspondence, participation on-line has valuable utility in teaching youth various social and emotional skills that are essential to successfully navigating life. For example, cyberspace provides a venue to learn and refine the ability to exercise self-control, to relate with tolerance and respect to others' viewpoints, to express sentiments in a healthy and normative manner, and to engage in critical thinking and decision making (Berson 2000). These skills, however, cannot be effectively

¹Some of the quotes used in the article have been edited for spelling and distracting grammatical errors. The substance of the quotes, however, has not changed.

internalized if the learning environment is unwelcoming or inhospitable to those who venture on-line. Indeed, if adolescents are uncomfortable or unwilling to explore the Internet and take advantage of all of its positive attributes, they will be sorely lacking in certain developmental qualities that others who do embrace cyberspace will naturally obtain. Although the vast majority of youth have quickly acquired a proclivity for computers and the Internet (NTIA, 2002), a small but growing proportion of kids are being exposed to interpersonal violence, aggression, mistreatment, and harassment—not indirectly by way of news reports or informational articles, but directly through what has been termed cyberbullying.

Cyberbullying has been succinctly defined as “willful and repeated harm inflicted through the medium of electronic text” (Patchin and Hinduja 2006:152). The primary means through which it can occur include the Internet-enabled personal computer and cellular phone. Via both, an offender can send hurtful and denigrating messages and content to a victim, to third parties, or to a public forum or environment that many other on-line users visit. It has been observed that “(s)ocial change always provides opportunities for the predatory behavior that is characteristic of a small number of people. With the new technologies which support the Internet, those who cannot adjust rapidly, and that is all of us, are at risk from those who can and will deploy technology as a criminal weapon” (Butterfield and Broad 2002:1). Cyberbullying is the unfortunate by-product of the union of adolescent aggression and electronic communication, and its growth is giving cause for concern.

The goal of the current research is to provide a foundational piece for the knowledge base associated with aggression and violence on the Internet by analyzing on-line survey data from approximately 1,400 adolescents in order to identify factors associated with cyberbullying victimization and offending. These preliminary portraits will inform both children and adults in supervisory roles of the demographic, situational, and behavioral variables that increase one’s risk of belonging to either group. Accordingly, attention can be directed to these areas, and strategies can be devised to reduce the contributive impact of those elements amenable to isolation and response. Future research can

then build on the groundwork laid in this study; specific directions to pursue will be discussed in detail.

LITERATURE REVIEW

Although computer-mediated communication has been studied extensively in a variety of fields, victimization through threats of violence on-line is a relatively new area of research that is only recently becoming further explored (Berson, Berson, and Ferron, 2002; Finn and Banach 2000; Finn 2004; Kennedy 2000; Lamberg 2002; Patchin and Hinduja 2006; Spitzberg 2002; Ybarra and Mitchell 2004). The specific impact of bullying² on young people has been studied at great length in a variety of academic disciplines (see, e.g., Borg 1998; Kaltiala-Heino, Rimpela, Rantenen, and Rimpela 2000; Nishina, Juvonen, and Witkow 2005; Oliver, Hoover, and Hazler 1994; Olweus 1978, 1991; Patchin 2002; Tattum and Lane 1989) but bullying that takes place via electronic means has been largely neglected³—perhaps because of the unique environment in which it occurs, or the specific nonphysical manner in which it is typically perpetrated.

There is no shortage of potential offenders or victims of cyberbullying because of the widespread availability of computers and the Internet in the developed world. Nonetheless, it has been difficult to observe and study the phenomenon due to its intangible, non-corporeal nature—much like many other forms of cyberdeviance. According to a 2005 survey by the National Children's Home charity and Tesco Mobile of 770 youth between the ages of 11 and 19, 20% of respondents revealed that they had been bullied via electronic means. Almost three-fourths (73%) stated that they knew the bully, whereas 26% stated that the offender was a stranger. Another interesting finding was that 10% indicated that another person had taken a picture of them via a cellular phone camera, consequently making them feel uncomfortable, embarrassed, or threatened. Many youth are not

²Nansel et al. (2001) define *bullying* as aggressive behavior or intentional "harm doing" by one person or a group, generally carried out repeatedly and over time, and that involves a power differential.

³Exceptions include Berson, Berson, and Ferron (2002), Hinduja and Patchin (2007); Li (2006), Patchin and Hinduja (2006), and Ybarra and Mitchell (2004).

comfortable telling an authority figure about their cyberbullying victimization; whereas 24% and 14% told a parent or teacher, respectively, 28% did not tell anyone whereas 41% told a friend (National Children's Home 2005). Of those respondents who kept the incident to themselves, the reasons given were because: it was not a problem (31%); there was no one they wanted to tell (12%); they did not think it would stop the bullying (11%); or they did not know where to go for help (10%).⁴ Interestingly, many in this same population indicated that speaking to a bullying expert (23%) or a school staff member (15%) would have made a difference, whereas 13% thought they would be helped by knowing of a website that gave advice on dealing with bullies (National Children's Home 2005).

Another study of on-line aggression and victimization conducted between Fall 1999 and Spring 2000 analyzed data from telephone surveys of 1,498 regular Internet users between the ages of 10 and 17, along with their parents (Ybarra and Mitchell 2004). Offending was operationalized as "making rude or nasty comments to someone on the Internet" and "using the Internet to harass or embarrass someone with whom the youth was mad" (Ybarra and Mitchell 2004:1310). Victimization was operationalized as "whether anyone had used the Internet in the previous year to threaten or embarrass the respondent by posting or sending messages about him or her for other people to see" and "whether the respondent ever felt worried or threatened because someone was bothering or harassing him or her while online" (Ybarra and Mitchell 2004:1310). Both of these variables were dichotomized.

Researchers found that 19% of youth respondents were either on the giving or receiving end of on-line aggression in the previous year. The vast majority of offenders (84%) knew their victim in person, whereas only 31% of victims knew their harasser in person. This fact is noteworthy; it appears that power and dominance are exerted on-line through the ability to keep the offender's identity unknown (Ybarra and Mitchell 2004). When comparing those who were only aggressors to those who had no involvement in on-line

⁴To note, the reasons for nonreporting mirror those found among populations of child abuse victims (Berlinger and Barbieri 1984; Swanson and Biaggio 1985).

harassment, the former were significantly more likely to be the target of off-line bullying,⁵ to display problematic behavior,⁶ to have low school commitment, and to engage in alcohol and cigarette use. When comparing those who had experience being both an offender and a victim with those who had no involvement in on-line harassment, the significant differences were the same as already mentioned—with the exception of low school involvement. It is interesting to note that real-world variables that play a contributive role in traditional forms of delinquency and crime—such as general deviance, low commitment to prosocial institutions such as school, and substance abuse—also are significantly related to bullying on the Internet.

ISSUES SPECIFIC TO CYBERVIOLENCE

The nuances of electronic communication are important to discuss in order to demonstrate why the phenomenon of cyberbullying deserves attention. To begin, the elements of perceived anonymity on-line, and the safety and security of being behind a computer screen, aid in freeing individuals from traditionally constraining pressures of society, conscience, morality, and ethics to behave in a normative manner. The use of pseudonyms or pseudonymous e-mail or user accounts also makes it difficult for victims to easily determine the identity of offenders, and also presumably contributes to the freedom an offender has on the Internet. Moreover, it is generally not illegal to use textual communication to mistreat, harass, or tease others because of First Amendment protections (except for cases that can be specifically defined as “cyberstalking”⁷). At some point the behavior may cross the legal line into “harassment,” although it is often difficult for law enforcement to get involved in

⁵This was defined as “being hit or picked on by another child during the previous year” (Ybarra and Mitchell 2004:1310).

⁶These included purposefully damaging property, police contact, physically assaulting a non-family member, and taking something that did not belong to the respondent within the previous year (Ybarra and Mitchell 2004:1310).

⁷According to the U.S. Department of Justice, *cyberstalking* can be defined as “the use of the Internet, e-mail, or other electronic communications devices to stalk another person” (Reno 1999). Generally speaking, most stalking laws involve direct or indirect threats against the victim or his or her immediate family.

cyberbullying cases unless there is a serious and substantial threat to one's personal safety.

Adolescents, it seems, are equating *legal* behavior with *ethical* behavior on-line, and consequently feel unrestrained within a "culture of deception" to engage in on-line harassment (Berson et al. 2002:66). In addition, malicious words and statements that an individual might be ashamed or embarrassed to use in a face-to-face setting are no longer off-limits or even tempered when that person is positioned behind a keyboard in a physically distant location from the victim. Anecdotal accounts from victims studied in complementing research by the current authors point to extreme viciousness and unconscionable textual violence expressed by cyberbullies who try to be anonymous. For example, a 17-year-old girl from Washington reported: "The last time I was bullied online was when I got an email from some anonymous person who said they went to my school, telling me that I was going to go to hell for dating girls. I have no idea who the messenger [sic] was." A 15-year-old girl from New Jersey admitted to engaging in cyberbullying: "I didn't like this girl, so I said something to her and left nasty messages in her online journal signed 'anonymous' saying 'you're such a little slut' and things like that." A 14-year-old girl from an undisclosed location in the United States acknowledged the anonymous, yet harmful nature of these on-line interactions: "Just because you say it doesn't hurt you because they are online, it does. They call you names because everyone online is anonymous. So they think they can do whatever they want to you. But honestly it annoys me that everyone thinks they can do whatever they want because you don't know who they are."

Notwithstanding the aforementioned attributes of electronic communication, regulatory bodies that meticulously monitor and supervise communication between individuals on-line are lacking. Although a few chat rooms associated with certain Internet Service Providers have hosts in public settings employed for those purposes, no supervision occurs when dialogue is initiated privately, or one-on-one between participants. Regardless, through either private exchanges (such as instant messages or personal e-mails), or public exchanges (in chat rooms, on Web-based message boards or newsgroups, or through the creation of malicious websites)

youth are being bullied in ways that could be negatively affecting their physical, social, emotional, and cognitive functioning, development, and well-being.

In addition, it is known that youth who are harassed, mistreated, and intimidated by others in traditional settings such as the school lunchroom, the playground, the hallway, at the bus stop, or on the bus are generally able to escape continued victimization once their school day is over. Retreat into personal and protected environments such as the confines of one's home provides a respite for targets of bullying, and perhaps allows those victims to be recharged and encouraged by loved ones before venturing out again into a potentially hostile world. Aggressors who are stymied from carrying out their maliciousness by temporal, physical, and geographic restrictions may become frustrated, and may decrease the intensity and frequency of their actions in time. However, technological advances now provide bullies with the ability to marshal the power of on-line applications to infiltrate the home of victims by contacting them through electronic means. Cyberbullying, then, greatly expands the reach and augments the intensity of interpersonal harm that occurs among this population.

NECESSITY FOR FORMAL INQUIRY

Why does cyberbullying warrant attention and inquiry by researchers? A vast number of negative ramifications have been linked to traditional bullying victimization. For example, school problems such as tardiness and truancy (BBCNews 2001; Ericson 2001; Forero, McLellan, Rissel, and Bauman 1999; Richardson 2003; Rigby and Slee 1999), suicidal ideation, eating disorders, and chronic illness (Borg 1998; Kaltiala-Heino, Rimpelä, Marttunen, Rimpelä, and Rantanen 1999; Rigby 2003; Roland 2002; Striegel-Moore, Dohm, Pike, Wilfley, and Fairburn 2002), and depression (Hawker and Boulton 2000; Magnusson, Statten, and Duner 1983; Olweus 1994; Roland 2002; Seale, Polakowski, and Schneider 1998) all underscore the nontrivial impact that the phenomenon can have on one's developmental trajectory, as well as one's psychosocial well-being. In extreme cases, victims of bullying have engaged in extreme violence toward themselves or other individuals

(Patchin 2002; Vossekuil, Fein, Reddy, Borum, and Modzeleski 2002), which speaks to a serious threat to one's physical well-being. Bullies do not escape the negative consequences of their own behavior; long-term outcomes for the offending population have included participation in more serious delinquency and substance abuse (Ericson 2001; Loeber and Dishion 1984; Magnusson et al. 1983; Olweus, Limber, and Mihalic 1999; Rigby 2003; Tattum 1989). Many of these predictors—school problems, interpersonal violence, and substance use—are assessed in the current work so that a more relevant sketch of typical cyberbullying offenders and victims can be created. We turn now to a discussion of the methods employed in the data collection phase and the statistical analyses that followed.

METHOD

In this exploratory study, an on-line survey methodology was utilized to collect data from over 6,800 respondents during December 22, 2004 and January 22, 2005 about their experiences with electronic bullying (as a victim, offender, and witness).⁸ The primary benefit in utilizing such a format concerns the ability to reach a wide number of participants at an economical cost. The subject matter itself was appropriate for this methodology, as it concerns a global phenomenon that occurs exclusively on-line. Because there does not exist a sampling frame with contact information of possible cyberbullying offenders and victims, the best way to seemingly reach such a population was to select a number of Internet sites whose visitors possessed demographic characteristics similar to the study's target population. As such, the survey instrument was linked to several websites that targeted adolescents.⁹ Despite this strategy, approximately 43% ($n = 2,978$) of the total number of respondents were older than 17 years of age and therefore excluded from the current analysis. In addition, efforts were made to target

⁸For brevity, much of the specific details of the on-line methodology employed have been removed. For more information about how the data were collected, please contact the first author.

⁹Seven websites agreed to link to our survey, and included three on-line gaming sites, three musical artist homepages, and a Harry Potter site.

both adolescent boys and girls, yet the vast majority of respondents (82%) were female.¹⁰ The differential response among gender may reflect a response bias, may characterize the distribution of cyberbullying across youth, or may reflect the greater impact that cyberbullying has on young women and their corresponding concern with the behavior. Future research is necessary to determine the extent to which this bias is substantively meaningful. To limit any partialities that may arise from the disproportionate number of female respondents, a random number of girls was drawn from the sample that was approximately equal to the number of male respondents under the age of 18 (male = 680, female = 698).¹¹ This approach, although not ideal, resulted in a final sample of 1,378 youth respondents that were relatively equal in terms of gender.

MEASURES

Dependent Variables

Four cyberbullying measures were employed as dependent variables in the current work. First, two *general* cyberbullying measures (one for victimization and one for offending) were used, and encompass all forms of cyberbullying. Specifically, youth were asked "Have you ever been bullied online?" (*general cyberbullying victimization*) and "Have you ever bullied others while online?" (*general cyberbullying offending*). Immediately before these questions, respondents were informed that: "Online bullying can include: bothering someone online, teasing in a mean way, calling someone hurtful names, intentionally leaving persons out of things, threatening someone, and saying unwanted sexually-related things to someone." In addition, two *serious* cyberbullying measures were used in an effort to understand the factors related to the most debasing forms of cyberviolence.

¹⁰Although there is no consistent finding in the literature base, some research involving self-reported delinquent behavior has indicated that girls are more likely to respond to Web surveys than boys (McCabe, Boyd, Couper, Crawford, and D'Arcy 2002). To be sure, more inquiry is necessary regarding gender differences in response rates for Web-based surveys of deviance.

¹¹As expected, there were no statistically significant differences between those female youth who were included and those who were excluded from analysis.

Respondents were asked if they ever: “were threatened” or “scared for their safety because of something someone said to them” (*serious cyberbullying victimization*) and if they ever “threatened someone with physical harm” or “made other kids scared of them” on-line (*serious cyberbullying offending*).¹² All dependent measures were binary coded where 1 equaled experience with the behavior and 0 equaled no experience with the behavior.

Independent Variables

Consistent with previous youth violence research, a number of individual-level variables were included in the models both to assess the relationship between demographic characteristics and cyberbullying and to include as controls in multivariate models. Studies of traditional bullying have found that boys are more commonly involved in physical bullying while girls are involved in relational or covert forms of bullying (Olweus et al. 1991; Seals and Young 2003). Traditional bullying research, though, has found mixed results regarding the impact of race and ethnicity (Devoe et al. 2002; Seals and Young 2003). Two dichotomous variables were included in the models as measures of gender and race. Gender was dichotomized into *male* respondents and female respondents (1 = male; 0 = female); race was dichotomized into *white* and non-white (1 = white; 0 = multiracial and all other races).

Previous research has noted that on-line bullies tend to be in high school rather than in middle school (Ybarra and Mitchell 2004), a finding contrary to the age of youth commonly involved in traditional bullying (Nansel et al. 2001).¹³ As such, *age* was included in the models and represented the youth’s age in years. Two additional variables were included to represent the respondent’s level of computer proficiency. Previous research has found that offenders (both

¹²It is possible that the other acts of relational aggression may be very detrimental, especially if they occur with frequency. For the purposes of this analyses, though, we have chosen to label as “serious” those acts that appear to evoke a greater level of personal fear among respondents—threatening physical harm and making others scared for their safety.

¹³An exception to this is found in Rigby (2003) and the phenomenon of “relational bullying,” which is more common among older students than younger and involves damage done to the victim’s relationship with peers.

those who have only offended, as well as those who have been an offender and a victim) tend to use the Internet significantly more frequently and with more proficiency than individuals who only have been victimized (Berson et al. 2002; Ybarra and Mitchell 2004). Youth were asked how many hours per week they are actively on-line and in how many of 13 different on-line activities¹⁴ they participate.

Furthermore, youth were asked about several offline behavioral problems that have been associated with traditional bullying but may or may not be linked to on-line bullying. First, respondents were asked if they had skipped school, cheated on an exam, or been sent home from school for bad behavior in the previous six months (*school problems*) (Ericson 2001; Rigby and Slee 1999). Second, respondents were asked if they got into a fight with other kids (*assault peer*) (Vossekuil et al. 2002) or consumed liquor or smoked marijuana (*substance use*) (Olweus 1999; Rigby 2003) in the previous six months. Finally, respondents were asked about their experiences with traditional bullying; specifically, if they had been a victim of bullying in real life (*off-line victim*) or bullied others in real life (*off-line offender*) in the previous six months. All of the off-line behavior variables were binary coded where 1 equaled experience with the behavior and 0 equaled no experience with the behavior.

ANALYSIS

The goal of the research is to determine which factors are related to involvement in, or experience with, cyberbullying. First, descriptive statistics will be presented to better understand the nature of the sample under consideration. Second, the location of cyberbullying experiences will be explored in order to determine what on-line environment is most conducive to bullying. Third, a series of bivariate logistic regression models will be computed to individually assess

¹⁴On-line activities included: e-mail or chat/IRC; research for school work; file transfer; using the newsgroups; product and travel information; on-line shopping; on-line auctions; on-line games; on-line stock trading; on-line banking; to collect information related to news, sports, or the weather; to collect information related to personal interests and hobbies; and Web design.

the impact of the predictor variables on all forms of cyberbullying. Finally, several multiple logistic regression models will be computed for the purposes of examining the net effect of the adolescent problem behaviors (controlling for gender, race, and age) on *serious* cyberbullying. Logistic regression is the ideal technique for attempting to identify a profile of cyberbullying because it estimates the odds of being a victim or offender based on the independent variables being considered.

FINDINGS

Descriptive Statistics

Our sample consisted of 1,378 respondents under the age of 18 distributed approximately evenly across gender. The vast majority were Caucasian or white (80%) and from the United States (74.6%), and the average age of respondents was 14.8. It is also clear from this study that youth are computer literate, spending an average of 18 hours per week on-line and engaging in over five different on-line activities. Table 1 presents data regarding the respondent's experiences with cyberbullying victimization and offending. For example, over 32% of boys and over 36% of girls have been victims of cyberbullying, whereas about 18% of boys and 16% of girls reported harassing others while on-line. This was illustrated in some of the open-ended feedback we

TABLE 1 General Cyberbullying Victimization and Offending by Location (%)

	Victimization		Offending	
	Male <i>n</i> = 680	Female <i>n</i> = 698	Male <i>n</i> = 680	Female <i>n</i> = 698
Any location	32.7	36.4	18.0	15.6
In a chat room	23.8	24.2	9.6	7.3
By computer text message	17.9	19.8	7.5	7.3
By e-mail	9.7	13.0	2.9	3.4
On a bulletin board	8.7	6.6	3.4	2.4
By cell phone text message	4.0	4.7	1.8	1.6
In a newsgroup	1.0	1.0	0.6	0.1

received; a 14-year-old boy from Canada declared: "Someone sent me numerous emails with like two words in the email like 'you're gay' 'you're dumb' and that kind of stuff. When I am bullied (which is infrequently) I am called homosexual or gay so I'm used to it but it still hurts." Similarly, an 11-year-old girl from California stated "Kristina, a friend from school, said in an e-mail 'tomorrow—we are coming for you.' It made me feel so bad I started to cry. Nobody likes me." These responses underscore the hurtful nature of cyberbullying victimization.

Interestingly, there was no statistically significant difference between boys and girls in terms of their experiences with cyberbullying either as an offender or victim. This is contrary to traditional schoolyard bullying (especially physical bullying), which has largely been a male-dominated affair. The Internet may be the ideal environment in which the more covert forms of bullying commonly employed by girls are effectuated. Youth were most commonly victimized in a chat room or via computer text message, while girls were more likely than boys to report being victimized via e-mail (13% and 9.7%, respectively). Not surprisingly, the patterns in locations of offending are very similar to victimization, with the two most common environments being chat rooms and computer text messages. By way of example, a 13-year-old girl from an unknown location expressed: "It happened on MSN Messenger about a year ago. . . . A girl threatened to kill me. . . . She said she knew my family and where I lived. . . . She'd come at 1 o'clock to kill me. . . . Then logged off. . . . I called my mum and told her. She said I should try to find out who it was, and if it continued we'd call the police. I sent an email to the girl, telling her I'd call the police. She replied and said she was sorry and she was only kidding. In front of her email address, there was her name! It was a girl in my class." Similarly, a 17-year-old boy from California reported the following:

I was talking to someone in a chatroom and they started telling me things. Like was I really that stupid and making fun of me. I told them privately to please stop and they wouldn't. They then told me they were going to harm me and I was scared because I don't know how but they knew where I lived. I am scared sometimes. One time someone

made me feel so bad that I wanted to kill myself because I believe those things that they said. My friends calmed me down and told me not to do anything dumb. I dislike it when people spread rumors online about you and it has happened to mostly everyone who chats.

Logistic Regression Analysis

The next stage of analysis sought to identify variables that are linked (at the bivariate level) to an increased risk of experiencing all forms of cyberbullying (Table 2). Notably, there were no statistically significant differences in offending or victimization by gender or race. That is, boys and girls and whites and nonwhites were equally as likely to experience cyberbullying as an offender or victim. In accordance with intuition, older youth were more likely to report victimization ($p < .05$) and offending (although the increase in offending was not statistically significant). The more time respondents spent on the Internet, and the more computer proficient they were, the more likely they experienced cyberbullying. Finally, a number of off-line maladaptive behaviors appear to be related to cyberbullying. Respondents who reported recent school problems, assaultive behaviors, or

TABLE 2 Bivariate Logistic Regression: Predictors of General Cyberbullying

	Victimization		Offending	
	Coefficient	Exp(B)	Coefficient	Exp(B)
Male	-.162 (.114)	0.851	.170 (.147)	1.185
Age	.064* (.035)	1.066	.020 (.044)	1.021
White	-.026 (.142)	0.975	-.199 (.178)	0.819
Hours per week on-line	.014***(.003)	1.015	.011** (.004)	1.011
Variety of on-line activities	.086***(.025)	1.090	.134***(.032)	1.143
School problems	.302** (.115)	1.352	.390** (.148)	1.476
Assault peer	.490***(.142)	1.632	.347* (.176)	1.414
Substance use	.279* (.127)	1.322	.469** (.156)	1.599
Off-line bully offender	.763***(.136)	2.145	.954***(.161)	2.595
Off-line bully victim	.984***(.121)	2.676	.394** (.151)	1.483

S.E. in parentheses; * $p < .05$; ** $p < .01$; *** $p < .001$.

substance use were more likely than their counterparts to experience cyberbullying, *both as an offender and victim*. All of these relationships were statistically significant ($p < .05$). Additionally, experience with traditional schoolyard bullying was related to an increased risk of experiencing cyberbullying. For example, youth who reported bullying others in real life in the previous six months were more than 2.5 times as likely to report bullying others on-line. Similarly, youth who were victims of traditional bullying in the previous 6 months were more than 2.5 times as likely to be victims of cyberbullying. These findings suggest that there are characteristics unique to some individuals that place them at an elevated risk to be victims or offenders in multiple contexts.

Next, several of the off-line problem behaviors were included in a multivariate model to explain *serious* cyberbullying victimization (Table 3) and offending (Table 4) while controlling for the demographic characteristics. While the initial bivariate results indicated no statistically significant differences between gender and race on all forms of cyberbullying, this stage of the analysis will determine if the relationships between the off-line problem behaviors and serious on-line bullying remain while holding them constant. As expected, almost all of the off-line behavioral problems were related to a statistically significant increase in the risk of serious cyberbullying victimization and offending. These variables, however, did not explain very much of the variation in cyberbullying. Many of the models explained only 1 or 2% of the variation; the most robust predictors were experience with off-line bullying as an offender or victim. For example, off-line bullies are more than five times as likely to bully on-line as those who do not bully off-line (Model 11). According to the Nagelkerke R^2_L , the demographic controls and experience with off-line bullying explained about 10% of the variation in cyberbullying offending. In short, the variables considered in the current study are relevant correlates of cyberbullying; however, additional salient variables still exist and need to be explored. Some of the constructs we hope to explore in future research include self-esteem and self-efficacy because of their link to psychological and emotional ill effects among adolescents (Leary and Downs 1995; Leary, Haupt, Strausser, and Chokel 1998;

TABLE 3 Predictors of Serious Cyberbullying Victimization (Multivariate Logistic Regression)

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Coef.	Exp(B)	Coef.	Exp(B)	Coef.	Exp(B)	Coef.	Exp(B)	Coef.	Exp(B)	Coef.	Exp(B)
Constant	-2.851*	0.058	-2.703*	0.067	-2.552*	0.078	-2.952*	0.052	-3.161*	0.042	-3.940*	0.019
	(.712)		(.720)		(.721)		(.716)		(.755)		(.771)	
Male	.126	1.134	.121	1.129	.129	1.1238	.103	1.109	.048	1.050	.090	1.094
	(.154)		(.155)		(.155)		(.155)		(.161)		(.161)	
Age	.059	1.060	.039	1.039	.029	1.029	.062	1.074	.072	1.074	.108*	1.114
	(.047)		(.048)		(.048)		(.047)		(.049)		(.050)	
White	.159	1.173	.163	1.177	.157	1.170	.151	1.163	.146	1.157	.102	1.107
	(.200)		(.201)		(.201)		(.201)		(.206)		(.207)	
School problems			.312*	1.366								
			(.158)									
Substance use					.468*	1.597						
					(.168)							
Assault peer							.305	1.357				
							(.187)					
Off-line bully									.698*	2.010		
									(.173)			
Off-line victim											.974*	2.648
											(.163)	
Cox and Snell R ² _L	.002		.005		.008		.004		.015		.031	
Nagelkerke R ² _L	.004		.009		.014		.007		.026		.054	

S.E. in parentheses; * $p < .05$.

TABLE 4 Predictors of Serious Cyberbullying Offending (Multivariate Logistic Regression)

	Model 7		Model 8		Model 9		Model 10		Model 11		Model 12	
	Coeff.	Exp(B)	Coeff.	Exp(B)	Coeff.	Exp(B)	Coeff.	Exp(B)	Coeff.	Exp(B)	Coeff.	Exp(B)
Constant	-4.283* (1.084)	0.014	-3.945* (1.111)	0.019	-3.765* (1.100)	0.023	-4.903* (1.115)	0.007	-4.970* (1.170)	0.008	-4.724* (1.132)	0.009
Male	.198 (.231)	1.218	.190 (.232)	1.210	.205 (.232)	1.227	.082 (.235)	1.086	-.008 (.243)	0.992	.191 (.235)	1.210
Age	.118 (.071)	1.125	.067 (.075)	1.069	.066 (.074)	1.068	.140 (.073)	1.151	.122 (.076)	1.130	.137* (.073)	1.147
White	-.456 (.260)	0.634	-.451 (.262)	0.637	-.464 (.262)	0.629	-.512 (.265)	0.599	-.451 (.269)	0.637	-.501 (.263)	0.606
School problems			.795* (.243)	2.214								
Substance use					.749* (.241)	2.114						
Assault peer							1.348* (.239)	3.851				
Off-line bully									1.616* (.241)	5.032		
Off-line victim											.572* (.235)	1.772
Cox and Snell R ² _L	.004		.013		.011		.025		.039		.010	
Nagelkerke R ² _L	.012		.035		.031		.070		.104		.026	

S.E. in parentheses; * $p < .05$.

Leary, Schreindorfer, and Haupt 1995; Leary, Tambor, Terdal, and Downs 1995).

DISCUSSION

Cyberbullying as a growing phenomenon is receiving much attention by the popular media, and various news outlets are publishing reports, case studies, and stories on the subject matter. Some data on cyberbullying have been collected by information technology research firms and social service agencies, but they have provided us with an underdeveloped picture of the prevalence of this particular form of deviance. Results from the current study revealed a number of important issues that warrant discussion. First, findings indicate that cyberbullying does not discriminate based on gender or race.¹⁵ The gender finding is surprising as it contradicts a significant body of traditional bullying research that indicates boys are involved in bullying more often than girls (Borg 1999; Boulton and Underwood 1992; Charach, Pepler, and Ziegler 1995; Espelage, Bosworth, and Simon 2000; Kaltiala-Heino et al. 1999; Kumpulainen, Rasanen, and Henttonen 1999; Kumpulainen, Rasanen, and Puura 2001; Seals and Young 2003). However, research has consistently noted that adolescent girls tend to participate in more indirect forms of bullying, including psychological and emotional harassment (e.g., rumor spreading) (Baldry 1998; Crick 1996; Crick, Casas, and Mosher 1997; Crick and Grotpeter 1995). Given the fact that the vast majority of cyberbullying behaviors involve these indirect forms of harassment, it makes sense that girls appear equally as likely to be participants. The race finding is not altogether unexpected as studies examining its distribution across traditional bullying offending and victimization are largely inconclusive

¹⁵Overall, research on gender and racial differences among *traditional crimes* is arguably inconclusive. Racial disparity can be explained away with differential arrest rates (Huizinga and Elliott 1987; Sealock and Simpson 1998; Tracy 1987) and socioeconomic factors, and gender disparity may be an artifact of hesitance on the part of criminal justice authorities to take action against women (Decker, Wright, Redfern, and Smith 1993; Pollack 1950; Steffensmeier 1980). Although future research is clearly required on crimes in both real space and cyberspace, the findings from the current study suggest that some forms of deviance do not neatly fall along certain demographic lines.

(Graham and Juvonen 2002; Nansel et al. 2001; Seals and Young 2003; Siann, Callahan, Glissov, Lockhart, and Rawson 1994; Sweeting and West 2001). That said, it may simply be that certain demographic characteristics such as race and gender are rendered less relevant in an environment where interpersonal communication occurs predominantly through electronic text.

An alternative explanation is that historically less powerful groups may be more powerful (or at least not disadvantaged) when on-line. Minority groups (irrespective of race or ethnicity), although potentially unpopular on the schoolyard, may not be exposed as marginal on the Internet. Moreover, youth who may not stand up for themselves on the playground may be more likely to do so via computer communications if the perceived likelihood of retaliation is minimized. Targets may be “turning the table” on bullies because of the equalizing characteristics of the Internet and its ability to preempt the relevance of physical intimidation. That is, victims of traditional bullying may seek retribution through technological means (e-mail, instant message, or cellular phone text message) by contacting those aggressors who have harassed them. Some might contend that bullying in the traditional sense requires certain personal or physical traits and qualities that an individual either has or does not have (such as physical prowess or social competence); cyberbullying requires no such personal traits and can be manifested simply through the outward expression of hate. This fact means that at the very beginning, a wide net of potential participants in the phenomenon is cast, which as a consequence can exponentially increase the number of offenders and victims—and the negative outcomes that often follow.

Second, the current work exposed a link between cyberbullying and traditional schoolyard bullying. Youth who are bullied at or near school are significantly more likely to be a victim of cyberbullying; those who bully off-line also appear to bully on-line. A 13-year-old girl from Canada related the following experience:

The last time I was bullied online, I was on MSN (instant messaging) talking to some people from school. Someone from my class who doesn't like me started talking shit about me

to everyone else. And a bunch of people that she had been talking to came and started harassing me. They were talking about how I had bad grades in math and how I bite my fingernails and other stupid stuff like that. They still say stuff about me at school and make things up about me and tell everyone.

These findings indicate that the factors associated with traditional bullying behaviors might also be associated with cyberbullying. It may simply suggest that computers and the Internet are new tools which can be employed to augment traditional behaviors and activities (Tarde [1890] 1903). Indeed, bullies may just be adapting to technological change and employing a different medium to harass and mistreat. Those predisposed to harass and mistreat their peers perhaps choose to do so regardless of context—in real space or in cyberspace.

Along these lines, traditional criminological theory may help to inform the connection between off-line and on-line bullying. For example, all forms of bullying may be learned behavior (Akers 1985), a manifestation of some latent trait such as low self-control (Gottfredson and Hirschi 1990), a response to strain (Agnew 1992; Hinduja and Patchin 2007), or an attempt at regaining a balance of control in a person's life (Tittle 1995). Concerning victims, the characteristics that render certain adolescents vulnerable to bullying in school may also be relevant on the Internet. Our results identified a subgroup of youth who experience bullying while at school during the day *and* while in front of their home computer at night. Research should seek to determine what makes these youth attractive targets in multiple environments; victimology theories may illuminate contributive factors (Von Hentig 1948). Overall, each of these speculations is important to assess and requires additional scholarly inquiry.

Finally, the qualitative details provided by victims also attest to the virulent nature of cyberbullying. Many youth reported being physically threatened ("I was in a chat room and someone threatened to beat me up because we liked the same girl." "I was sent death threats via email from somebody I knew from school"). A 14-year-old girl from Texas stated: "I think it's just as bad as bullying in person, only harder to be detected. They don't know who it is that is

bullying them so they have to continue to endure it. I think it's horrible and people should stop bullying." A 17-year-old girl reiterates this point:

Bullying online is terrible because it affects the mind more than the body. It makes me feel so annoyed that people can harm others over a computer. People can say things online to make people more scared than if they were being physically threatened. People feel more vulnerable online than they would elsewhere. Bullying online is really bad because it is mental bullying which is sometimes worse than physical bullying, and can cause people to do stupid things. It makes me angry.

Despite the important contributions of the present study, it is not without limitations. The most notable of these has to do with its methodology, as the data collection took place entirely through a Web-based format. Research has identified that concerns related to the generalizability of data collected via the Internet assume that a random sample is sought (Walther 2002:209). The current work employed a convenience sample, where individuals were chosen for study because they are available (or, in this case, because they visited a particular website and saw a solicitation to participate in our research). It is not possible to generalize the findings from this study to a larger population of youth or even only youth on-line (Couper 2000) because of the nature of the methodology. Nonetheless, this procedure has value in exploring a novel phenomenon such as cyberbullying. Also deserving comment is the fact that it is not possible to fully know that each respondent to an on-line survey was completely accurate in their representation of who they are, and what experiences with cyberbullying they have had. It is unreasonable to believe, though, that just because a questionnaire is presented to a respondent in electronic rather than a paper-based format, that the respondent will be less likely to be truthful (Walther 2002). Given these potential limitations, however, future research ought to replicate this study using a more methodologically-controlled sample.

Two final methodological points warrant mention. First, precautions were taken to construct a proportional sample, but the final sample demographics were markedly skewed in terms of the gender and race distribution. As such,

application of the findings to other populations must be exercised with care. Second, the study employed a cross-sectional design that only gathered data on individuals at one time point in their development. It is therefore impossible to determine if school problems predict cyberbullying victimization or if victims of cyberbullying subsequently get into trouble at school. Although it is useful to know that the behaviors are linked, future studies must seek to identify the temporal ordering of these life events to better understand how they can be ameliorated.

The current work identified certain factors that make some individuals more likely than others to be involved in cyberbullying offending or victimization. What seems to most logically follow in terms of policy solutions is to ensure that those involved in traditional bullying are aware of their susceptibility to the on-line variety, and to present them with a systematic plan of action to preclude such an outcome. The Internet is replete with safety tips, and various top-ten precautionary lists to instruct adults that have children who are frequently on-line. In addition, software is available for adults to install on home computers to filter certain content from the eyes of innocent youth. Neither of these measures, however, are exhaustive or inerrant in their goal to prevent victimization. Research by Berson and colleagues (2002), for example, identified the utility of ongoing discussions by parents, caregivers, or teachers with children about the latter's interactions through the computer. In that study, direct supervision or periodic monitoring of adolescents' on-line activities also proved advantageous in reducing the likelihood of unhealthy social choices on the Internet. Other research has supported such a strategy, and has stressed the importance of positive caregiver-child relationships—which have been shown to decrease the likelihood of on-line offending (Ybarra and Mitchell 2004). The onus of responsibility, though, is not solely placed on the shoulders of parents and guardians. Attenuating the problem of cyberbullying will necessarily involve contributions from multiple stakeholders, including counselors, school teachers and administrators, and law enforcement. Moreover, researchers should continue to pursue this line of inquiry to further inform our understanding of the causes and consequences of violence perpetrated via the Internet.

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