Trends in Cyberbullying and School Bullying Victimization in a Regional Census of High School Students, 2006-2012

SHARI KESSEL SCHNEIDER, MSPH[a] LYDIA O'DONNELL, EdD[b] ERIN SMITH, MPH[c]

─────── ABSTRACT ───────

BACKGROUND: Schools are increasingly being called upon to address cyberbullying and its consequences. This study compares cyberbullying and school bullying trends and examines help-seeking among cyberbullying victims.

METHODS: We analyzed self-report data over 4 surveys (2006-2012) from more than 16,000 students in 17 MetroWest Boston high schools. Using generalized estimating equations, we examined school and cyberbullying victimization trends by sex, grade, and sexual orientation.

RESULTS: From 2006 to 2012, cyberbullying increased from 15% to 21% (p < .001). In 2006, school bullying was 1.7 times higher than cyberbullying (26% versus 15%); by 2012, school bullying and cyberbullying were similar (23% versus 21%). Cyberbullying increased more among girls (17% to 27%; p < .001) than boys (12% to 15%; p < .001). There was no net increase in school bullying among girls (26% in 2006 and 2012) and a decrease among boys (25% to 18%; p < .001). Sexual minorities were more likely than heterosexuals to be bullied at school and online at every survey. Only 33% of cyberbullying victims told an adult; more victims told parents/non-school adults (29%) than school adults (17%).

CONCLUSIONS: Despite decreases in school bullying, cyberbullying rose steadily, particularly among girls. Increased attention to sociodemographic differences in bullying could promote help-seeking and positive online behavior.

Keywords: adolescents; cyberbullying; school bullying; help-seeking.

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Cyberbullying has continued to garner substantial media attention because of its attribution to high-profile suicides among victims[1] and the steady introduction of social networking applications through which cyberbullying can occur. Concern over cyberbullying and its impact on students' well-being at school has brought about anti-bullying legislation in many states, increasing the roles and responsibilities of schools to address online incidents even if they occur off of school property.[2] Yet, because cyberbullying is still a relatively new phenomenon, there is little research on trends in cyberbullying to inform the strategies of school- and community-based anti-bullying efforts.

Whereas definitions of cyberbullying vary, it is commonly thought to encompass acts of intentional and repeated harm that occur through online communications of text and images via computers, mobile phones, and other electronic devices. Some studies estimate that between 11% and 18% of youth are victims of cyberbullying,[3-8] with variation based on the types of acts, time frames, and populations studied. Most research has shown that cyberbullying victimization is higher among girls than boys;[5,9] the 2011 national Youth Risk Behavior Survey found twice as many girls (22%) were electronically bullied compared with boys (11%).[3] Cyberbullying victimization is also about twice as high among sexual

minority youth,[8,10] who are also more likely than heterosexuals to be victimized in school settings.[11-13]

With 95% of youth ages 12-17 being online as of September, 2012,[14] the nature of how youth relate to each other has changed in positive and negative ways. One of the most notable trends is the pervasive use of social networking sites, some of which include anonymous postings, polls, and other features that provide opportunities for online bullying. About 80% of youth are users of social media sites, and 88% of these users have witnessed acts that were cruel or mean.[15]

Another important shift in digital communications is the increasing use of mobile phones to access the Internet. According to the Pew Research Center, smartphone ownership among teens grew substantially from 23% in 2011 to 37% in 2012. Of the 78% of youth reporting cell phone ownership in 2012, nearly half (47%) had smartphones, and 25% accessed the Internet mostly on a cellular phone.[14] This increasing ownership of smartphones has expanded teens' access to social networking sites and has made it more difficult for parents and schools to monitor adolescent online behavior.

These shifts in digital communications, in combination with research documenting associations of cyberbullying with negative school outcomes,[16,17] have focused schools' attention on preventing and intervening in cyberbullying. There is growing evidence that cyberbullying is associated with negative school consequences, including poor academic achievement, lower levels of school attachment,[8,18] poor self-esteem,[19] and anxiety about coming to school.[20] In addition, consistent with research on school bullying, cyberbullying has been linked with psychological distress, including major depression,[21,22] self-harm, and suicide.[23-25] Yet, little is known about how the prevalence of cyberbullying has changed over time and how it compares with trends in school bullying. Research has shown, both nationally and internationally, either stability or declines in traditional forms of bullying over the last decade.[26,27] In the United States, Finkelhor et al[6] found a decrease in bullying from 22% in 2003 to 15% in 2008. The National Crime Victimization Survey showed similar rates of bullying in 2005 and 2009, with a small peak in 2007,[28] and the national Youth Risk Behavior Survey data showed stable reports of 20% from 2009 to 2013.[29]

Only a few studies have collected longitudinal data to examine trends in cyberbullying; lack of consistency in how cyberbullying is defined and the limited number of data points used to identify trends makes it difficult to draw conclusions from the findings. Jones et al[30] found a near doubling in ''online harassment'' over 3 time points, from 6% in 2000 to 11% in 2010. The School Crime Supplement of the National Crime Victimization Survey also found in increase in cyberbullying over 2 time points, from 6% in 2009[31] to 9% in 2011.[32] In contrast, a study by MTV, the Associated Press, and the University of Chicago found a substantial decrease in ''digital abuse'' from 2011 to 2013;[33] however, their definition of digital abuse encompasses many behaviors not typically considered cyberbullying.

Another factor that complicates estimates of cyberbullying trends is the potential underreporting due to victims' reluctance to seek help. Researchers have found that a large number of youth do not seek help from adults: Unnever and Cornell[34] found that 40% of school bullying victims do not tell an adult, and Brown et al[35] found that 75% of victims do not tell an adult. Further, youth are less likely to tell an adult in situations of indirect bullying, such as social exclusion and spreading rumors, in comparison with physical or direct verbal bullying.[36] Insofar as indirect bullying can occur through electronic communications, cyberbullying victims may be particularly unlikely to seek help from adults.

The MetroWest Adolescent Health Survey, a regional census of MetroWest Boston high school youth conducted biennially since 2006, is one of only a few studies that began collecting data on cyberbullying early enough to be able to measure trends. It is unique in that it allows for a comparison of both school bullying and cyberbullying over time, and analyzes trends over 4 time points, which is, to our knowledge, more than other published studies to date. In this study, we examined victimization trends among students of different sexes, grades, and sexual orientations to determine whether cyberbullying may differentially affect groups known to be vulnerable to cyberbullying, including girls and sexual minority youth, and whether reports of victimization decrease with grade. Last, we explored whether victims of cyberbullying seek help from adults, and whether they are more likely to talk to adults at school or parents/non-school adults about their victimization experiences.

METHODS

The MetroWest Adolescent Health Survey (MWAHS) is a school-based census of youth in 25 suburban Boston communities funded by the MetroWest Health Foundation. The survey generates school-level data to inform local policies, programs, and prevention efforts and regional data to inform large-scale health initiatives.

Participants

Among 26 public high schools in the region, 17 schools participated in all 4 survey administrations

Table 1. **MetroWest Adolescent Health Survey Participants, 2006-2012**

	2006		2008		2010		2012	
	%	N	%	N	%	N	%	N
Girls	49.7	8,080	50.1	8,283	50.2	8,382	50.9	8,594
Boys	50.3	8,193	49.9	8,244	49.8	8,321	49.1	8,300
9th	27.2	4,426	27.0	4,463	27.0	4,526	27.0	4,568
10th	25.6	4,171	26.2	4,334	25.5	4,275	25.6	4,333
11th	24.7	4,020	24.8	4,105	24.8	4,146	25.1	4,248
12th	22.6	3,684	22.1	3,652	22.6	3,791	22.3	3,779
White	76.4	12,442	74.4	12,318	72.9	12,224	72.7	12,306
Nonwhite/mixed	23.6	3,850	25.6	4,229	27.1	4,537	27.3	4,619
Sexual minority	6.1	989	6.2	1,022	7.4	1,223	8.3	1,385
Heterosexual	93.9	15,139	93.8	15,342	92.6	15,290	91.7	15,295
Total	100.0	16,385	100.0	16,634	100.0	16,857	100.0	17,089

from 2006 to 2012 and are included in this analysis. Four of these schools had fewer than 750 students, 7 had 750-1000 students, and 6 had more than 1000 students. Students in grades 9-12 were surveyed at each school. Student participation rates ranged from 89% to 90% over the 4 time points, and the number of students that completed surveys at each time point ranged from 16,385 to 17,089. The main reason for nonparticipation was student absence on the day of the survey. In any given year, less than 1% of students were opted out by a parent/guardian, and less than 2% of students chose not to participate.

Student demographics were similar across all 4 administrations in terms of sex and grade (Table 1). The proportion of white students decreased slightly, and the proportion of sexual minority youth (gay/lesbian, bisexual, or other/not sure) increased slightly from 2006 to 2012.

Instrumentation

The MWAHS is a self-report survey based on the Centers for Disease Control and Prevention's Youth Risk Behavior Survey[37] with additional questions to monitor emerging trends and local concerns. Questions on school bullying and cyberbullying victimization in the past 12 months were included at all 4 time points. School bullying was defined as "when one or more students tease, threaten, spread rumors about, hit, shove, or hurt another student over and over again on school property" and students were asked: "During the past 12 months, how many times have you been bullied on school property?" Subsequently, responses were dichotomized as yes or no. Regarding cyberbullying, students were asked: "During the past 12 months, how many times has someone used the Internet, cell phones, or other electronic devices to bully, tease, or threaten you?" with responses again dichotomized as yes or no. The phrase, "spread rumors," was added to the cyberbullying question in 2010 and 2012. To assess help-seeking behaviors in

2012, participants were asked how many times they had talked to an "adult at school" and a "parent or other adult outside of school" about being cyberbullied during the past 12 months.

Procedure

The MWAHS was administered during October-November of 2006, 2008, 2010, and 2012. It is an anonymous and voluntary paper-and-pencil survey administered in a classroom setting. Parents are notified in advance and given the opportunity to opt their children out of participation. Survey administration across schools is standardized through use of a common protocol. Students are given the opportunity to choose whether or not to take the survey or to skip individual questions.

Data Analysis

The analysis included all 17 high schools that participated in each of the 4 survey administrations. There were 9 additional high schools in the region that were excluded because they began participation in the MWAHS in 2008 or later (8 schools) or skipped a year of participation (1 school). These 9 schools did not differ notably from the 17 schools included in the analysis in terms of student sex, age, socioeconomic status, or bullying prevalence.

At each time point, we examined the prevalence of cyberbullying and school bullying victimization separately, as well as reports of any (school *and/or* cyberbullying) and both (school *and* cyberbullying) forms of victimization. We examined trends in these outcomes overall and stratified by sex, grade, and sexual orientation. To test for trends from 2006 to 2012, we conducted regression analyses in which we tested for the linear, quadratic, and cubic effects of year. We then tested whether changes from 2006 to each subsequent year (2006 to 2008, 2006 to 2010, and 2006 to 2012) were statistically significant. All analyses adjusted for sex, grade, race/ethnicity, and sexual orientation. We used generalized estimating equations as our regression approach to take into account that the data were multilevel due to school-level clustering. Analyses were conducted using SPSS version 22 (IBM, Armonk, NY).

RESULTS

Trends in Cyberbullying Victimization

Figure 1 shows the prevalence of cyberbullying and school bullying overall, and by sex, at each of the 4 surveys. From 2006 to 2012, the prevalence of cyberbullying victimization increased by a total of 6 percentage points, from 15% to 21%. A significant upward linear effect (adjusted odds ratio [AOR] = 1.37; 95% confidence interval [CI] = 1.28, 1.46; $p < .001$)

and a downward cubic effect (AOR = 0.93; CI = .90, .96; p < .001) were found for the change in cyberbullying from 2006 to 2012. As can be seen in the figure, this suggests an increase followed by a leveling off over the years. Compared to 2006, cyberbullying was significantly higher in 2008 (AOR = 1.08; CI = 1.01, 1.15; p = .02), in 2010 (AOR = 1.45, CI = 1.37, 1.54; p < .001), and in 2012 (AOR = 1.57; CI = 1.48, 1.67; p < .001) (Table 2).

Across the 4 survey years, cyberbullying was significantly higher in 2012 than 2006 for both sexes (p < .001 for each), for heterosexual youth (p < .001) but not sexual minority youth, and for each of grades 9-12 (p < .001 for each) (Table 2). Specifically, cyberbullying victimization increased among girls across all 4 time points, from 17% in 2006 to 27% in 2012, whereas victimization among boys rose from 12% to 15%. There was also an increase in cyberbullying at every time point among heterosexual youth, from 14% in 2006 to 20% in 2012. Among sexual minority youth, cyberbullying increased from 29% in 2006 to 35% in 2010, but then decreased to 32% in 2012 (a net increase of 3 percentage points). Whereas the increase over time was greater among heterosexual than sexual minority youth—a finding that holds for both sexes (data not shown)—at each time point sexual minority girls and boys reported substantially higher cyberbullying victimization than heterosexual youth.

The increase over time in cyberbullying victimization was observed at all grade levels. For example, cyberbullying increased from 16% in 2006 to 23% in 2012 among 9th-grade students, and from 12% to 19% among 12th-grade students. At each time point, cyberbullying victimization was more commonly reported by youth in the lower grades (9-10) compared with the higher grades (11-12).

Trends in School Bullying Victimization

School bullying victimization was more prevalent than cyberbullying victimization at all 4 time points (Figure 1 and Table 2). Whereas reports of cyberbullying victimization increased at each time point from 2006 to 2012, overall reports of school bullying victimization increased from 2006 to 2010 (from 26% to 28%) and then decreased to 23% in 2012, a net decrease of 3 percentage points over the 4 surveys. Both the initial upward and then lowering reports of school bullying from 2006 to 2012 were statistically significant; there was a statistically significant upward linear effect (AOR = 1.13; CI = 1.07, 1.19; p < .001), and downward quadratic effect (AOR = .92; CI = .90, .94; p < .001), and cubic effect (AOR = .92; CI = .90, .95; p < .001). Compared to 2006, school bullying was not significantly different in 2008, was significantly higher in 2010 (AOR = 1.13; CI = 1.08,

1.19; p < .001) and was significantly lower in 2012 (AOR = .83; CI = .79, .87; p < .001). Boys' reports of school bullying victimization were similar from 2006 to 2010 (both around 25%) and then dropped notably to 18% in 2012 (a significant decrease of about 6 percentage points comparing 2006 to 2012; p < .001). In contrast, school bullying among girls rose from 26% in 2006 to 31% in 2010 and then dropped back to 26% in 2012. Whereas school bullying was only slightly higher among girls than boys in 2006 (26% versus 25%), the difference in experiences by sex increased substantially by 2012 (26% versus 18%).

Overall, school bullying victimization was significantly lower in 2012 than in 2006 among both sexual minority youth and heterosexual youth; however, temporal changes in school bullying by sexual orientation varied by sex. Among sexual minority youth of both sexes and heterosexual boys, reports of victimization remained constant from 2006 to 2010 and then dropped in 2012; in contrast, reports of school bullying victimization among heterosexual girls remained constant throughout (data not shown). Consistent with findings for cyberbullying, school bullying victimization was substantially higher among sexual minority youth than heterosexual youth at every time point; this finding holds for both boys and girls.

Comparing 2006 to 2012, there were significant declines in school bullying in grades 9 through 11 (ranging 3 to 8 percentage points), with the greatest decline among 9th-grade youth (p < .001). In contrast, school bullying increased significantly among 12th-grade youth by 2 percentage points (p < .05). In 2006, the prevalence of school bullying among 9th-grade students was nearly double that of 12th-grade students (32% versus 17%), but by 2012, reports were more similar (25% versus 19%).

Trends in Overall Reports of Any Victimization

Table 2 presents trends in overall bullying victimization (school and/or cyberbullying). The proportion of students reporting either or both forms of victimization was similar in 2006 and 2012 (31% versus 32%; n.s.). When broken down by sex, however, reports of victimization increased significantly among girls from 33% in 2006 to 39% in 2012 (p < .001) and decreased significantly among boys from 30% in 2006 to 26% in 2012 (p < .001). Given the steady reports of school bullying among girls, the increase in overall victimization largely reflects an increase in cyberbullying.

With respect to sexual orientation, overall victimization was lower in 2012 compared with 2006 among sexual minority youth (47% versus 50%; n.s.), but similar among heterosexual youth (31% versus 30%; n.s.). Victimization increased among heterosexual girls but remained similar among sexual minority girls. Victimization decreased similarly

Figure 1. **Trends in Past 12-Month Cyberbullying and School Bullying, Overall and by Sex, 2006-2012.**
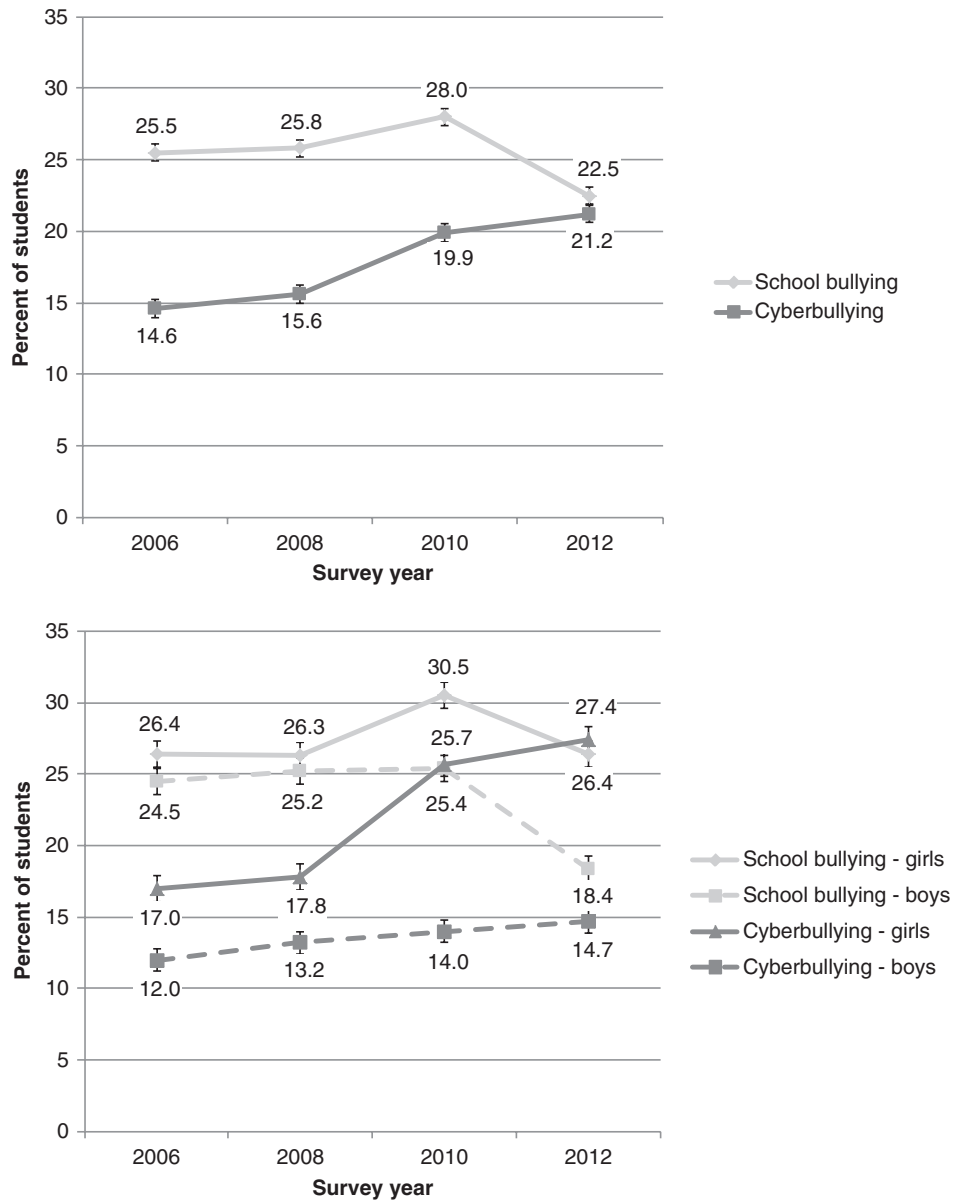
among heterosexual and sexual minority boys (data not shown). Despite these changes, sexual minority youth of both sexes continue to report substantially higher victimization than their heterosexual peers.

Reports of overall victimization increased from 2006 to 2012 among 12th-grade students (from 22% to 28%; p < .001), but declined slightly among 9th-grade students (from 38% to 36%; p < .01). This pattern varied by sex (data not shown). At each grade level, girls were more likely to report overall victimization in 2012 than 2006, whereas 9th- to 11th-grade boys reported less victimization over time. At each time point, however, both boys and girls in lower grades

were more likely to report some form of bullying victimization.

Trends in the Overlap Between Cyberbullying and School Bullying

In 2006, about one third of school bullying victims (35%) also reported being victims of cyberbullying; by 2012, this proportion increased to 50%. Conversely, the proportion of cyberbullying victims who also reported school bullying victimization decreased from 60% in 2006 to 53% in 2012. Whereas these trends held for both sexes, they were more pronounced among girls than boys. For example, the proportion of school bullying victims that also reported cyberbullying

Table 2. Percentage of Students Who Report Past 12-Month Bullying Victimization, MetroWest Adolescent Health Survey, 2006-2012

	Cyberbullying Victimization					School Bullying Victimization					Any Victimization (School and/or Cyber)				
	2006 N= 16,385 % (95% CI)	2008 N= 16,634 % (95% CI)	2010 N= 16,857 % (95% CI)	2012 N= 17,089 % (95% CI)	2006-2012 % Point Change†	2006 N= 16,385 % (95% CI)	2008 N= 16,634 % (95% CI)	2010 N= 16,857 % (95% CI)	2012 N= 17,089 % (95% CI)	2006-2012 % Point Change†	2006 N= 16,385 % (95% CI)	2008 N= 16,634 % (95% CI)	2010 N= 16,857 % (95% CI)	2012 N= 17,089 % (95% CI)	2006-2012 % Point Change†
Total	14.6 (14.0, 15.1)	15.6* (15.0, 16.1)	19.9*** (19.3, 20.5)	21.2*** (20.6, 21.8)	+6.6	25.5 (24.8, 26.1)	25.8 (25.2, 26.5)	28.0*** (27.4, 28.7)	22.5*** (21.9, 23.2)	−3.0	31.3 (30.6, 32.0)	32.1 (31.4, 32.9)	35.4*** (34.7, 36.1)	32.4 (31.7, 33.1)	+1.1
Girls	17.0 (16.2, 17.9)	17.8 (17.0, 18.7)	25.7*** (24.7, 26.6)	27.4*** (26.5, 28.4)	+10.4	26.4 (25.4, 27.3)	26.3 (25.4, 27.3)	30.5** (29.5, 31.5)	26.4	0.0	33.0 (31.9, 34.0)	33.3 (32.3, 34.4)	39.7** (38.7, 40.8)	38.6*** (37.6, 39.7)	+5.6
Boys	12.0 (11.3, 12.8)	13.2* (12.4, 13.9)	14.0** (13.3, 14.8)	14.7*** (14.0, 15.5)	+2.7	24.5 (23.6, 25.4)	25.2 (24.3, 26.2)	25.4 (24.5, 26.4)	18.4*** (17.6, 19.3)	−6.1	29.5 (28.5, 30.5)	30.8 (29.8, 31.8)	30.9 (29.9, 31.9)	25.9*** (24.9, 26.8)	−3.6
Sexual minority	28.6 (25.9, 31.5)	32.8 (30.0, 35.8)	34.6** (32.0, 37.3)	31.5 (29.1, 34.1)	+2.9	43.2 (40.2, 46.4)	42.7 (39.7, 45.8)	42.7 (39.9, 45.5)	35.8*** (33.3, 38.3)	−7.4	49.9 (46.8, 53.1)	53.0 (49.9, 56.1)	53.1 (50.3, 55.9)	46.8 (44.2, 49.5)	−3.1
Heterosexual	13.6 (13.0, 14.1)	14.3 (13.8, 14.9)	18.7*** (18.1, 19.3)	20.3*** (19.7, 20.9)	+6.7	24.2 (23.5, 24.9)	24.7 (24.1, 25.4)	26.7*** (26.0, 27.4)	21.2*** (20.5, 21.8)	−3.0	30.0 (29.2, 30.7)	30.7 (30.0, 31.4)	33.9*** (33.1, 34.6)	31.1 (30.3, 31.8)	+1.1
9th	15.9 (14.8, 17.0)	16.6 (15.6, 17.8)	20.1*** (19.0, 21.3)	23.0*** (21.8, 24.2)	+7.1	33.2 (31.8, 34.6)	32.2 (30.8, 33.6)	32.8 (31.4, 34.2)	25.3*** (24.1, 26.6)	−7.9	38.3 (36.9, 39.8)	38.0 (36.6, 39.5)	39.2 (37.8, 40.7)	35.6** (34.2, 37.0)	−2.7
10th	15.8 (14.7, 16.9)	16.9 (15.8, 18.1)	21.1*** (19.9, 22.4)	22.3*** (21.1, 23.6)	+6.5	27.9 (26.6, 29.3)	29.0 (27.7, 30.4)	30.0* (28.7, 31.4)	25.4** (24.1, 26.7)	−2.5	34.4 (33.0, 35.9)	35.3 (33.9, 36.7)	37.5* (36.1, 39.0)	35.5 (34.1, 36.9)	+1.1
11th	13.9 (12.9, 15.0)	14.6 (13.6, 15.7)	20.3*** (19.1, 21.6)	19.9*** (18.7, 21.1)	+6.0	22.2 (20.9, 23.5)	22.3 (21.1, 23.6)	25.1* (23.8, 26.4)	19.7* (18.6, 21.0)	−2.5	28.1 (26.8, 29.6)	29.1 (27.7, 30.5)	33.0*** (31.5, 34.4)	29.5 (28.1, 30.9)	+1.4
12th	12.1 (11.1, 13.2)	13.5 (12.4, 14.6)	17.5*** (16.3, 18.7)	19.3*** (18.0, 20.6)	+7.1	16.6 (15.5, 17.9)	18.2 (17.0, 19.5)	23.1*** (21.8, 24.5)	18.9* (17.7, 20.2)	+2.3	22.4 (21.1, 23.8)	24.5* (23.1, 25.9)	30.8*** (29.3, 32.3)	28.4*** (26.9, 29.8)	+6.0

* p < .05; ** p < .01; *** p < .001 indicating statistical significance of change in bullying in each year relative to 2006, based on generalized estimating equations models, adjusting for sex, sexual orientation, race/ethnicity, and grade (except when stratifying by one of these variables).
† Net percentage point change from 2006 to 2012.

increased from 40% to 58% among girls, and from 29% to 39% among boys.

We also examined the proportions of students that reported *both* cyberbullying and school bullying victimization over time (data not shown). The proportion of youth reporting both forms of victimization was significantly higher in 2012 (11%) than 2006 (9%; p < .001). Among girls, reports increased from 10% to 15%; p < .001), whereas among boys, reports were similar across the 4 surveys. Heterosexual youth were significantly more likely to report being victims of both forms of bullying in 2012 compared with 2006 (p < .001), whereas there were no significant differences among sexual minority youth. Students in each of grades 9 to 12 were also significantly more likely to report both forms of bullying in 2012 relative to 2006.

Help-Seeking Among Cyberbullying Victims

In 2012, only one third (33%) of cyberbullying victims reported that they told an adult about being cyberbullied in the past 12 months (Table 3). Girls were more likely to tell an adult (39%) compared with boys (22%) (p < .001). Across both sexes, youth were more likely to tell a parent/non-school adult (35% for girls, 18% for boys; p < .001) compared with a school adult (20% for girls, 12% for boys; p < .001).

Grade differences in reports of help-seeking are small, with students in 12th grade slightly more likely to tell an adult about being victimized than younger students. Overall reports of help-seeking among sexual minority and heterosexual youth also did not vary substantially (35% and 33%, respectively; n.s.). However, heterosexual boys were far less likely to tell an adult (20%) compared with sexual minority boys (33%), whereas sexual minority girls were only slightly less likely to tell an adult (36%) than heterosexual girls (39%) (data not shown). Both boys and girls were more likely to tell a parent/non-school adult compared with a school adult, regardless of sexual orientation.

DISCUSSION

This study is, to our knowledge, the first to monitor trends in cyberbullying over as many as 4 time points. It is also the first study large enough to examine trends among subgroups particularly vulnerable to bullying victimization, including sexual minority girls and boys. Although most studies of online trends have not considered other forms of victimization, our study is unique in that it examined trends in cyberbullying relative to school bullying and their overlap, providing more comprehensive data to inform school-based anti-bullying efforts.

From 2006 to 2012, we found a steady increase in cyberbullying from 15% to 21%, despite a recent downturn in school bullying. This increase in cyberbullying is consistent with media reports and research studies of online harassment[30] and cyberbullying.[32] Whereas reports of cyberbullying were much lower than school bullying in 2006 (15% and 26%, respectively), by 2012, reports of cyberbullying and school bullying were similar (21% and 23%). This lessening gap shows a shift in victimization toward the digital realm. This is important in light of research that shows that cyberbullying may be more strongly associated with mental health problems than school bullying.[8]

The increase in cyberbullying was especially notable among girls (a 10 percentage point increase) relative to boys (a 3 percentage point increase), widening the gap in experiences of online victimization among girls and boys. Prior research on bullying has shown that girls more commonly report being victims of "relational bullying," including verbal bullying and spreading rumors.[38,39] Girls are also more likely to be victims of bullying that is less confrontational, such as exclusion. These types of bullying can occur easily through social media and other online communications that are commonly utilized by girls.[14]

Heterosexual youth also reported a greater increase in cyberbullying than sexual minority youth, even though sexual minority youth continue to experience disproportionately more victimization both at school and online. One possible explanation is that school-based efforts, such as Gay Straight Alliances (student-run clubs that work to provide a safe school environment for sexual minority youth)[40] and school anti-bullying policies that specifically mention the rights of sexual minority youth may have increased awareness of the targeting of sexual minority youth and promoted a no-tolerance approach that may offer some protection for this vulnerable group. Whereas cyberbullying still increased among sexual minority youth during the study period, these efforts may explain why this increase was not as large as the increase for heterosexual youth. Nonetheless, greater attention is needed to address the disparate victimization that continues to be experienced by sexual minority youth, both online and at school.

In addition, we found that there are notable overlaps in school bullying and cyberbullying as well as shifts in the proportion of youth experiencing both forms of victimization. The proportion of school bullying victims who also reported cyberbullying rose over the 4 surveys; by 2012, half of school bullying victims also reported being cyberbullied. This suggests that, despite an overall decline in the prevalence of school bullying victimization, school bullying victims are increasingly being targeted online. Conversely, there was a slight decrease in the proportion of cyberbullying victims that report school bullying (from 60% in 2006 to 53% in 2012). Whereas this indicates that

Table 3. Help-Seeking Behaviors Among Cyberbullying Victims,*MetroWest Adolescent Health Survey, 2012

	All Cyberbullying Victims (N = 3,586)					
	Told School Adult (%)	p-Value	Told Parent/ Non-School Adult (%)	p-Value	Told Any Adult[†](%)	p-Value
Total	17.0		29.3		32.9	
Female	19.6	<.001	35.3	<.001	38.9	<.001
Male	12.2		18.0		21.7	
9th	16.3	.047	29.3	0.489	32.8	0.449
10th	15.0		29.1		32.1	
11th	17.6		28.0		32.0	
12th	20.0		31.5		35.4	
Sexual minority	21.0	.017	29.2	0.938	34.6	0.440
Heterosexual	16.4		29.4		32.7	

*In the past 12 months.
[†]Told a school adult and/or a parent/nonschool adult.

a majority of cyberbullying victims are also victimized at school, it also suggests that cyberbullying may be contributing to victimization of a large number of youth that may otherwise not be targeted at school or in other face-to-face settings. In light of the decreases in school bullying, many have questioned whether cyberbullying has increased the overall number of youth being victimized, or whether it is just a new platform for bullying youth who are already being victimized in school settings. Olweus[41] argues that cyberbullying is a ''low-prevalence phenomenon'' that affects few youth who are not already victims of traditional bullying. Yet, we found a 6 percentage point increase in overall bullying victimization (school and/or cyberbullying victimization) among girls (from 33% to 39%), and a 5 percentage point increase in the proportion of girls reporting both forms of victimization (10% to 15%). This suggests not only that more girls are being victimized over time, but also—given that there was no net change in school bullying among girls—that this increase can be attributed to cyberbullying.

With the rise in cyberbullying, it is especially concerning that only one-third of youth who are victimized have told an adult at school or outside of school. Girls are more likely to tell an adult than boys (39% vs. 22%); still, most victims do not seek help from adults. Juvoven and Gross[24] found that an even greater proportion of youth (90%) did not tell an adult about being victimized by cyberbullying. Concerns about losing online privileges, fear of loss of privacy, and lack of confidence in the effectiveness of adult intervention in the online world may contribute to the lack of help-seeking behaviors.[20]

Limitations

The surveys were collected in the MetroWest Boston region, so the findings may not be generalizable. The decline in school bullying coincides with 2010 Massachusetts anti-bullying legislation requiring schools to

implement age-appropriate and evidence-based anti-bullying curriculum at all grade levels, establish procedures for incident reporting and investigation, provide ongoing professional development to all staff, and provide parent education about school anti-bullying policies and how they can reinforce positive behavior at home. Importantly, the legislation also required schools to address cyberbullying when it affects school climate, functioning, or safety. By April 2011, 36 states had provisions in their education codes that prohibited cyberbullying, and 13 states, including Massachusetts, specified that school districts have jurisdiction over off-campus online bullying behavior that contributes to a hostile school environment.[2] Therefore, the legislative context in which this study occurred is similar to several other states and indicative of further strengthening of anti-bullying legislation which is being considered across the nation. It is also possible that an increase in school-based prevention education may have led to increased recognition of school and online incidents as bullying. If this were the case, we would expect greater awareness of bullying behavior to affect reporting of both cyberbullying and school bullying.

Our survey question on cyberbullying changed slightly from 2008 to 2010 with the addition of *spreading rumors* to the survey question, which already referred to bullying, threats, and teasing taking place online. Because the act of spreading rumors is a form of relational bullying that is more common among girls than boys,[5] this may have contributed, in part, to the increase in cyberbullying reported by girls. Regardless, our findings show a notable increase in bullying among girls which is consistent with findings from other trend studies of online harassment[30] and cyberbullying.[31,32]

The self-report data collected in this study were not validated by external reports of victimization. However, it is unlikely that attempts to validate the data with school incident reports would have been telling, as most cyberbullying incidents are not reported to schools.[20] In addition, the study

only looked at trends in victimization, but did not examine perpetration and the multiple roles that some youth play. We also did not consider the types or severity of cyberbullying behaviors, such as harassment, spreading rumors, creating fake profiles, and exclusion. Whereas our study showed an increase in cyberbullying, we do not know if the intensity and related harm of these experiences is also on the rise.

Conclusions

Our study showed a substantial and steady increase in cyberbullying victimization over 4 time points, despite a recent decrease in school bullying. The increase in cyberbullying is particularly notable among girls and heterosexual youth, although sexual minority youth continue to be at disproportionately high risk of victimization at school and online. The findings are especially concerning in light of the fact that only one-third of victims reported telling an adult about being cyberbullied.

IMPLICATIONS FOR SCHOOL HEALTH

Although most cyberbullying occurs outside of school,[42] there is growing evidence that cyberbullying affects students' emotional well-being at school, ability to learn, and feelings of safety. For this reason, anti-bullying legislation in several states has increased the roles and responsibilities of schools to address online incidents.[2] Yet, the increasing levels of cyber victimization evidenced in our research, in contrast to recent decreases in school bullying, is indicative of the challenge that schools face in addressing student online behavior.

The lack of incident reporting makes it particularly challenging for schools to respond to cyberbullying. Our study showed that only 1 in 5 victims told an adult at school about being cyberbullied. Reasons for not sharing victimization in the school setting may include fear of retaliation, concern over giving up privacy for incident investigations, fear of confronting online bullies in the school setting, and disbelief that schools can take effective actions to mitigate cyberbullying.[20] It is important for schools to increase students' awareness of incident reporting and investigation procedures and to strengthen students' confidence that they will receive an effective and sensitive response.

Creating a positive school climate is another important aspect of cyberbullying prevention. Research has shown that a majority of cyberbullying victims are also victims of traditional bullying,[8,43] and those who are only cyberbullied may still experience social anxiety at school and academic disturbances.[8,20] Creating a positive school climate has been linked with preventing school bullying,[38] and is thought to discourage cyberbullying by promoting an atmosphere in which no forms of bullying are tolerated.[44] A key component of creating such a climate is teaching students about the notion of digital citizenship, commonly defined as appropriate and responsible use of technology. Through comprehensive K-12 curriculum, awareness campaigns, and peer mentoring, schools can promote positive and supportive online interactions and encourage prosocial bystander intervention when cyberbullying occurs. Specific efforts to prevent relational bullying among girls may curb the increase in victimization in this population. Additional efforts should consider the unique vulnerabilities of sexual minority youth, who continue to be targeted in both school and non-school settings.

The fact that most cyberbullying occurs outside of school[42] suggests that parents and other non-school adults play a crucial role in prevention and intervention. Setting rules about Internet and mobile phone use and monitoring children's social media accounts are responsibilities that primarily fall upon parents, yet many parents believe they lack the technical knowledge to do so effectively.[20] Greater outreach from schools could educate parents about cyberbullying prevention strategies, expand their knowledge of school policies and procedures, and increase their efficacy for monitoring and other protective behaviors.

Increasing roles and responsibilities of schools to address cyberbullying is an important step in responding to the seriousness of this growing phenomenon; however, addressing this issue through the schools is complex. Increased education and prevention efforts in schools, greater parental involvement, and increased school-parent collaboration could help to promote positive online interactions among youth.

Human Subjects Approval Statement

The study procedures were reviewed and approved by the Institutional Review Board at Education Development Center, Inc.

REFERENCES

1. Sanburn J. A Florida tragedy illustrates rising concern about cyber-bullying suicides. *Time*. 2013. Available at: http://nation.time.com/2013/10/16/a-florida-tragedy-illustrates-rising-concern-about-cyber-bullying-suicides/. Accessed April 17, 2014.
2. US Department of Education. Analysis of State Bullying Laws and Policies—December 2011. Available at: http://www2.ed.gov/rschstat/eval/bullying/state-bullying-laws/state-bullying-laws.pdf. Accessed March 24, 2014.
3. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance - United States, 2011. *MMWR Morb Mortal Wkly Rep*. 2012;61(SS4):1-162. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/ss6104a1.htm. Accessed May 19, 2015.
4. Kowalski RM, Limber SP. Psychological, physical, and academic correlates of cyberbullying and traditional bullying. *J Adolesc Health*. 2013;53(Suppl. 1):S13-S20.

5. Wang J, Iannotti RJ, Nansel TR. School bullying among adolescents in the United States: physical, verbal, relational, and cyber. *J Adolesc Health*. 2009;45(4):368-375.

6. Finkelhor D, Turner H, Ormrod R, Hamby SL. Trends in childhood violence and abuse exposure: evidence from 2 national surveys. *Arch Pediatr Adolesc Med*. 2010;164(3):238-242.

7. Gan SS, Zhong C, Das S, Gan JS, Willis S, Tully E. The prevalence of bullying and cyberbullying in high school: a 2011 survey. *Int J Adolesc Med Health*. 2014;26(1):27-31.

8. Kessel Schneider S, O'Donnell L, Stueve A, Coulter RWS. Cyberbullying, school bullying, and psychological distress: a regional census of high school students. *Am J Public Health*. 2012;102(1):171-177.

9. Kowalski RM, Limber SP. Electronic bullying among middle school students. *J Adolesc Health*. 2007;41(6 Suppl 1):S22-S30.

10. Cooper RM, Blumenfeld WJ. Responses to cyberbullying: a descriptive analysis of the frequency of and impact on LGBT and allied youth. *J LGBT Youth*. 2012;9(2):153-177.

11. Birkett M, Espelage DL, Koenig B. LGB and questioning students in schools: the moderating effects of homophobic bullying and school climate on negative outcomes. *J Youth Adolesc*. 2009;38(7):989-1000.

12. Espelage DL, Aragon SR, Birkett M, Koenig BW. Homophobic teasing, psychological outcomes, and sexual orientation among high school students: What influence do parents and schools have? *School Psychol Rev*. 2008;37(2):202-216.

13. Berlan ED, Corliss HL, Field AE, Goodman E, Austin SB. Sexual orientation and bullying among adolescents in the Growing Up Today study. *J Adolesc Health*. 2010;46(4):366-371.

14. Lenhart, A. Cyberbullying and Online Teens. Pew Research Center's Internet & American Life Project. 2007. Available at: http://www.pewinternet.org/2007/06/27/cyberbullying/. Accessed December 17, 2014.

15. Lenhart A, Madden M, Smith A, Purcell K, Zickuhr K, *Rainie L*. Teens, Kindness and Cruelty on Social Network Sites. Pew Research Center's Internet & American Life Project. 2011. Available at: http://www.pewinternet.org/2011/11/09/teens-kindness-and-cruelty-on-social-network-sites/. Accessed April 11, 2014.

16. Dake JA, Price JH, Telljohann SK. The nature and extent of bullying at school. *J Sch Health*. 2003;73(5):173-180.

17. Spriggs AL, Iannotti RJ, Nansel TR, Haynie DL. Adolescent bullying involvement and perceived family, peer and school relations: commonalities and differences across race/ethnicity. *J Adolesc Health*. 2007;41(3):283-293.

18. Tokunaga RS. Following you home from school: a critical review and synthesis of research on cyberbullying victimization. *Comput Hum Behav*. 2010;26(3):277-287.

19. Patchin JW, Hinduja S. Cyberbullying and self-esteem. *J Sch Health*. 2010;80(12):614-621.

20. Kessel Schneider S, Smith E, O'Donnell L. Social Media and Cyberbullying: Implementation of School-based Prevention Efforts and Implications for Social Media Approaches. Available at: http://www.promoteprevent.org/sites/www.promoteprevent.org/files/resources/Social_Media_and_Cyberbullying_FinalReport-EDC_0.pdf. Accessed April 2, 2014.

21. Ybarra ML, Mitchell KJ. Online aggressor/targets, aggressors, and targets: a comparison of associated youth characteristics. *J Child Psychol Psychiatry*. 2004;45(7):1308-1316.

22. Mitchell KJ, Ybarra M, Finkelhor D. The relative importance of online victimization in understanding depression, delinquency, and substance use. *Child Maltreat*. 2007;12(4):314-324.

23. Ybarra ML, Mitchell KJ, Wolak J, Finkelhor D. Examining characteristics and associated distress related to Internet harassment: findings from the Second Youth Internet Safety Survey. *Pediatrics*. 2006;118(4):e1169-e1177.

24. Juvonen J, Gross EF. Extending the school grounds?—Bullying experiences in cyberspace. *J Sch Health*. 2008;78(9):496-505.

25. Tynes B, Giang M. Online victimization, depression and anxiety among adolescents in the US. *Eur Psychiatry*. 2009;24(Suppl 1):S686-S686.

26. Rigby K, Smith PK. Is school bullying really on the rise? *Soc Psychol Educ*. 2011;14(4):441-455.

27. Molcho M, Craig W, Due P, et al. Cross-national time trends in bullying behaviour 1994-2006: findings from Europe and North America. *Int J Public Health*. 2009;54(Suppl 2):225-234.

28. Robers S, Zhang J, Truman J. *Indicators of School Crime and Safety: 2011*. National Center for Education Statistics, US Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, US Department of Justice: Washington, DC; 2012.

29. Centers for Disease Control and Prevention. Trends in the Prevalence of Behaviors That Contribute to Violence on School Property, National YRBS: 1991-2013. Available at: http://www.cdc.gov/healthyyouth/yrbs/pdf/trends/us_violenceschool_trend_yrbs.pdf. Accessed November 13, 2014.

30. Jones LM, Mitchell KJ, Finkelhor D. Trends in youth Internet victimization: findings from three youth Internet safety surveys 2000-2010. *J Adolesc Health*. 2012;50(2):179-186.

31. US Department of Education. Student Reports of Bullying and Cyber-Bullying: Results from the 2009 School Crime Supplement to the National Crime Victimization Survey. 2011. Available at: http://nces.ed.gov/pubs2011/2011336.pdf. Accessed May 4, 2014.

32. US Department of Education. Student Reports of Bullying and Cyber-Bullying: Results from the 2011 School Crime Supplement to the National Crime Victimization Survey. 2013. Available at: http://nces.ed.gov/pubs2013/2013329.pdf. Accessed May 4, 2014.

33. Tompson T, Benz J, Agiesta J. The Digital Abuse Study: Experiences of Teens and Young Adults. Available at: http://www.apnorc.org/PDFs/Digital Abuse/AP-NORC Center and MTV_Digital Abuse Study_FINAL.pdf. Accessed December 13, 2013.

34. Unnever JD, Cornell DG. Middle school victims of bullying: who reports being bullied? *Aggr Behav*. 2004;30(5):373-388.

35. Brown SL, Birch DA, Kancherla V. Bullying perspectives: experiences, attitudes, and recommendations of 9- to 13-year-olds attending health education centers in the United States. *J Sch Health*. 2005;75(10):384-392.

36. Rivers I, Smith PK. Types of bullying behaviour and their correlates. *Aggr Behav*. 1994;20(5):359-368.

37. Centers for Disease Control and Prevention. 2011 Youth Risk Behavior Survey. Available at: ftp://ftp.cdc.gov/pub/data/yrbs/2011/2011_hs_questionnaire.pdf. Accessed on June 18, 2015.

38. Nansel TR, Overpeck M, Pilla RS, Ruan WJ, Simons-Morton B, Scheidt P. Bullying behaviors among US youth: prevalence and association with psychosocial adjustment. *JAMA*. 2001;285(16):2094-2100.

39. Wang J, Iannotti RJ, Luk JW, Nansel TR. Co-occurrence of victimization from five subtypes of bullying: physical, verbal, social exclusion, spreading rumors, and cyber. *J Pediatr Psychol*. 2010;35(10):1003-1112.

40. Toomey RB, McGuire JK, Russell ST. Heteronormativity, school climates, and perceived safety for gender nonconforming peers. *J Adolesc*. 2012;35(1):187-196.

41. Olweus D. Cyberbullying: an overrated phenomenon? *Eur J Dev Psychol*. 2012;9(5):520-538.

42. Smith PK, Mahdavi J, Carvalho M, Fisher S, Russell S, Tippett N. Cyberbullying: its nature and impact in secondary school pupils. *J Child Psychol Psychiat*. 2008;49(4):376-385.

43. Raskauskas J, Stolz AD. Involvement in traditional and electronic bullying among adolescents. *Dev Psychol*. 2007;43(3):564-575.

44. Patchin JW, Hinduja S. School-based efforts to prevent cyberbullying. *Prev Res*. 2012;19(3):7-9.