

Cyberbullying Perpetration and Victimization Among Middle-School Students

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Cyberbullying is the “willful and repeated harm inflicted [on another] through the use of computers, cell phones, or other electronic devices.”^{1(p5)} Among 6th- through 10th-grade students nationally, 4% reported being cyberbullying perpetrators, 5% reported being a victim of cyberbullying, and 5% reported being perpetrators–victims (meaning that they have both perpetrated and been victimized by cyberbullying) during the previous 2 months.² Among middle-school students in the southeastern and northwestern United States, a non-probability sample of 3767 students by Kowalski and Limber³ found that 11% reported being a victim of cyberbullying, 4% were cyberbullying perpetrators, and 7% were perpetrators–victims during the previous 2 months. Cyberbullying may be more insidious than traditional bullying, because cyberbullying can quickly reach wide audiences (e.g., e-mails sent to an entire school), can be perpetrated anonymously, and is not bound to in-person interactions.^{4,5} Although cyberbullying has garnered widespread media attention, to our knowledge, no previous study has explored correlates of cyberbullying with a representative probability sample in an urban middle-school sample.

Cyberbullying is associated with a host of health and behavioral health consequences. Research has suggested that cyberbullying may have a greater effect on depression and suicidal ideation than traditional offline bullying.⁶ Both perpetration and victimization are associated with mental health consequences, including lower self-esteem,⁷ recent depressive symptoms,^{5,8,9} and suicidal ideation.^{5,8,10} Cyberbullying perpetrators are more likely to have problems with their behavior, peer relationships, and emotions, and are less likely to be prosocial than their peers who are neither cyberbullying perpetrators nor victims of cyberbullying.¹¹ Specifically, female cyberbullying perpetrators express greater anxiety and

Objectives. We examined correlations between gender, race, sexual identity, and technology use, and patterns of cyberbullying experiences and behaviors among middle-school students.

Methods. We collected a probability sample of 1285 students alongside the 2012 Youth Risk Behavior Survey in Los Angeles Unified School District middle schools. We used logistic regressions to assess the correlates of being a cyberbully perpetrator, victim, and perpetrator–victim (i.e., bidirectional cyberbullying behavior).

Results. In this sample, 6.6% reported being a cyberbully victim, 5.0% reported being a perpetrator, and 4.3% reported being a perpetrator–victim. Cyberbullying behavior frequently occurred on Facebook or via text messaging. Cyberbully perpetrators, victims, and perpetrators–victims all were more likely to report using the Internet for at least 3 hours per day. Sexual-minority students and students who texted at least 50 times per day were more likely to report cyberbullying victimization. Girls were more likely to report being perpetrators–victims.

Conclusions. Cyberbullying interventions should account for gender and sexual identity, as well as the possible benefits of educational interventions for intensive Internet users and frequent texters. (*Am J Public Health.* 2015;105:e66–e72. doi:10.2105/AJPH.2014.302393)

depression than their female peers who are not cyberbullying perpetrators.¹² Cyberbullying victimization is also strongly associated with substance use, violent behavior, and risky sexual behavior among high-school students.¹⁰

Cyberbullying disproportionately affects youths who are already vulnerable to mental health and behavioral health disparities, including members of sexual minorities (i.e., gay, lesbian, bisexual), girls, and racial and ethnic minorities. More than half of sexual-minority middle- and high-school students nationally report being a cyberbully victim during the previous year, with almost one fifth reporting often or frequent victimization.¹³ Female students are significantly more likely to be cyberbully perpetrators–victims than their male peers.^{9,14} Studies have reported that male students are significantly more likely to be cyberbullying perpetrators^{2,15} and significantly less likely to be cyberbully victims.^{2,6,9} Middle-school boys are more likely to cyberbully others because of their race, sexual

identity, or both.¹⁶ African American students are more likely to be cyberbully perpetrators and Hispanic students are more likely to be cyberbully perpetrators–victims than their White peers.²

Cyberbullying may occur across a variety of technology platforms, and the specific qualities of each platform may affect how cyberbullying is perpetrated and experienced. Earlier studies suggested that instant messaging, chat rooms, and message boards were the most common mediums for middle-school students who experienced cyberbullying.^{3,17} More recently, youths have migrated to social media platforms such as Facebook,^{18–20} necessitating an examination of cyberbullying across more contemporary and emerging platforms for youth interaction.

More frequent use of technology has also been associated with cyberbullying. Students who use the Internet for at least 3 hours per day and those who use instant messaging and Web cams are significantly more likely to have

been cyberbully victims at least 7 times during the previous year.¹⁷ Frequent Internet users are significantly more likely to be cyberbully perpetrators, victims, and perpetrators–victims.¹⁴

Research has shown that even though cyberbullying takes place in a virtual space, most cyberbullying perpetrators know their victims and vice versa. Moreover, 73% of victims reported being “pretty sure” or “totally sure” about the identity of their cyberbully, with 51% of cyberbullying perpetrators identified as a classmate, 43% as someone who they only knew online, and 20% as an in-person, nonclassmate relation.¹⁷ Cyberbullying perpetrators of middle-school victims were most often a classmate or a stranger; cyberbullying perpetrators most often reported that they cyberbullied classmates, friends, and strangers.³

This study expanded previous work with high-school samples² and nonprobability samples of middle-school students^{3,17} to explore the role of sexual identity, gender, race, and technology use patterns in a random sample of urban middle-school students in Los Angeles County, California. The study focused on demographic characteristics including sexual identity, patterns of technology use (i.e., frequency of Internet use, texting, parental rules regarding Internet use), and platforms on which middle-school students experience cyberbullying (i.e., Facebook, Twitter, e-mail, text messaging) to inform interventions to disrupt this maladaptive behavior and help protect early adolescents from the consequences of cyberbullying.

METHODS

We collected data with a 27-item supplement to the 2012 Centers for Disease Control and Prevention’s Youth Risk Behavior Survey (YRBS) in Los Angeles Unified School District (LAUSD) middle schools. Although the supplemental questionnaire was administered concurrently with the YRBS, we were unable to link the 2 because there was no common identifier between the supplemental questionnaire and the YRBS.

The YRBS is conducted by using a multi-stage cluster sampling approach. First, the LAUSD selected schools within the district with

a probability proportional to their student enrollment. Second, they selected classes within schools with equal probability. All students in grades 6 through 8 were eligible, including those in special education classes or those with low English-language proficiency. Of 1320 students sampled for the YRBS, 1285 students completed the supplemental questionnaire, yielding a response rate of 97.3%. Of the 1285 students who completed the supplemental questionnaire, we excluded 99 students from the analysis for marking transgender as their sexual identity, and we excluded 1 student because of a reported age of 17 years. We weighted data with respect to race and ethnicity to reflect the demographic distribution of students attending LAUSD.

Measures

Cyberbullying victimization and perpetration. The outcome variables of interest were experiences of being a cyberbully perpetrator, cyberbully victim, and cyberbully perpetrator–victim. Questions individually assessed experiences of cyberbullying perpetration and victimization during the previous year with the following statements: “During the past 12 months, how often have you electronically bullied someone else?” and “During the past 12 months, how often have you been electronically bullied by someone? (Include being bullied through e-mail, chat rooms, instant messaging, Web sites, or texting).” Response options corresponded to a 5-point Likert scale: never, once or twice, a few times, many times, and every day. We dichotomized responses for each question to represent being a cyberbully or victim, respectively, during the previous 12 months. For analyses, we separated cyberbullying experiences into the following mutually exclusive categories: cyberbully perpetrator only, cyberbully victim only, cyberbully perpetrator–victim, and neither victim nor perpetrator. Respondents were also asked to describe the electronic platform on which they experienced cyberbullying perpetration, victimization, or both (i.e., Facebook, MySpace, e-mail, text message, instant message, or other; multiple categories could be selected), and the identity of the person they bullied or were bullied by (i.e., mutually exclusive categories for someone met in real life, someone never met in real life, unsure).

Technology use. Respondents were asked several questions about their Internet and cell phone use. For cell phones, participants reported their access to a cell phone, type of cell phone, and frequency of text messaging. Respondents also reported their frequency of Internet use (including via cell phone), and whether their parents or guardians have rules about Internet use at home. We dichotomized variables indicating technology use into dummy variables for cell phone access (i.e., owns a cell phone and uses it every day compared with those who own cell phones that are not activated and youths who do not own cell phones), frequent text messaging (i.e., sending at least 50 texts per day vs those that send fewer or have no phone), owning a smartphone (compared with phones that can only make calls, text messages, or having no cell phone), frequent Internet use (i.e., using the Internet at least 3 hours per day), and Internet rules at home (i.e., youth’s parents or guardians have rules about Internet use at home compared with no rules or no access to Internet at home).

Demographic variables. Respondents reported their gender (male or female), race and ethnicity, and sexual identity. For race and ethnicity, respondents could check any category with which they identified: American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or other Pacific Islander, and White. We created a variable for mixed race and ethnicity to represent respondents who identified with more than 1 category. In addition, because of low responses, American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, and mixed race were aggregated into an other/mixed race category accounting for approximately 7% of the weighted sample. Response options for sexual identity were homosexual (gay or lesbian), bisexual, heterosexual (straight), transgender, and questioning or unsure. Transgender was erroneously included in the sexual identity question rather than the gender item; as such, we excluded respondents who selected transgender in this question from analyses. We dichotomized the sexual identity measure to represent lesbian, gay, bisexual, or questioning (LGBQ) versus heterosexual.

Analytic Approach

We conducted descriptive statistics to provide the context of cyberbullying for middle-school youths. Univariable multinomial logistic

regressions, with independent variables dictated by previous research (i.e., technology use), determined which variables would be included in the multivariable multinomial logistic regression. We included variables significant at a *P* level of less than .10 in the multivariable multinomial models, a more restrictive strategy for model building suggested by Hosmer and Lemeshow.²¹

Multivariable multinomial logistic regression models estimated the likelihood of a student being a cyberbully perpetrator, cyberbully victim, or cyberbully perpetrator–victim compared with a student with no previous-year cyberbullying experiences (i.e., not being a cyberbully perpetrator or victim). Each model included demographic variables for race, age, gender, and identifying as a sexual minority. We applied sampling weights to all models to adjust for the distribution of students by race and ethnicity and created these based on reports of race/ethnicity within LAUSD during 2012. We conducted all analyses in the statistical software program SAS 9.3 (SAS Institute, Cary, NC).

RESULTS

Descriptive statistics are presented in Table 1. The weighted sample was 55.3% female. The sample was predominantly Hispanic or Latino (59.2%) followed by Black or African American (17.9%), White (14.9%), and other or mixed race (6.9%). Respondents were aged 12.3 years on average (*SD* = 0.8). Nearly 5% of the sample reported identifying as LGBQ. The majority of participants had a cell phone (70.9%). Approximately half of the youths (53.7%) reported having a smartphone. Forty-three percent of the sample sent at least 50 text messages a day, 26.5% used the Internet for 3 or more hours a day, and 54.6% had parental rules regarding Internet use at home.

Almost 5% of surveyed youths reported being a cyberbully, 6.6% reported being victims, and 4.3% reported being cyberbully perpetrators–victims during the previous 12 months. The majority (84.2%) of students experienced no cyberbullying during the previous year. As shown in Table 2, Facebook was the most common forum for cyberbully victimization (60.4%), followed by some other technology platform (31.5%), and text messaging at a rate of 25.7%. Cyberbully

perpetrators most often perpetrated across other digital mediums not captured in the survey question (31.0%), followed by Facebook (27.9%), and text messaging (26.7%). For cyberbullying perpetrators–victims, Facebook was most common for victimization (70.3%) and perpetration (73.2%). Of note, between 16.2% and 44% of all types of cyberbullying experiences occurred in more than 1 digital medium. The majority (more than 65%) of any type of cyberbullying was with someone they knew in real life. However, 19.7% of perpetrators and 29.4% of victims experienced cyberbullying with a person they only knew online and, among perpetrator–victims, 21.9% experienced perpetration and 40.4% experienced victimization with a person they only knew online. Moreover, approximately 20% of all types of cyberbullying occurred with someone whom they did not know.

Results of the univariable multinomial regressions are displayed in Table 3. For all further analyses, the sample was limited to participants who responded to all variables of interest (i.e., no missing values). We ran a missing-data analysis to see if there were any relations between missing responses and cyberbullying categories. Results were insignificant indicating that responses were missing at random, not systematically. High levels of texting and Internet use were positively associated with being a cyberbully; having Internet rules at home was negatively related with being a cyberbully. Being female, White, and LGBQ were positively associated with being a cyberbully victim, as were high levels of texting, high Internet use, and having Internet rules at home. Black or African American race was negatively associated with being a victim. Students who were female, White, or smartphone owners and those who reported high levels of texting and Internet use had a positive association with being a cyberbully perpetrator–victim. For all of these results the contrast category was youths who were neither a victim nor a perpetrator. Because of the associations identified in the univariable analyses, we used age, female gender, race, being LGBQ, sending at least 50 texts per day, using the Internet for 3 or more hours per day, having a smartphone, and having Internet rules at home as independent variables in the multivariable multinomial regression model.

Table 4 displays the results of the multivariable multinomial logistic regression model. The likelihood ratio test indicated that the model was significant overall. Using the Internet for at least 3 hours per day was the only variable associated with an increase in the likelihood of a youth being a cyberbully perpetrator relative to no cyberbullying experiences (odds ratio [OR] = 2.0; 95% CI = 1.1, 3.8; *P* < .05). Being LGBQ (OR = 4.6; 95% CI = 2.0, 11.0; *P* < .01) and reporting high levels of texting (OR = 2.1; 95% CI = 1.1, 4.0; *P* < .05) and Internet use (OR = 2.0; 95% CI = 1.0, 3.64; *P* < .05) were associated with being a victim relative to no cyberbullying experiences. Female participants had greater odds than males of being perpetrators–victims (OR = 2.5; 95% CI = 1.1, 5.5; *P* < .05) relative to no cyberbullying experiences. The odds of White participants being cyberbullying perpetrators–victims relative to no cyberbullying experiences is 3.6 times (95% CI = 1.5, 9.1; *P* < .01) the odds of Latinos being cyberbullying perpetrators–victims relative to no cyberbullying experiences. Students reporting high levels of Internet use had more than 5 times the odds of being cyberbullying perpetrators–victims (OR = 5.3; 95% CI = 2.5, 11.3; *P* < .001) compared with students with less Internet use.

DISCUSSION

To our knowledge, no previous study has explored correlates of cyberbullying in a probability sample of urban middle-school students. Our data indicate that cyberbullying is not a rare event; nearly one fifth of surveyed students were involved in the phenomenon. The present study found rates of cyberbully victimization were very similar to the sample of middle- and high-school youth in Wang et al.² In comparison with the sample of middle-school students in Kowalski and Limber,³ we found lower levels of victimization. The prevalence of cyberbully perpetration among LAUSD middle-school students fell between rates of cyberbullying behavior among other samples of middle-school students.^{2,3} These slight variations may be a result of 2 possible issues: differences in the operationalization of cyberbullying and sample characteristics. Our data primarily represented ethnic minority youths, whereas the 2 other samples primarily

TABLE 1—Demographic Characteristics, Technology Use, and Cyberbullying Experiences in a Probability Sample of Middle-School Students (n = 1185): Supplement to the Youth Risk Behavior Survey, Los Angeles County, CA, 2012

Characteristic	Unweighted No. (Weighted %) or Mean $\pm$ SD
Age, y	12.29 $\pm$ 0.86
Gender	
Male	586 (51.70)
Female	587 (48.30)
Missing	12
Race/ethnicity	
American Indian or Alaska Native	17 (0.41)
Asian	57 (3.40)
Black or African American	83 (18.31)
Hispanic or Latino	730 (59.62)
Native Hawaiian or Pacific Islander	16 (1.82)
White	119 (15.18)
Mixed	86 (1.26)
Missing	77
Sexual identity	
Homosexual, gay, or lesbian	19 (1.82)
Bisexual	35 (3.39)
Heterosexual	1048 (94.70)
Questioning	1 (0.09)
Missing	37
Cell phone status	
Has a cell phone	832 (70.87)
Has a smartphone	601 (52.14)
Missing	21
Texts	
Sends $\geq$ 50 texts/d	497 (43.96)
Missing	82
Internet hours	
Spends 3 h/d on Internet	303 (26.33)
Missing	90
Internet rules	
Has Internet rules at home	600 (54.72)
Missing	90
Cyberbullying	
None	888 (84.16)
Cyberbully only	50 (4.98)
Cybervictim only	60 (6.59)
Cyberbully-victim	32 (4.27)
Missing	155

represented White youths. Of note, White youths in the present study were more likely to report being a cyberbully perpetrator-victim and fewer Black or African American youths reported being a victim, relative to the majority Latino youths in the school district. Our data

are particularly robust because we used the YRBS 2-stage probability sampling frame to collect data from LAUSD students.

Not surprising when one considers its widespread use by contemporary adolescents,²² we found that Facebook was the most common

digital platform for youths to experience cyberbullying, followed by text messaging. This represents a move away from earlier reports of cyberbullying occurring primarily in chat-rooms, message boards, and via instant messaging,^{3,17} which may be diminishing in popularity in favor of new platforms. These older platforms were often characterized by anonymity, as users often created aliases and fictitious screen names. Facebook, by contrast, is highly public and lacks anonymity in most cases (although creating a fictitious profile is always a possibility). Schools may be able to be more proactive in cyberbullying interventions because the perpetrators leave a digital record of their activity. The boundary between school responsibility and private, home, or parental responsibility is not clear, as Facebook may be accessed on cell phones during the school day and outside school hours. These complications need to be wrestled with by schools, parents, and communities for the good of the health and well-being of their children.

Technology use was also strongly associated with cyberbullying in our study. High levels of Internet use (i.e., at least 3 hours per day) was associated with being a cyberbully perpetrator, a victim, and a cyberbully perpetrator-victim. Although frequent text messaging had an association with bullying outcomes in all of our univariable analyses, excessive texting was only significantly associated with being a victim. Similarly, in the univariable analyses, there was some indication that having parents who set rules regarding Internet use was related to cyberbullying, but this finding did not remain in the multivariable multinomial logistic regression model.

Limitations

There were several limitations in this study. First, this sample was specific to urban and suburban middle-school youths in southern California. It is unclear whether these results are generalizable to youths in a rural environment or environments predominantly composed of White students, because White students reported more cyberbully perpetrator-victim experiences.

Second, the inclusion of “transgender” as a response option in the sexual identity question led to invalid responses. This is because transgender is a gender identity and not

TABLE 2—Cyberbullying Characteristics in a Probability Sample of Middle-School Students: Supplement to the Youth Risk Behavior Survey, Los Angeles County, CA, 2012

Variable	Perpetrators (n = 50), Unweighted No. (Weighted %)	Victims (n = 60), Unweighted No. (Weighted %)	Victim-Perpetrators (n = 32)	
			Victimization, Unweighted No. (Weighted %)	Perpetration, Unweighted No. (Weighted %)
Cyberbullying digital medium				
Facebook	28 (27.89)	36 (60.37)	22 (70.27)	24 (73.16)
Myspace	3 (3.67)	3 (2.33)	5 (13.79)	4 (11.31)
E-mail	3 (6.52)	1 (1.72)	4 (3.40)	1 (3.87)
Text	15 (26.76)	16 (25.71)	14 (39.85)	12 (43.33)
Instant message	7 (14.03)	3 (3.75)	4 (12.70)	2 (6.35)
Other	14 (30.95)	19 (31.51)	9 (26.61)	8 (29.02)
More than 1 place	11 (21.73)	11 (16.19)	12 (32.86)	13 (43.78)
Relationship between cyberbully and cybervictim				
Someone I know in real life	35 (71.75)	37 (64.54)	19 (65.65)	24 (79.42)
Someone I know online	10 (19.80)	18 (29.38)	14 (40.40)	6 (21.88)
Someone I don't know	11 (21.07)	10 (20.22)	8 (22.62)	8 (20.58)

a sexual identity, and, thus, we had 2 gender identities and no sexual identity for students who marked transgender. As such, we recommend future research investigate the experiences of cyberbullying among self-identifying transgender youths.

Third, because of the cross-sectional nature of these data, causal inferences regarding the associations between technology use and demographic characteristics with cyberbullying outcomes cannot be made. Longitudinal studies are needed to examine how technology use

over time affects victimization by and perpetration of cyberbullying. In addition, these cross-sectional data limited our ability to determine whether victimization leads to perpetration or vice-versa. There is some evidence that suggests that cyberbullying perpetration is a response to victimization as a retaliation or defense mechanism with a sample of cyberbullying perpetrators stating that 25% of their victims were their former perpetrators.²³ Moreover, our data were anonymous and we do not know if cyberbully perpetrators–victims are engaging in mutual harassment or if students who are bullied go on to bully a person other than their bully.

Lastly, because participant responses were recorded on bubble sheets, “other” was a closed-ended response for cyberbullying platforms; as such, we do not know what other digital mediums are used for cyberbullying. Further research should also investigate the targets of cyberbullying with regard to gender, age, sexual identity, relationship to the bully, and other characteristics.

Conclusions

The results of this study indicate several potential avenues for intervention. Because middle-school students who are involved in cyberbullying (as bullies or perpetrators–victims) spend more time online than their peers who are not involved in cyberbullying, reducing Internet use could potentially reduce cyberbullying. In addition, educational programs could be developed and tailored for youths who are frequent Internet users. Interventions should also take into account that cyberbullying is not simply bullying that is conducted online. Unlike in-person bullying, which is more common among boys,²⁴ our study found that cyberbullying was more common among girls. Of concern, we found that sexual-minority students were at a greatly disproportionate risk of cyberbullying victimization. Nearly 1 in 3 (31%) students who identified as LGBQ reported some type of cyberbully victimization during the previous year, and LGBQ youths were 4.6 times more likely than their heterosexual peers to experience cyberbully victimization. This disparity is consistent with previous work reporting high rates of victimization in this population.²⁵ Developing programs that reduce homophobia

TABLE 3—Univariable Multinomial Logistic Regressions of Cyberbullying (n = 886) in a Probability Sample of Middle-School Students: Supplement to the Youth Risk Behavior Survey, Los Angeles County, CA, 2012

Characteristic	Perpetrator Vs None, OR (95% CI)	Victim Vs None, OR (95% CI)	Perpetrator-Victim Vs None, OR (95% CI)
Age	1.08 (0.77, 1.50)	1.09 (0.79, 1.49)	0.68 (0.46, 1.01)
Female	1.66 (0.93, 2.95)	2.78*** (1.55, 4.99)	3.39** (1.64, 7.03)
Race/ethnicity			
Hispanic or Latino	1.25 (0.69, 2.28)	0.93 (0.54, 1.61)	0.59 (0.31, 1.12)
White	0.38 (0.12, 1.22)	2.15* (1.16, 4.00)	2.18* (1.05, 4.53)
Black or African American	1.15 (0.57, 2.32)	0.21* (0.06, 0.75)	1.10 (0.49, 2.45)
Other	1.17 (0.40, 3.38)	1.55 (0.63, 3.83)	0.83 (0.21, 3.32)
LGBQ	1.91 (0.62, 5.89)	5.82*** (2.71, 12.49)	2.89 (0.97, 8.64)
≥ 50 texts/d	1.94* (1.09, 3.46)	2.01* (1.16, 3.49)	2.92** (1.49, 5.73)
Has cell phone	0.97 (0.52, 1.79)	0.91 (0.51, 1.63)	1.26 (0.60, 2.64)
Has smartphone	1.27 (0.71, 2.26)	0.81 (0.47, 1.40)	2.58* (1.25, 5.32)
≥ 3 h/d on Internet	2.62** (1.46, 4.70)	2.59** (1.49, 4.52)	4.87*** (2.50, 9.48)
Has Internet rules at home	0.55* (0.31, 0.99)	1.78* (1.00, 3.17)	0.97 (0.51, 1.85)

Notes. CI = confidence interval; LGBQ = lesbian, gay, bisexual, or questioning; OR = odds ratio.

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

TABLE 4—Multivariable Multinomial Logistic Regressions of Cyberbullying (n = 886) in a Probability Sample of Middle-School Students: Supplement to the Youth Risk Behavior Survey, Los Angeles County, CA, 2012

Characteristic	Perpetrator Vs None, OR (95% CI)	Victim Vs None, OR (95% CI)	Perpetrator-Victim Vs None, OR (95% CI)
Age	0.95 (0.67, 1.34)	0.94 (0.65, 1.36)	0.59 (0.38, 0.91)
Female	1.60 (0.85, 3.01)	1.92 (0.99, 3.71)	2.49* (1.13, 5.48)
Race/ethnicity			
Hispanic or Latino (Ref)	1.00	1.00	1.00
White	0.50 (0.15, 1.68)	1.61 (0.76, 3.43)	3.64** (1.47, 9.05)
Black or African American	1.21 (0.57, 2.55)	0.31 (0.09, 1.13)	1.71 (0.67, 4.32)
Other	1.37 (0.45, 4.19)	1.94 (0.26, 5.47)	1.94 (0.26, 5.47)
LGBQ	1.65 (0.49, 5.53)	4.62** (1.95, 10.96)	1.21 (0.29, 5.04)
≥ 50 texts/d	1.66 (0.84, 3.26)	2.10* (1.10, 4.03)	1.39 (0.63, 3.07)
Has smartphone	0.91 (0.47, 1.75)	0.64 (0.34, 1.21)	2.23 (0.95, 5.23)
≥ 3 h/d on Internet	2.03* (1.08, 3.82)	1.95* (1.05, 3.62)	5.30*** (2.50, 11.27)
Has Internet rules at home	0.66 (0.35, 1.21)	1.61 (0.86, 3.02)	1.03 (0.50, 2.13)

Notes. CI = confidence interval; LGBQ = lesbian, gay, bisexual, or questioning; OR = odds ratio.

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

and increase sensitivity to LGBQ populations for middle-school students may help to lessen the burden of cyberbully victimization suffered by these students.

In addition, Facebook was overwhelmingly the most common place for cyberbullying to occur. Therefore, parents and school professionals should be aware of what their children post and what is posted to their accounts. However, because social media platforms are constantly changing, parents and school professionals must reinforce universal cyberbullying prevention messages that can be applied to all digital mediums. This study suggests that interventions should take into account social media platforms, gender, and especially sexual identity.

A multilevel approach that involves various stakeholders is likely required to reduce cyberbullying. At the school level, policies must be developed and enforced to ensure a safe and supportive school environment. Schools can create rules for social media use at the school site that discourage cyberbullying and work with parents to encourage rules at home. Schools can also include lessons focused on cyberbullying in their curriculum and educate youths about appropriate steps to take if they are a victim or witness of cyberbullying.

Schools can also implement evidence-based interventions for reducing cyberbullying and building skillsets for problem solving and coping. It is important for all students to receive these interventions, not just those who are identified as bullies or victims or at elevated risk of cyberbullying. Moreover, mental health services should either be available on site or via appropriate referral systems for students who are victims and bullies. Finally, successful efforts to curb cyberbullying will likely require strong collaboration and partnerships among many stakeholders, including students, parents, teachers, administrators, counselors, and law enforcement.

We also identified several areas for future research. At a basic level, more information is needed about the relationships between cyberbully victims and perpetrators and about the long-term consequences of cyberbullying for both bullies and victims. Research is needed to stay abreast of how cyberbullying evolves across the ever-changing landscape of social media platforms and new technology devices such as smartphones, tablets, and even online gaming systems. Qualitative research is needed to provide greater insight into the context, content, and effects of cyberbullying. Perhaps most important is further research focused on

creating effective interventions. Interventions that are technology-driven are especially promising because they could take advantage of the rapidly increasing use of technology among youths and be delivered through the platforms on which cyberbullying occurs. Once promising programs are identified, translational research methods should be used to promote their implementation and widespread dissemination to address the very prevalent issue of cyberbullying among adolescents. ■

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Contributors

E. Rice conceptualized the idea and analytic plan. R. Petering performed the data analysis. H. Rhoades and H. Winetrobe oversaw data management. All previously mentioned authors shared responsibilities in writing the article. J. Goldbach helped with drafting and editing the article. A. Plant, J. Montoya, and T. Kordic were involved in study conceptualization and survey design. All authors provided input on different drafts of the article.

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Human Participant Protection

This study was approved by the Los Angeles Unified School District Health Education Programs Unit. Data analyzed were de-identified data collected by Los Angeles Unified School District. As such, it was granted exemption from human participant review by the University of Southern California institutional review board.

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