

# The Impact of Cyberbullying on Substance Use and Mental Health in a Multiethnic Sample

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**Abstract** The objective of this study was to examine the relationship between cyberbullying and mental health problems among a multiethnic sample of high school students in Hawai‘i. A University-Community partnership was established to direct the research. Using a mixed-methods approach, we explored violence among Asian and Pacific Islander youth. In the first phase, focus groups were conducted to identify areas of youth concern and develop survey questions. Responses from 677 high school students on interpersonal youth violence and risk and protective factors were utilized in this study. More than 1 in 2 youth (56.1%) had been victims of cyberbullying in the last year. Filipino and Samoan youth were more likely to report feeling badly about themselves as a result of cyberbullying. While cyberbullying and mental health problems varied by sex and ethnicity, we found that cyberbullying is widespread with serious potential consequences among Asian and Pacific Islander youth. A multifaceted approach is needed to reduce and prevent cyberbullying. School, family and community programs that strengthen positive relationships and promote safe use of technology provide promise for reducing cyberbullying.

**Keywords** Cyberbullying · Violence · Mental health · Adolescence · Asian · Pacific Islander

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## Introduction

Cyberbullying is an aggressive, intentional act using electronic forms of contact [1]. It includes texting derogatory messages; sending threatening e-mails; forwarding confidential e-mail or pictures; repeatedly sending “flame” or upsetting messages; excluding individuals from chat rooms; and setting up slanderous voting websites. It also includes cybercontrol or monitoring a dating partner’s behavior using electronic forms of contact [2]. On average, one in five youth report being a victim of cyberbullying [3, 4]. Cyberbullying may have more devastating outcomes than traditional forms of violence, due to its potential to reach a wider audience through mass distribution and the sense of anonymity that technology can provide. Recent studies have shown that cyberbullying can result in emotional distress, depression, anxiety, and suicidality [5, 6]. This project examines the mental health consequences of cyberbullying among students from two multiethnic high schools in Hawai‘i.

## Methods

### Participants

Eight hundred and eighty-one students from two high schools in Hawai‘i were surveyed, representing a 33% response rate. Of the sample, 26.2% were in 9th grade, 33.5% were in 10th grade, 25.7% were in 11th grade and 14.6% were in 12th grade. More girls (60.2%) took part than boys (39.8%). The ethnic distribution was divided into 45.7% Filipino, 22.3% Native Hawaiian, 4.7% Samoan, 4.2% Caucasian, and 23.1% Other ethnicity (e.g., other Pacific Islander, Asian, African American or groups not

listed above). Due to the heterogeneity of the “Other ethnicity” group, the analyses for this study was limited to the Filipino, Native Hawaiian, Samoan, and Caucasian ethnic groups ( $N = 677$ ). With respect to socioeconomic status, 44.6% of respondents qualified for free or reduced lunch.

### Procedures

In the first phase, focus groups were conducted to identify areas of youth concern and develop survey questions. In the second phase, students were surveyed. Parent permission (consent) and student assent were required to participate in the survey. In Spring 2007, participants filled out a 12-part, 447-item survey on mental health and violence dimensions during class time. Participants received a monetary token of appreciation (movie coupon or money order valued at \$10 U.S.). All procedures were approved by the Institutional Review Board of the University of Hawai‘i.

### Measures

**Demographics.** Demographic information was self-reported by students, such as sex, grade level, free or reduced-cost lunch status (measuring socioeconomic status), and ethnic identification.

**Cyberbullying.** During the focus groups, cyberbullying was repeatedly brought up. Student comments were used to develop the cyberbullying survey questions. Students reported the number of times in the last year that they: (1) received a threatening or mean text message; (2) received a threatening or mean e-mail; (3) had embarrassing, threatening or mean information posted about them on a website; (4) had a dating partner go through their cell phone to check on calls or text messages; and (5) had a partner go through their personal website to check up on them. For analyses, cyberbullying items were dichotomized as yes or no.

**Substance use and mental health.** Students reported the number of times in the last month students had 4 or more drinks of alcohol in a row (binge drinking), and had used marijuana [7]. Two screening questions measured depression [8]. Two screening items measured anxiety [9]. For analyses, mental health responses (depression and anxiety) were categorized as yes or no. Students must have rated both screening questions in the moderate (3–4 days per week) range or higher to be coded as having depression or anxiety. Additionally, they were asked to report how many suicide attempts they made in the past 12 months. These responses were dichotomized into occurred and not occurred.

### Analyses

Logistic regression tests were performed to determine if there were any significant differences in cyberbullying and

mental health by ethnicity, gender, and the interaction between ethnicity and gender. If significance was found among ethnic groups, further post-hoc tests (Student-Newman Kuels) were performed to determine significant differences between pairs of ethnic groups. Logistic regression was also performed for each of the mental health outcomes related to cyberbullying as an independent variable, controlling for gender, grade, and ethnicity.

## Results

### Prevalence

Table 1 displays the frequencies of cyberbullying and mental health problems by ethnicity and gender. Significant ethnic differences were found with Filipinos reporting more phone cybercontrol ( $\chi^2 [3, n = 482] = 8.0, p = .0468$ ) and web cybercontrol ( $\chi^2 [3, n = 481] = 17.5, p = .0006$ ) than Samoans. Caucasians, Filipinos, and Samoans were more likely to report cyberbullying victimization over the web than Native Hawaiians ( $\chi^2 [3, n = 664] = 12.1, p = .0071$ ). Native Hawaiians were more likely to report substance use of alcohol ( $\chi^2 [3, n = 653] = 18.9, p = .0003$ ) and marijuana ( $\chi^2 [3, n = 656] = 38.6, p < .0001$ ) than other groups. Samoans were more likely to feel badly about themselves when cyberbullied than others ( $\chi^2 [3, n = 677] = 8.7, p = .0343$ ). Girls reported more cyberbullying victimization from text messages ( $\chi^2 [1, n = 659] = 4.1, p = .0430$ ) and from the web ( $\chi^2 [1, n = 659] = 4.3, p = .0385$ ), anxiety symptoms ( $\chi^2 [1, n = 572] = 13.8, p = .0002$ ), and suicide attempts ( $\chi^2 [1, n = 649] = 6.0, p = .0143$ ) than boys. There was a significant interaction between gender and ethnicity for cybercontrol using the web ( $\chi^2 [3, n = 477] = 8.7, p = .0339$ ), in which Filipino and Native Hawaiian females were more likely to be cybercontrolled via the web than Filipino and Native Hawaiian males and Samoan and Caucasian males were more likely to be cybercontrolled via the web than Samoan and Caucasian females.

### Consequences

Logistic regression revealed that ethnicity, gender, grade, and cyberbullying victimization were predictors of negative mental health consequences (see Table 2). Cyberbullying victimization increased the likelihood of substance use, with binge drinking and marijuana use both approximately 2.5 times more likely to occur, and increased the likelihood of depression by almost 2 times, and suicide attempts by 3.2 times (3.2 times for females and 4.5 times

**Table 1** Cyberbullying victimization patterns and mental health problems among high school students in Hawai'i by ethnicity and gender

	Filipino (%)	Native Hawaiian (%)	Samoan (%)	Caucasian (%)	Significance ( $\chi^2$ ) ethnicity sex interaction	Post-hoc test (S–N–K)
Any cyberbullying victimization						
Overall ( <i>n</i> = 677)	57.3	54.1	48.8	62.2	Eth: NS	
Male ( <i>n</i> = 256)	53.4	47.5	50.0	56.3	Sex: NS	
Female ( <i>n</i> = 416)	59.5	58.3	48.3	70.0	Inter: NS	
Victimization: text						
Overall ( <i>n</i> = 664)	18.5	18.6	22.5	27.8	Eth: NS	
Male ( <i>n</i> = 249)	16.7	14.1	16.7	6.7	Sex: 4.1*	F > M
Female ( <i>n</i> = 410)	19.8	20.9	25.0	45.0	Inter: NS	
Victimization: e-mail						
Overall ( <i>n</i> = 662)	23.0	14.4	22.5	27.8	Eth: NS	
Male ( <i>n</i> = 249)	26.4	14.1	25.0	13.3	Sex: NS	
Female ( <i>n</i> = 408)	21.2	14.8	21.4	40.0	Inter: NS	
Victimization: web						
Overall ( <i>n</i> = 664)	21.1	9.8	20.0	25.0	Eth: 12.1**	
Male ( <i>n</i> = 249)	18.1	3.9	16.7	26.7	Sex: 4.3*	F > M
Female ( <i>n</i> = 410)	23.1	13.9	21.4	25.0	Inter: NS	
Victimization : cybercontrol phone						
Overall ( <i>n</i> = 482)	51.9	46.9	25.0	39.3	Eth: 8.0*	Fil > S
Male ( <i>n</i> = 164)	45.9	39.7	14.3	44.4	Sex: NS	
Female ( <i>n</i> = 314)	54.2	51.0	28.6	38.9	Inter: NS	
Victimization: cybercontrol web						
Overall ( <i>n</i> = 481)	49.1	34.6	14.3	32.1	Eth: 17.5****	Fil > S
Male ( <i>n</i> = 163)	46.4	23.8	28.6	55.6	Sex: NS	
Female ( <i>n</i> = 314)	49.7	41.8	9.5	22.2	Inter: 8.7*	
Binge drinking						
Overall ( <i>n</i> = 653)	20.2	36.3	18.4	19.4	Eth: 18.9****	
Male ( <i>n</i> = 246)	27.0	34.6	25.0	20.0	Sex: NS	
Female ( <i>n</i> = 402)	16.1	37.7	15.4	20.0	Inter: NS	
Marijuana						
Overall ( <i>n</i> = 656)	10.8	31.1	5.4	13.9	Eth: 38.6****	H > C, Fil, S
Male ( <i>n</i> = 246)	14.9	33.3	8.3	6.7	Sex: NS	
Female ( <i>n</i> = 405)	8.5	29.8	4.0	20.0	Inter: NS	
Depression						
Overall ( <i>n</i> = 654)	8.0	10.4	8.1	11.1	Eth: NS	
Male ( <i>n</i> = 245)	7.1	7.7	8.3	0.0	Sex: NS	
Female ( <i>n</i> = 404)	8.5	12.4	8.0	20.0	Inter: NS	
Anxiety						
Overall ( <i>n</i> = 575)	12.5	13.4	6.9	9.4	Eth: NS	
Male ( <i>n</i> = 206)	10.2	12.2	11.1	6.7	Sex: 13.8****	F > M
Female ( <i>n</i> = 366)	13.7	14.4	5.0	12.5	Inter: NS	
Suicide attempt						
Overall ( <i>n</i> = 654)	13.6	11.5	8.1	5.6	Eth: NS	
Male ( <i>n</i> = 244)	10.0	5.2	8.3	6.7	Sex: 6.0*	F > M
Female ( <i>n</i> = 405)	15.9	15.8	8.0	5.0	Inter: NS	

**Table 1** continued

	Filipino (%)	Native Hawaiian (%)	Samoan (%)	Caucasian (%)	Significance ( $\chi^2$ ) ethnicity sex interaction	Post-hoc test (S–N–K)
Felt badly about self						
Overall ( <i>n</i> = 677)	8.9	3.1	12.2	2.7	Eth: 8.7*	
Male ( <i>n</i> = 256)	6.1	2.5	8.3	0.0	Sex: NS	
Female ( <i>n</i> = 416)	10.7	3.5	13.8	5.0	Inter: NS	

\* *p* ≤ .05; \*\* *p* ≤ .01; \*\*\* *p* ≤ .001; \*\*\*\* *p* ≤ .0001

**Table 2** Predictors of mental health consequences (odds ratios and 95% CI) from logistic regression analysis

Variable/odds ratio	Binge drinking	Marijuana	Anxiety	Depression	Attempt suicide
Ethnicity (vs. Caucasian)					
Filipino	1.09 (.44–2.66)	.86 (.31–2.37)	1.00 (.49–2.06)	1.18 (.54–2.57)	2.78 (.63–12.23)
Native Hawaiian	2.53 (1.01–6.29)	3.33 (1.21–9.19)	1.18 (.56–2.49)	1.14 (.51–2.55)	2.44 (.53–11.14)
Samoan	1.08 (.32–3.63)	.44 (.08–2.49)	.72 (.26–1.97)	1.24 (.45–3.46)	1.47 (.22–9.73)
Female (vs. Male)	.67 (.46–.98)	.66 (.42–1.02)	1.92 (1.36–2.69)	1.33 (.93–1.90)	1.88 (1.09–3.24)
Grade (vs. 9th)					
10th	.99 (.60–1.65)	1.63 (.90–2.96)	.74 (.49–1.12)	.91 (.60–1.40)	.74 (.38–1.44)
11th	1.02 (.60–1.75)	1.38 (.73–2.61)	.91 (.59–1.41)	.76 (.48–1.21)	1.7 (.89–3.12)
12th	2.64 (1.51–4.63)	1.60 (.80–3.20)	.86 (.52–1.43)	.54 (.30–.97)	.78 (.35–1.77)
Cyberbullied	2.52 (1.68–3.79)	2.46 (1.53–3.95)	1.20 (.87–1.65)	1.85 (1.30–2.63)	3.22 (1.82–5.70)

for males). Cyberbullying was not a significant predictor of depression or anxiety.

**Discussion**

Cyberbullying is a pervasive problem among high schools students with potentially serious mental health consequences with the greatest impact on substance use and suicide attempts. This pervasiveness was also reflected in our qualitative study that found wide acceptance of cyberbullying among youth, indicating it was an expectation of high school [2]. Additionally, because it is commonplace and youth are more likely to talk about it with friends than parents or school personnel, behavioral norms are reinforced [4]. Only one in three cyberbullied teens told their parents about their experience. Youth may be hesitant to speak with parents about this because they do not want their parents to restrict their use of the internet and cell phones [10]. Parents are most concerned about the 4Ps—Privacy, Predators, Pornography and Pop-Ups and therefore they lack knowledge about day-to-day cyberbullying [11]. Furthermore, the vast majority of public attention has focused on stalking and sexual predators. Clearly, more emphasis needs to be placed on cyberbullying.

The experience of cyberbullying is not only limited to the nature and the intensity of the behavior but also

includes the perception of being victimized. For some, this can have distressing consequences. Experiencing cyberbullying tripled the likelihood of binge drinking, and more than doubled the likelihood of using marijuana and of attempting suicide. While these findings are not causal, they are further supported by students reporting negative feelings resulting from cyberbullying. With limited support and skills to resolve cyberbullying, youth may resort to substance use or even suicide. Youth may not have the support and skills to cope with being cyberbullied, and may turn to substance use or self-injurious behaviors to escape.

A multifaceted prevention and early intervention approach is needed to reduce cyberbullying. Several websites have developed prevention materials (e.g. [www.stopcyberbullying.org](http://www.stopcyberbullying.org) and [www.cyberbullyhelp.com](http://www.cyberbullyhelp.com)). Parents can work with their children to establish and monitor their social networking sites. Additionally, parents need to be aware of signs and symptoms of cyberbullying. Youth may stop using electronic communication devices or appear anxious when using them, have difficulty sleeping, exhibit moodiness or irritability, talk about harming themselves or others, and/or withdraw from normal activities. Regular discussion of technology use will enable parents to assess changes in youth patterns. Schools are encouraged to set up age appropriate guidelines for appropriate use of communication technology. Schools can work with the parents to stop and remedy cyberbullying

situations. They can also educate the students on cyberethics and the law. For example, CyberSmart offers a free curriculum to educators with lessons plans and activities for students K-12 [12]. Legislation and other policy needs to address the concern of cyberbullying by allowing school officials to respond to incidents of cyberbullying even when it occurs offcampus [13]. In 2009, Hawai'i passed a law that make it illegal to electronically harass or stalk someone using text messages or social networking websites.

### Limitations

There are limitations to this study. Only self-report data were obtained and not direct measures of behavior. However, the survey procedure provided anonymity. The design does not allow the establishment of a causal relationship between cyberbullying and mental health problems. Although our response rate was 33%, our findings were not significantly different from the 2007 Hawai'i YRBS rates, which utilize a representative sample for the State, for physically fighting (28.2% for sample vs. versus 28.6% for State) and attempting suicide (11.2% for sample versus 12.0% for state). Given these limitations, caution should be used in generalizing our findings to Asian American and Pacific Islander adolescents in the United States. Nevertheless, cyberbullying increased the likelihood of mental health problems among adolescents who responded beyond ethnic status, gender or grade level.

### Conclusion

This article increases our understanding about the experience and impact of cyberbullying among multiethnic high school students. Longitudinal research is warranted to explore cyberbullying experiences and the use of technology in dating relationships. Research must also focus on evaluating the effectiveness of prevention and early intervention strategies.

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