Master's Theses   University of Connecticut Graduate School

8-25-2016

Cyberbullying Among Young Adults: Effects on Mental and Physical Health

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B.A., Indiana University of Pennsylvania, 2008

A Thesis

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Science

at the

University of Connecticut

2016

APPROVAL PAGE

Master of Science Thesis

Cyberbullying Among Young Adults: Effects on Mental and Physical Health

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University of Connecticut

2016

University of Connecticut

2016

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Introduction

Technology evolves rapidly and the advent of the Internet has substantially changed the way most people live their lives. There have been obvious social benefits arising from advances of the Internet and communication technologies: easier access to educational information and resources, creation and maintenance of friendships, and instant access to a wide variety of entertainment; these are only a few of the many ways to describe the Internet's pervasiveness in daily life (Livingstone & Haddon, 2009).

An unfortunate social byproduct of newer communication technologies is the emergence of cyberbullying, a new and potentially pervasive form of peer harassment. Originally considered just an extension of traditional bullying, the wealth of research into cyberbullying in recent years has indicated it is a much more complicated issue. Some researchers contend that rates of cyberbullying have not increased since its emergence last decade (Olweus, 2012; Patchin & Hinduja, 2012), while others have documented an increase in the recent years (Cassidy, Brown, & Jackson, 2011; Kowalski, Limber, & Agatston, 2012). Not debated is the increased mainstream media attention cyberbully has received over the past several years, mostly due to high-profile cases ending in tragedy (Dooley, Pyżalski, & Cross, 2009). This study seeks to characterize the prevalence, mental, and physical health consequences of cyberbullying among young adults.

Traditional Bullying and Cyberbullying

Prevalence.

Patchin and Hinduja synthesized data from 35 peer-reviewed studies and estimated that an average of 24% of adolescents report being victims of cyberbullying and 17% of students report perpetrating cyberbullying (2012). These estimates are similar to that of traditional bullying, for which approximately 25% of youth are directly involved in as perpetrators, victims, or both

(Hamm et al., 2015; Nansel et al., 2001; Robers, Zhang, Truman, & Snyder, 2010). Among the 35 papers reviewed, rates of cybervictimization varied widely from 7% in one study (Ybarra, 2004) to 72% in another (Juvonen & Gross, 2008). Only a handful of studies have examined the prevalence of cyberbullying in young adults. These studies have found similarly varying prevalence rates of cyberbullying ranging from 10% (Smith & Yoon, 2013) to 97% (Doane et al., 2013). At the university level, two studies have shown the prevalence of cyberbullying to be close to the rate found in an adolescent meta-analysis with 19% (Zalaquett & Chatters, 2014) and 29% (Hinduja & Patchin, 2010) of the sample reporting experiences of cyberbullying. Reported prevalence varies significantly based on a number of factors, such as age, demographic composition of the sample, the way cyberbullying was defined, and retrospective time frame of cyberbullying (Patchin & Hinduja, 2012). Interestingly about two-thirds of cyberbullying victims report knowing their perpetrator (Juvonen & Gross, 2008). Many studies have found that individuals who experience or perpetrate cyberbullying also encounter traditional bullying (Agatston, Kowalski, & Limber, 2007; Patchin & Hinduja, 2012; Smith & Slonje, 2010). This variability in prevalence rates point to the need to characterize prevalence rates among samples under study regardless of age.

Data on cyberbullying has largely been collected from adolescents age 12 to 17 who are in school. Few studies have been conducted on cyberbullying among younger adult populations, most notably college students (Hoff & Mitchell, 2010). A recent survey of college undergraduates reported that 35% of the sample had their first experience of cyberbullying while in college (Kowalski, Limber, & Agatston, 2012). Additionally the investigators found that among those who reported being cyberbullied, 44% reported the majority of cyberbullying occurred during college, 30% during high school, and 26% during middle school. This data points to a major

methodological limitation in the literature and a need to further investigate cyberbullying across lifespan, not just as an adolescent phenomenon. Further, it is also important to characterize cyberbullying as a recent or remote occurrence or both in determining its impact on any sample under investigation.

Defining cyberbullying.

Much of the research concerning cyberbullying comes from the more established research field of traditional bullying. Traditional bullying can be defined as an intentional aggressive act carried out by a group or individual repeatedly and over time against a victim who cannot easily defend his or herself (Olweus, 1993; Olweus, Limber, & Mahalic, 1999). The three central tenets of bullying, which distinguish it from fights between friends, singular acts of peer aggression, and so forth are: 1) intention to cause harm, 2) repetition, and 3) power imbalance (Pieschl, Porsch, Kahl, & Klockenbusch, 2013). Despite compelling empirical evidence that shows conventional bullying overlaps with cyberbullying (see Bauman, Toomey, & Walker, 2013 and Gradinger, Strohmeier, & Spiel, 2009 for a review on this literature), carrying the conventional definition over to the cyber-realm is problematic for each of the three tenets:

1. The intention to harm is more subjective when it is applied to cyberbullying. Electronic communications vary significantly from face-to-face communication, as the communicating partners sometimes do not see body language, facial expressions, gestures, and sometimes cannot hear the vocal prosody that can distinguish sarcasm and teasing from actual harassment (DeHue, Bolman, & Völlink, 2008). The nature of online communication can result in the victim misinterpreting what was intended as fun, while the perpetrator may not be aware of the consequences of their actions because there is no physical and social cue feedback. Some researchers have considered how this

dynamic perpetuates online disinhibition by not seeing the pain one causes when being removed from the empathetic response of face-to-face communication (Davis & Nixon, 2012; Smith et al., 2012). However, Smith and Slonje (2010) note that the inability to see a victim's reaction or demonstrate one's power to a group may deter some potential bullies, although some bullies may in fact favor seeing a victim's reaction or impact of cyberbullying at a later time (Cassidy, Faucher, & Jackson, 2013).

2. Repetitive harassment may not be as critical to cyberbullying. For example, the act of uploading even a single embarrassing photo can result in continued humiliation (Dooley, Pyżalski, & Cross, 2009; Menesini & Nocentini, 2009). Also, cyberbullying incidents can spread to a large audience in a relatively short amount of time. For example, harassment can continue without the involvement of the original perpetrator by way of others swiftly forwarding an email or copying and pasting a text message. There can be little to no escape for the victim given the omnipresence of electronic communication and difficulty erasing information from the Internet (Slonje & Smith, 2008). For victims, the phenomena of a video "going viral," to use common vernacular of today, can lead to the feeling of being bullied repeatedly despite only a single act of harassment by the perpetrator.

3. The conceptualization of power imbalance does not apply equally to cyberbullying as it does to traditional bullying. Facets such as physical dominance, older age, social status, and popularity may not be a significant factor in cyberbullying and would-be cybervictims have greater options for preventing and suppressing harassment (Nocentini & Calmaestra, 2010). The question has been raised if those who cyberbully possess greater technological prowess, for example a better ability to deceive and impersonate

online, but no research has demonstrated cyberbullies having superior technological skills (Vandebosch & Van Cleemput, 2009).

There are also important novel aspects of cyberbullying that are a function of the electronic nature of communication and therefore are not typically associated with traditional bullying. With cyberbullying, the perpetrator has the ability to remain completely anonymous either by virtue of not knowing the victim or hiding behind a pseudonym, such as a non-obvious screen name (Cassidy, Faucher, & Jackson, 2013). It is noted that traditional bullying may also have this characteristic; however, it appears to be far less common: in one study, 12% of bullied youths at school reporting they did not "know" their bully versus about 46% not knowing their bullying online (Ybarra, Boyd, & Korchmaros, 2012). It is also logical that anonymity in cyberspace can lead to increased feelings of frustration and powerlessness (Dooley, Pyżalski, & Cross, 2009), which is more consistent with the power imbalance criteria.

In summary, the definition of traditional bullying is insufficient for cyberbullying. This has oftentimes led to researchers selectively choosing criteria for what constitutes cyberbullying. Therefore, a major methodological issue plaguing cyberbullying research, and even traditional bullying research, is a lack of a standardized, agreed upon definition of the phenomena. With these aforementioned complicating factors in mind, the best working definition to characterize cyberbullying comes from Robert Tokunaga in 2010:

> "Cyberbullying is any behavior performed through electronic or digital media by individuals or groups (whose identity may or may not be known) that communicate hostile or aggressive messages, intended to inflict harm or discomfort on others." (p. 278)

Cyberbullying Enacted

Types of cyberbullying.

In conjunction with constructing a unified definition, it is important to consider what behavior constitutes cyberbullying and the method by which it is enacted. It is also a relevant place to begin thinking about feasible points of future intervention. Nancy Willard (2006) authored one of the first books on cyberbullying, *Cyberbullying and Cyberthreats,* in which she outlines a number of behaviors that constitute cyberbullying.

Flaming is a form of cyberbullying that refers to an argument or brief exchange between two or more people involving vulgar or rude language, threats, and insults (Chibbaro, 2007). Typically flaming occurs in public Internet settings like message boards and chat rooms rather then private message exchanges. A series of insulting exchanges can ensue, which is commonly referred to as a "flame war" (Willard, 2006).

Cyber harassment is a specific form of cyberbullying that involves repetitive offensive messages sent to a target (Kowalski, Limber, & Agatston, 2012). Harassment often occurs via private communication such as emails but can also be seen in online public forums. While conceptually similar to flaming, cyber harassment is different in two critical ways. First, harassment takes place over a longer period than what is observed in flaming. Second, it tends to be one-sided, in that there are one or more offenders focusing on a single target who does little to retaliate. If repeated, intense harassment and denigration continues and includes threats or creates significant fear, it may be considered *cyberstalking* (Siegle, 2010).

Denigration is the spreading of information about another that is derogatory and untrue, including spreading gossip or rumors about someone in an effort to damage reputations and friendships (Willard, 2006). With online denigration, false information may be posted on webpages or disseminated through private communication channels. Included in this form of

cyberbullying is the digital alteration of photos, most commonly in a way that portrays someone in a sexualized or harmful manner (Kowalski, Limber, & Agatston, 2012).

Another popular method of cyberbullying is *impersonation,* which is when the perpetrator poses as the victim and either sends or posts negative, cruel, or inappropriate information in an attempt to damage that person's reputation (Willard, 2006). This may take place in public and private exchanges. Impersonation can also be enacted by the perpetrator posing as someone else entirely in an attempt to elicit information or manipulate feelings. This relates to another form of cyberbullying known as *trickery* that refers to talking someone into revealing secrets or embarrassing information and then sharing it online (Kowalski, Limber, & Agatston, 2012). Sometimes trickery leads to *outing*, which is the sharing of personal secrets or sensitive information without the victim's permission. This type of cyberbullying is most commonly used when discussing cases that involve the exposure of a victim's sexual orientation.

Finally, *exclusion* or *cyber-ostracism* is intentionally and cruelly excluding someone from an online group (Willard, 2006). Decades of research by social psychologists have identified a basic human desire to be included by other people, and children readily perceive themselves as either "in" or "out" in the context of a group (Ellemers & Barreto, 2001; Tajfel, 1979). This is seen online with "defriending" or blocking on Facebook and similar social network sites. While perhaps not as obviously harmful as more direct types of cyberbullying, exclusion or even perceived exclusion has been shown to lower self-esteem (Williams, Cheung, & Choi, 2000).

Methods for Cyberbullying.

There are seemingly infinite modalities to carry out cyberbullying through ever-evolving technological media. Email is among the most frequently used means of digital communication. Instant and text messaging are typically shorter forms of communication between two or more

people. It is now common for these types of communication to include image, video, or sound content. Cyberbullying through messaging services takes many different forms, but most obviously is the sending of angry or threatening messages (Aftab, 2011). Chat rooms, message boards, blogs, and user created websites are also prone to cyber harassment and flaming as they are loosely regulated (Belsey, 2011).

Social networking websites, such as Facebook and Twitter, allow users to become part of a virtual community and thus provide an additional avenue for cyberbullying (Hester, 2012). Most websites require users to build a basic profile that can include demographic information, photos, personal essays, short comments, and so forth. After a profile is created, users can interact with others by following their profiles, sending messages, or leaving comments directly on other profiles. Not only does this open the door for cyber harassment, fake profiles or parody accounts can easily be created to embarrass or trick other users. Today there are hundreds of social networking sites with millions of users and more registering each day (Patchin & Hinduja, 2012). With smartphones, the Internet has become even more pervasive, as newer applications (apps) like SnapChat and Tinder provide constantly changing modalities available to those who perpetrate cyberbullying.

Impact of Cyberbullying

The much fuller body of literature on traditional bullying research routinely shows that experiences of bullying are associated with a host of negative mental and physical health outcomes, including lower self-esteem, higher rates of depression, anxiety, headaches, sleep problems, suicidal ideation, sexual risk taking (e.g., unprotected sex), and substance abuse (Craig, 1998; Fekkes, Pijpers, & Verloove-Vanhorick, 2004; Juvonen & Gross, 2008; Patchin & Hinduja, 2012; Zweig et al., 2002). Now, this trend is beginning to be observed in cyberbullied samples, with

documentation of increased feelings of sadness, depression, anger, embarrassment, and fear of attending school (Heath, Coyne, & Ferrin, 2012; Juvonen & Gross, 2008; Patchin & Hinduja, 2012). Other research has established a link between cyberbullying with family problems, physical aggression, delinquent behavior, and poor academic performance (Freis & Gurung, 2013). Cyberbullying has also associated with risky behavioral and psychosocial problems such as alcohol and drug use, physical altercations, school drop out, suicidal ideation, and possession of a weapon at school (Hinduja & Patchin, 2012; Ybarra, Diener-West, & Leaf, 2007).

In recent years, the link between youth experiences of cyberbullying and suicide has been highlighted in the media. Youth suicide is the third leading cause of death among young people in the United States, and thus a significant public health concern (Bauman, Toomey, & Walker, 2013; Cash & Bridge, 2009). However, it is important to remember that the effects of cyberbullying are highly variable (Wong-Lo & Bullock, 2011). While some cases do end in suicide, many victims of cyberbullying report no mental health consequences. Last, it should be noted that much of this research is cross-sectional by design, making it difficult to draw temporal conclusions. That is to say, lower self-esteem, anxiety, and depression may not only be consequences of cyberbullying, but also precursors. Borrowing from traditional bullying literature, it seems plausible that pre-existing psychiatric disorder may make individuals "easy targets" for cyberbullying (Fredriks, Vogels, & Verloove-Vanhorick, 2006). Longitudinal research on cyberbullying is greatly needed to better understand this temporal sequence of negative mental health outcomes.

It is also pertinent to examine experiences of cyberbullying by race and other identifying characteristics. Based on just a handful of available studies, there does not appear to be major differences in the rates of cyberbullying among those who identify as either Caucasian, Hispanic, African-American, or Asian-American (Hinduja & Patchin, 2008; Kowalski, Giumetti, Schroeder,

& Lattanner, 2014). Additionally, Ybarra and colleagues found that race did not significantly differentiate students' experiences of cyberbullying (2007). They propose that certain demographic characteristics such as race or gender are not as relevant or obvious when communicating online. Hinduja and Patchin add that historically less powerful minority groups may be more powerful or less disadvantaged online (2012). However, there is strong evidence to suggest cyberbullying disproportionately affects the lesbian, gay, bisexual, and transgender (LGBT) community (Hinduja & Patchin, 2008; Rivers & D'Augelli, 2001; Schneider & O'Donnell, 2012). Not only is increased frequency of cyberbullying well documented, there is also evidence suggesting that the most severe cases reported are those with a sexual orientation bias (Meyer, 2009). An additional concern is that LGBT youth are more reluctant than their heterosexual counterparts to share their cybervictimization with others (Blumenfeld & Cooper, 2010).

Present Study

Given the paucity of research into the experience of cyberbullying for individuals beyond high school, it is important to examine the relationship between young adults' experiences of cyberbullying and subsequent psychosocial and physical health outcome variables. The purpose of the current study is first to obtain a snapshot of the prevalence of cyberbullying at a large public university campus and then further examine the effects of cyberbullying on physical and mental health. The main hypotheses of the current study are:

1. Increased severity and frequency (i.e., within the past 30 days) of cyberbullying experiences will be associated with higher self-reported depressive, anxiety, and perceived stress symptoms, as well as lower self-esteem.

2. Increased severity and frequency (i.e., within the past 30 days) of cyberbullying experiences will be associated with increased physical health symptoms, including greater alcohol usage and sleep disturbance.

3. Increased severity and frequency (i.e., within the past 30 days) of cyberbullying experiences will be positively related to increased sexual risk taking behavior.

Methods

Participants

Each semester, university students complete the psychology subject pool pre-screener, which in this case included questions about prior experiences of cyberbullying answered by 1,194 participants. Our follow-up study included 180 undergraduate students enrolled in an introductory psychology course at a major state university. To be eligible to participate in this research study, participants were: 1) 18 years of age or older; 2) reported at least one lifetime experience of cyberbullying; and 3) able to read and understand English, as the survey was not available in other languages.

Procedure

For the follow-up study, recruitment occurred over consecutive days beginning in March 2015 through April 2015. Participants who indicated a prior experience cyberbullying in their lifetime were eligible to participate in our survey study, which was distributed and completed entirely online. Qualifying participants accessed a unique URL that linked them to the study through the Sona-System participant pool management software. Informed consent was obtained before any study procedures began via selecting "I agree" on an information page that outlined the purpose of the study and possible risks.

Participants then completed the electronic assessment battery via Qualtrics, a software toolset and workflow methodology for electronic collection and management of research data. Participants were able to complete the survey anywhere with an Internet-connected device (e.g., desktop computer, laptop, tablet, or smartphone). Participants were able to take as much time as needed to complete the survey but were recommended to complete the survey in a single sitting. No identifying information, other than basic demographics, was collected. With the Sona-System participant pool management system, participants remained completely anonymous to the researchers and received two research participation credits through the Sona-System using unique random number identifiers. The average time to complete the full survey was approximately 45 minutes. The survey concluded with resources available both locally and nationally for participants who felt as though they needed additional support regarding their experience of cyberbullying. The university's Institutional Review Board approved all procedures and measures of this research study.

Measures

Demographics. Participants provided demographic information including their age, race, ethnicity, sexual orientation, gender identity, education level, grade point average (GPA), religion, and relationship status.

Cyberbullying frequency. The frequency of cyberbullying that participants experienced was assessed using the Cyberbullying and Online Aggression Survey developed by Hinduja and Patchin (2009). The survey collected data on cyberbullying victimization within the past 30 days. Unlike most measurements of cyberbullying, this questionnaire included media-specific items related to experiences on Facebook, Twitter, and others. It also included a variety of behaviors ranging from relatively minor (e.g., "I received an upsetting email from someone I didn't know"

to more serious (e.g., "something was posted online about me that I didn't want others to see").

Responses were recorded on a 5-point scale ranging from "never" to "every day" and higher values

indicate more experiences of cyberbullying, depending on the subscale. The instrument has shown

high reliability across multiple studies with Cronbach's Alpha ranging from .91 to .97 (Hinduja &

Patchin, 2009; Sbarbaro & Smith, 2011). In the current study, the Cronbach alpha coefficient was

.79.

Cyberbullying severity. Participants completed the Impact of Events Scale- Revised (IES-

R) which is a 22-item questionnaire that measures the psychological impact of an event on an

individual (Weiss & Marmar, 1997). Participants were asked to recall their most salient experience

of cyberbullying and answer questions such as "I thought about it but didn't mean to" and "I was

jumpy and easily startled" as it related to them in the past seven days. Responses were recorded

on a 5-point scale ranging from "not at all" to "extremely." Higher scores on the scale suggested

increased presence of trauma symptoms, including intrusive thoughts, avoidance, and

physiological hyperarousal. Scores above 33 are indicative of post-traumatic stress symptoms. In

the current sample, Cronbach's alpha was .96.

Depression. Participants completed the Center for Epidemiological Studies- Depression

scale (CES-D) a self-report, 20-item measure of depressive symptoms (Radloff, 1977). The CES-

D assessed depressed mood in the previous week on a four-point scale that ranged from 0 "rarely

or none of the time (less than one day)" to 3 "most or all of the time (five – seven days)." Higher

scores on the scale indicated increased presence of depressive symptoms with a score of 16 or

higher indicative of clinically significant depression. The CES-D demonstrated high reliability in

the sample with a Chronbach's alpha of .87.

Anxiety. The 7-item anxiety subscale of the Hospital Anxiety and Depression Scale (HADS) was completed by participants to assess anxious symptomatology (Zigmond & Snaith, 1983). "I feel tense or wound up" and "I feel restless and have to be on the move" are examples of items on the questionnaire that are related to anxiety. Each item was scored on a 4-point scale with anchors specific to each question. A systematic review identified a cut-off point of 8 for presence of an anxiety condition (Bjelland et al., 2002). The HADS anxiety scale has consistently demonstrated high internal consistency with an average Cronbach's alpha of .83 and strong concurrent validity (.80). For the current study, Cronbach's alpha was .84.

Distress. Participants completed the Beck Hopelessness Scale (BHS) to measure negative attitudes about the future (Beck & Steer, 1988). The scale is a 20-item self-report inventory in which participants respond "yes" or "no" in agreement to various statements over the past week, such as "My past experiences have prepared me well for the future." A composite score was calculated with higher scores indicating greater pessimism. The BHS internal reliability coefficients are reasonably high (Pearson r = .82 to .93 across seven norm groups) but test-retest coefficients are modest (0.69 after one week; Beck & Steer, 1988). In our sample, Cronbach's alpha was .87.

Self-Esteem. Participants completed the Rosenberg Self-Esteem Scale (short-form; RSES), a 10-item measure of self-esteem (Rosenberg, 1965). The questions, for example, "At times, I think I am no good at all" were answered on a 4-point scale from 1 "Strongly Disagree" to 4 "Strongly Agree." Certain items are reversed scored and higher composite scores represent lower self-esteem. This scale has demonstrated good reliability (internal consistency and test-retest) including samples of ethnic minorities (Salyers et al., 2001). Reliability for the RSES was high in the present sample with Cronbach's alpha = .91.

Perceived Stress. The Perceived Stress Scale (PSS) was developed by Cohen and colleagues (1983) to measure the degree to which situations in one's life are appraised as stressful. Participants answered 10 questions and were asked to consider the last month in response to questions such as "how often have you been because of something that happened unexpectedly" and "how often have you felt that you were on top of things." Participants responded to questions on 5-point scale ranging from "never" to "very often." The PSS is not a diagnostic instrument, thus there are no cut-off scores and comparisons are sample dependent. The scale has previously demonstrated good test-retest reliability, and in the current sample the Cronbach alpha coefficient was .84.

Alcohol Use. Participants completed the 10-item Alcohol Use Disorders Identification Test (AUDIT) to assess for alcohol dependence as well as less severe alcohol problems (Saunders et al., 1993). An example question is "how often do you have a drink containing alcohol?" Questions were anchored on a 5-point Likert scale, with most questions ranging from "never" to "daily or almost daily." The psychometric properties of the AUDIT are favorable with a high degree of internal consistency (range of .75 to .97; Reinert & Allen, 2007). In the current study, the AUDIT demonstrated good reliability with Cronbach's alpha = .87.

Sleep Behavior. Participants completed the DSM-5 Level 2 Sleep Disturbance Measure (DSM-SD), an 8-item self-report measure designed to gather information about sleep quality and disturbances in the prior week (PROMIS Health Organization and PROMIS Cooperative Group, 2012). Responses were indicated on a 5-point scale ranging from "never" to "always." With higher composite scores associated with increased sleep disturbance. Examples of questions on the measure include: "I was satisfied with my sleep" and "I had difficulty falling asleep." Reliability for this measure was good in the current sample with a Cronbach's alpha = .91.

Health Symptoms. The Pennebaker Inventory of Limbic Languidness (PILL) is a 54-brief item scale that asked the frequency of common physical symptoms and sensations (Pennebaker, 1982). Examples of symptoms include: "eyes water," "lump in throat," "upset stomach," and "dizziness." Responses were recorded on a 5-point scale ranging from "have never or almost never experienced the symptom" to "more than once every week." The PILL was scored by summing the total number of items endorsed by each participant. Cronbach's alphas range from .88 to .91 and test-retest reliability range from .79 to .83 over a two-month period (Pennebaker, 1982). The reliability for the PILL was very good in the present sample, Cronbach's alpha = .96.

Sexual Behavior. Sexual activity and sexual risk behavior was assessed using an adapted questionnaire intended for university students created by Turchik and Garske (2008). Participants were asked the number of times, in the past six months, that they had unprotected and protected insertive and receptive anal and vaginal sex. A sexual risk composite variable was calculated for each participant, defined as the sum of unprotected anal or vaginal intercourse acts with sex partners in the previous six months.

Data Analysis Plan

Study data was collected and stored using Qualtrics online database. The data was downloaded weekly, stored on an encrypted and password protected computer, and checked for errors prior to analysis. All analyses were conducted using SPSS software version 22.0. Correlations were used to determine no relationship between demographic and mental and physical health outcome variables. To test the first hypothesis, Pearson's correlation was used to examine the relationship between the severity of most salient cyberbullying experience, using the IES-R, with mental and physical health outcome variables. To check the second hypothesis, one-way

analysis of variance (ANOVA) was used to examine differences between individuals who more frequently experience cyberbullying (i.e., in the past 30 days) with mental and physical health outcomes. For the final hypothesis, to test the relationship between cyberbullying and sexual risk behavior, a logistic regression was employed. Scores on severity of cyberbullying experience and frequency (i.e., cyberbullying experience in the previous 30 days) were entered as predictor variables and a dichotomous sexual risk variable (i.e., yes or no having an episode of unprotected intercourse in the past month) was entered as the criterion variable.

Results

Prevalence of Cyberbullying

The first aim of this study was to examine the prevalence of cyberbullying in our unique sample at one of the largest public universities in New England. Approximately 22,973 undergraduate students were enrolled in the Spring 2015 semester and of those, 1,194 were enrolled in an introductory psychology class that took a research study screening survey and responded to questions about experiences that related to online Internet behavior. Participants were then asked to consider the following definition of cyberbullying when answering the final two questions: "Cyberbullying is when someone repeatedly makes fun of another person online or picks on another person through e-mail or direct message or when someone posts something line about another person that the person doesn't like." Nearly one third of participants (32%; n = 388) endorsed, that by this definition, that in their entire lifetime they have been cyberbullied. Furthermore, 72 participants (6%) indicated that they have had this experience in the previous 30 days.

Participants were asked if in their entire lifetime they have received an e-mail, text message, instant message, or other type of electronic direct message from someone that made them upset or uncomfortable; 983 participants (82%) responded affirmatively. When asked the same question, but within the previous 30 days, 672 participants (56%) answered that they have received some type of upsetting or uncomfortable electronic message. When asked directly if they have been "made fun of online" including through the usage of smartphone and apps, 561 participants (47%) endorsed this experience in their lifetime and 208 participants (17%) in the previous 30 days.

Participants were also asked questions about their experiences on social media websites such as Facebook, Twitter, Tumblr and other apps. When asked if someone in their entire lifetime has posted something on their account or profile page that was upsetting or uncomfortable, 760 participants (64%) endorsed yes and 351 participants (29%) noting this experience in the previous 30 days. Finally, when asked about someone posting something upsetting or uncomfortable on other webpages, such as message boards, online forums, dedicated websites, etc., 458 participants (38%) experienced this within their lifetime and 178 participants (15%) indicating this experience within the prior 30 days.

Sample Characteristics

A summary of the sample's demographic information for the follow-up study (N = 180) is provided in Table 1. The mean age of the participants was 19.32 years (range 18 – 30). There was a near-even split in terms of gender identification with 52% of the participants identifying as female and 48% identifying as male (no participants identified as transgender). A breakdown of experience of cyberbullying by gender identification is provided on Table 2. Table 3 highlights

the lack of gender identification differences on psychosocial and health outcome variables. The majority (70%) of the sample identified their race as Caucasian, 18% identified as Asian-American, 7% identified as African-American, and the remaining 4% responded unknown or chose not to report their race. For ethnic identification, 7% of the participants in the overall sample identified as either Hispanic or Latino. The vast majority (94%) of the sample identified as straight or heterosexual, 1% identified as gay or lesbian, 2% identified as bisexual, and the remaining 3% responded either unsure of their sexual orientation or chose not to respond. Just over half the sample (51%) reported being a freshman at the university, 41% reported being a sophomore, 6% reported being a junior, and 3% reported being a senior. The average grade point average (GPA) of the sample was 3.17 ($SD = .52$). The sample varied on religious affiliation in that 35% identified as Catholic, 25% reported no religious affiliation, 21% as Christian, 6% as Jewish, 4% as Muslim, 2% as Protestant, and the remaining 7% selected other or did not respond. When asked about relationship, status the majority (74%) of the sample responded as being single, 22% reported being in a committed relationship, and 3% reported being married.

Severity of Cyberbullying and Mental Health

The relationship between the severity of participants' most salient cyberbullying experience, as measured by the IES-R, and mental health outcomes was investigated using Pearson's correlation coefficients. These findings are presented on Table 4. Preliminary analyses were conducted to confirm no violation of the assumptions of normality, linearity, and homoscedasticity. For depressive symptomatology, there was a medium, positive correlation between the IES-R and the CES-D, $r = .35$, $p < .001$, with increased severity of cyberbullying experience associated with higher levels of depressive symptomatology. For anxious symptomatology, there was a medium, positive correlation between the IES-R and the HADS, $r =$

.41, $p < .001$, with increased severity of cyberbullying experience associated with higher levels of anxious symptomatology. For reported distress, there was a medium, positive correlation between the IES-R and the BHS, $r = .34$, $p < .001$, with increased severity of cyberbullying experience associated with higher levels of distress. For the measure of self-esteem, there was a medium, positive correlation between the IES-R and the RSES, $r = .30$, $p < .001$, with increased severity of cyberbullying experience associated with higher reports of low self-esteem (i.e., higher scores on the RSES indicates lower self-esteem). Finally, for perceived stress, there was a small, positive correlation between the IES-R and the PSS, $r = .24$, $p < .01$, with increased severity of cyberbullying experience associated with higher levels of anxious symptomatology.

Frequency of Cyberbullying and Mental Health

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the relationship between frequency of cyberbullying and mental health symptomatology. Table 5 contains a breakdown of these findings. Participants were divided into two groups based on reported frequency of cyberbullying (Group 1: at least one reported incident of cyberbullying in the past 30 days and Group 2: no reported incident of cyberbullying in the past 30 days). There was a statistically significant difference at the $p < .05$ level in depressive symptomatology when examining CES-D scores between Group 1 ($M = 19.13$, $SD = 9.50$) and Group 2 ($M = 11.59$, $SD = 8.00$): $F (1, 169) = 16.79$, $p < .01$. The effect size, calculated using eta squared, was .09. Considering anxious symptoms, there was a statistically significant difference at the $p < .05$ level in HADS scores between Group 1 ($M = 9.13$, $SD = 4.46$) and Group 2 ($M = 6.43$, $SD = 4.15$): $F (1, 172) = 8.56$, $p < .01$. The effect size, calculated using eta squared, was .05. Examining reported distress, there was a statistically significant difference at the $p < .05$ level in BHS scores between Group 1 ($M = 5.95$, $SD = 4.67$) and Group 2 ($M = 2.84$, $SD = 3.56$): $F (1, 166) = 13.40$, $p < .01$.

The effect size, calculated using eta squared, was .07. There was a statistically significant difference at the $p < .05$ level in RSES self-esteem scores between Group 1 ($M = 10.91$, $SD = 6.24$) and Group 2 ($M = 6.97$, $SD = 5.79$): $F (1, 168) = 9.01$, $p < .01$. The effect size, calculated using eta squared, was .05. Finally when looking at perceived stress, there was a non-statistically significant difference (but a trend in the right direction) at the $p < .05$ level in PSS scores between Group 1 ($M = 18.43$, $SD = 5.65$) and Group 2 ($M = 16.34$, $SD = 6.08$): $F (1, 166) = 2.39$, $p = .12$.

Severity of Cyberbullying and Physical Health

The relationship between the severity of participants' most salient cyberbullying experience, as measured by the IES-R, and physical health outcomes was investigated using Pearson's correlation coefficient. A summary of these analyses is presented on Table 4. Preliminary analyses were conducted to confirm no violation of the assumptions of normality, linearity, and homoscedasticity. For alcohol abuse, there was a medium, positive correlation between the IES-R and the AUDIT, $r = .30$, $p < .001$, with increased severity of cyberbullying experience associated with higher levels of alcohol use. For sleep disturbance, there was a small, positive correlation between the IES-R and the DSM-SD, $r = .23$, $p < .01$, with increased severity of cyberbullying experience associated with greater sleep disturbance. With reported adverse physical health symptoms, there was a small, positive correlation between the IES-R and the PILL, $r = .20$, $p < .01$, with increased severity of cyberbullying experience associated with higher report of adverse physical health symptoms.

Frequency of Cyberbullying and Physical Health

A one-way between-groups ANOVA was conducted to explore the relationship between frequency of cyberbullying and physical health. Refer to Table 5 for a summary of these findings.

Participants were divided into two groups based on reported frequency of cyberbullying (Group 1: at least one reported incident of cyberbullying in the past 30 days and Group 2: no reported incident of cyberbullying in the past 30 days). In terms of alcohol use, there was a statistically significant difference at the $p < .05$ level in AUDIT scores between Group 1 ($M = 10.08$, $SD = 7.00$) and Group 2 ($M = 6.10$, $SD = 6.31$): $F(1, 178) = 8.06$, $p < .01$. The effect size, calculated using eta squared, was .04. Examining sleep disturbance, there was a non-statistically significant difference at the $p < .05$ level in DSM-SD scores between Group 1 ($M = 21.04$, $SD = 5.80$) and Group 2 ($M = 19.68$, $SD = 7.30$): $F(1, 173) = .76$, $p = .39$. Finally, there was a statistically significant difference at the $p < .05$ level in physical health symptoms in PILL scores between Group 1 ($M = 62.83$, $SD = 36.17$) and Group 2 ($M = 48.64$, $SD = 28.62$): $F(1, 178) = 4.75$, $p < .05$. The effect size, calculated using eta squared, was .03.

Cyberbullying and Sexual Risk Behavior

A linear regression was calculated to predict sexual risk behavior based on frequency of cyberbullying. A non-significant regression equation was found ($F(1,178) = .003$, $p = .96$). Next, a linear regression was calculated to predict sexual risk behavior based on the severity of participants' most salient cyberbullying experience as measured by the IES-R. A significant regression equation was found ($F(1,162) = 3.80$, $p = .05$), with an R^2 of .02. The analysis showed that level of severity significantly predicted sexual risk behavior ($\beta = .15$, $t(163) = 1.95$, $p = .05$).

Discussion

The goal of the present study was to examine the prevalence, mental health, and physical health outcomes of university students with experiences of cyberbullying. Specifically, we investigated whether increased severity and frequency of recent cyberbullying experiences

resulted in poorer mental health symptomatology, adverse physical health symptoms, as well as experiences of cyberbullying relating to sexual risk taking behavior.

The first aim of this study was to obtain a snapshot of the prevalence of cyberbullying at a large public university in New England. When participants were given a basic definition of cyberbullying to consider, nearly one third of the sample (32%; n = 388) endorsed having experienced cyberbullying in their lifetime while 6% (n = 72) reported having experienced cyberbullying in the previous 30 days. As previously stated, prevalence rates vary widely based on a number of factors (e.g., definition and time frame), but our prevalence rate is similar to that found in previous research that has documented cyberbullying among college populations to be about 30% students (Hinduja & Patchin, 2010). When participants were asked more specific questions about ways in which cyberbullying is enacted (e.g., receiving upsetting text messages or uncomfortable posts on their social media page), endorsement of these types of experiences increased across the board. This pattern echoes that of other public health crises (see Mary Koss's (1987) research on sexual assault) and highlights the utility of asking behaviorally-based questions in research.

We hypothesized that participants who reported increased severity of a cyberbullying experiences would exhibit higher self-reported depressive, anxiety, and perceived stress symptoms, lower self-esteem as well as increased physical health symptoms, including alcohol usage and sleep disturbance. Using Cohen's (1988) interpretation guidelines for strength of correlations, we found significant "medium" correlations between the severity of participants' most salient cyberbullying experiences, measured by the IES-R, and depressive and anxious symptomatology, reported distress, lower self-esteem, and alcohol abuse. We found significant, if "small," correlations between the severity of participants' cyberbullying experience with perceived

stress, sleep disturbance, and adverse physical health symptoms. Our findings are consistent with previous research that has documented this emerging trend with cyberbullying victims in higher education (Schenk & Fremouw, 2012). However, to our knowledge, this is the first study to document this association using a measure of severity of most salient cyberbullying experience.

We hypothesized that increased frequency, that is, an experience of cyberbullying within the previous 30 days would be associated with higher self-reported negative mental and physical health outcomes outlined above. Again using Cohen's (1988) proposed guidelines for evaluating effect size, we found significant results with a "medium" effect size for depressive symptomatology and reported distress. We found "small" but still significant effects for anxious symptomatology, self-esteem, alcohol use, and adverse physical health symptoms. We found no significant differences on measures of perceived stress and sleep disturbance. Most intriguing, when the sample was split between those who reported at least one incidence of cyberbullying in the past 30 days (Group 1) and those with no reported incident (Group 2), the mean score for participants in Group 1 were above the clinical cutoff score for measures of depression, anxiety and alcohol abuse. This would suggest a meaningful difference in cyberbullying experience, regardless of statistical significance and effect size. For perceived stress and sleep disturbance, mean scores were relatively elevated in both groups, suggesting that stress and abnormal sleep are common for most university students, regardless of cyberbullying history. Furthermore, sleep disturbance is consistently among the most common reported stressors of university students (Ross, Niebling, Heckert, 1999; Taylor et al., 2013).

We hypothesized that increased frequency as well as increased severity of cyberbullying would predict increased sexual risk taking behavior. In our sample, frequency of cyberbullying did not predict sexual risk taking behavior, however, severity of cyberbullying experience did

significantly predict sexual risk taking behavior. Sexual risk taking behavior has been previously associated with traditional bullying among adolescents (Holt, Matjasko, Espelage, Reid, & Koenig, 2013). To our knowledge, this is the first study to document this finding in a sample of young adults (i.e., university students) with a history of being cyberbullied. This result adds to the literature that individuals with other types of victimization histories (e.g., childhood sexual abuse) engage in sexual risk taking behavior at higher rates than their non-victimized peers (Black et al., 2009). It would appear that the severity of a cyberbullying experience, regardless of the number of occurrences, seems to be the most important factor linking cyberbullying and sexual risk taking behavior.

Limitations

The findings of this study should be considered in conjunction with some limitations. First, the cross-sectional design of this study does not allow us to determine the causal relationships among our variables. It is possible that individuals with pre-existing mental and physical health conditions are more disposed to be targets of cyberbullying. Secondly, our study did not specifically assess or characterize different types of cyberbullying victimization by varying modalities (e.g., social media web pages, blogs, apps, etc.) or motives (e.g., sexual orientation, race, safety, etc.). Collecting this type of data may better inform future research studies and intervention development. Finally, collecting data online using Qualtrics allowed for a broad reach of participants but there was a limited ability to control the environment in which participants completed the survey. While it is difficult to determine the level of attention given by participants, built-in software logic checks and alerts prompted participants to confirm if they intentionally left an item blank, which helped to certify data integrity.

Future Directions

Reporting and Ethical Concerns

There are several important ethical and legal issues that arise when addressing a problem like cyberbullying. First, one must consider at what point do insults and comments posted online cross a threshold for punishable behavior. When does the harm caused by cyberbullying merit legal action (Patchin & Hinduja, 2012)? There is also concern for protecting a perpetrator's rights of freedom of speech and expression allowed under the First Amendment of the United States Constitution. Historically, many school administrations have deflected the issue claiming it is an off-campus problem (Hoff & Mitchell, 2010). Concurrently, most law enforcement officials have delayed involvement with cyberbullying cases until it leaves cyberspace and there are obvious violations of criminal law such as physical harassment or stalking (Shariff & Hoff, 2007). Recently many social media companies, such as Facebook and Twitter, have increased the ease in which users can report incidents of harassment. Conversely other apps, such as the anonymous messaging service Yik Yak, have received criticism for not updating their misusage reporting procedure. This has resulted in several universities creating "geo fences" to essentially block the usage of the app on their campuses (Rubbelke, 2015).

Because of the recent media attention and public interest in the detrimental effects of cyberbullying, school administrators have a renewed interest in meeting their ethical and legal duty to protect their students. Most have done this by revising existing bullying policies to further articulate policies surrounding cyberbullying (Kowalski, Limber, & Agatston, 2012). Several states have either passed or proposed legislation that requires school districts to address cyberbullying in their student handbooks and curriculum and take other steps to address cyberbullying among their student bodies (Patchin & Hinduja, 2012). However, many of these

mandates or safeguards are not in place at higher education institutions, leaving most universities unprepared to handle such incidents (Patchin & Hinduja, 2014).

Finally, there are ethical concerns about researching cyberbullying in the laboratory setting, particularly with minors. Under the guidance of institutional review boards, investigators must be cautious when working with human subjects not to re-traumatize victims. Therefore, it can be challenging to recreate realistic cyberbullying scenarios in a laboratory. One researcher attempted this by simulating a cyberbullying in an online chat room (Kowalski, Limber, & Agatston, 2012). There were two confederates who engaged in cyberbullying and one actual participant in the chart room. The purpose of the study was to observe the extent to which a bystander would intervene during cyberbullying. Not surprisingly, very few participants intervened to defend the victim of cyberbullying, but this study illustrates one way researchers can creatively study cyberbullying (Kowalski, Giumetti, Schroeder, & Reese, 2012).

Prevention and Interventions for Cyberbullying

As public awareness about the serious consequences of bullying has increased, so has interest in developing interventions that target the problem. It is difficult to develop effective bullying interventions, as no two cases are completely alike with complicating individual factors, different available modalities, and so forth. Development of cyberbullying interventions is still in its infancy, with only a few school-based programs and no published psychosocial interventions that are individually tailored to address experiences of cyberbullying; therefore this is an obvious avenue for future research. Thus, far treatments have focused on response strategies for victims of cyberbullying and there are virtually no resources available to those who perpetrate cyberbullying and are seeking behavioral change (Ahlfors, 2010). Not surprising, the burden of implementing intervention strategies falls largely on school counselors and psychologists (Chibbaro, 2007).

Several methods for responding and coping with experiences of being cyberbullied have been suggested in the literature (Tokunaga, 2010). A common first-line approach is to recommend technological strategies to avoid repeated victimization. Examples of technological solutions include blocking the cyberbully, increasing privacy settings, changing usernames and email addresses, refraining from visiting particular websites, and documenting incidents of cyberbullying (Kowalski, Limber, & Agatston, 2012; Tokunaga, 2010). The effectiveness of these technological strategies remains unclear (Perren, Corcoran, Cowie, & DeHue, 2012).

Other response approaches in the literature are classified as passive strategies, which include doing nothing or ignoring it (Tokunaga, 2010). There is no empirical support for the efficacy of such strategies (Perren, Corcoran, Cowie, & DeHue, 2012). In fact, this type of response may perpetuate the problem of cyberbullying as it is well documented that most incidents of cyberbullying go unreported. One study found that 90% of victims did not tell their parents or other adults of their experiences with cyberbullying (Juvonen & Gross, 2008). Common reasons for not reporting cyberbullying is fear that the bullying would then become more frequent and intense or fear an adult will confiscate or restrict usage of their electronic devices (Cassidy, Brown, & Jackson, 2012; Cassidy, Jackson, & Brown, 2009; Chibbaro, 2007).

Alternate approaches are classified as active strategies to preventing future cyberbullying encounters. These methods include confronting the cyberbully, telling the perpetrator to stop, or threatening to tell someone (Tokunaga, 2010). The studies reviewed by Perren et al. (2012), found that this approach may actually exacerbate the problem rather than solve it as they typically escalate the bullying. However, it remains important to acknowledge these recommendations as they are frequently promoted in the literature (Cassidy, Faucher, & Jackson, 2013)

Many counselors and psychological service providers utilize some form of emotions-focused coping strategies for victims of cyberbullying (McGuckin, Perren, & Corcoran, 2013). The goal of this approach is to mitigate negative emotions such as anger, fear, sadness, helplessness, and guilt in order to buffer the impact of cybervictimization (Price & Dalgleish, 2010; Völlink, Bolman, & DeHue, 2013). The effectiveness of emotions-focused coping has been established; however, the cyberbullying literature does not identify the exact treatment cybervictims received (McGuckin, Perren, & Corcoran, 2013; Perren, Corcoran, Cowie, DeHue, 2012). In the cyberbullying research field, there is a critical need for the development and testing of individualized interventions that target cybervictims and cyberbullies alike.

Conclusions

As recently as ten years ago, cyberbullying was practically unheard of, let alone the topic of a growing body of research. Recently, there have been many important findings to better understand and document the prevalence and detrimental effects of cyberbullying. This study added to the literature by demonstrating that increased severity and frequency of cyberbullying is associated with depressive, anxiety, and perceived stress symptoms, lower self-esteem as well as increased physical health symptoms, including alcohol usage and sleep disturbance. We also found an association between severity of cyberbullying experience and sexual risk taking behavior. However, this and much of the cyberbullying research have been self-report and cross-sectional studies, and the field is in significant need of additional methodological work beyond this. An important first step in this is the adoption of a universal definition of cyberbullying, which will increase generalizability of findings and allow researchers to collaborate more easily. For future studies, longitudinal methodologies would provide a clearer temporal understanding of the interplay between individual risk factors and potential negative health outcomes.

In terms of treatment, the development of individualized interventions for both victims and perpetrators is an attractive possibility to address cyberbullying in a clinical setting. This would require more experimental and randomized control studies to evaluate the effectiveness of different types of treatment and health outcomes. Such a strategy would be difficult to implement on large scales (e.g. school-wide approaches) but may provide an effective treatment for individuals with experiences of cyberbullying. As technology becomes ever more pervasive as a tool for social interaction, incidences of cyberbullying are expected to continue rising; empirically validated and efficacious treatments are thus urgently needed.

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Table 1. Demographic characteristics of sample.

Characteristic	Total (N = 180)	
	n or M	% or SD
Age (years)	M: 19.32	SD: 1.52
Gender Identity		
Male	87	48%
Female	93	52%
Transgender	0	-
Sexual Orientation		
Heterosexual	168	93%
Gay/Homosexual	2	1%
Bisexual	4	2%
Not Sure	1	1%
Other	5	3%
Race		
Caucasian	126	70%
Asian-American	33	18%
Black/African American	13	7%
Unknown/Not reported	8	4%
Ethnicity		
Not Hispanic/Latino	165	92%
Hispanic/Latino	12	7%
Not reported	3	2%
Education Level		
Freshman	92	51%
Sophomore	73	41%
Junior	10	6%
Senior	5	3%
Grade Point Average (GPA)	M: 3.17	SD: .52
Religious Affiliation		
Catholic	63	35%
Christian	38	21%
Muslim	7	4%
Jewish	10	6%
Protestant	3	2%
None	45	25%
Other/Not reported	14	8%
Relationship Status		
Single/Never married	133	74%
Committed relationship	40	22%
Married	5	3%
Other/Not reported	2	1%

Note: Some percentages may not total 100% as participants were able to select multiple identities.

Table 2. Experience of Cyberbullying

	Total (n=180)		Men (n=87)		Women (n=93)		Analysis	
	M or (n)	SD or (%)	M or (n)	SD or (%)	M or (n)	SD or (%)	X^2 or (t)	p
Past 30 Days,								
Yes	(24)	(13%)	(14)	(16%)	(10)	(11%)	1.11	.292
No	(156)	(87%)	(73)	(84%)	(83)	(89%)		
Impact of Event Scale	10.27	15.56	10.81	15.54	9.78	15.65	(.42)	.67

Note: Impact of Events Scale was used to measure severity of most salient cyberbullying experience.

Table 3. Psychosocial and Health Outcome Variables

	Full Sample		Men (n=87)		Women (n=93)		Analysis	
	M	SD	M	SD	M	SD	t	p
Psychosocial Variables								
Depression	12.60	8.59	12.12	8.18	13.05	8.96	-.70	.48
Anxiety	6.80	4.29	6.63	4.27	6.96	4.32	-.50	.62
Distress	3.25	3.85	3.33	3.37	3.17	4.27	.27	.79
Self-esteem	7.51	5.99	7.43	5.78	7.57	6.21	-.15	.88
Perceived stress	16.63	6.05	16.05	6.08	17.16	6.00	-1.19	.24
Health Variables								
Alcohol use	6.63	6.53	7.72	7.29	5.60	5.58	2.20	.03
Sleep disturbance	19.87	7.11	19.25	6.65	20.44	7.5	-1.11	.27
Physical Symptoms	50.53	30.01	43.17	28.28	57.42	30.09	-3.27	.01

Table 4. Association between the impact of most salient cyberbullying experience with psychosocial and health outcome variables.

	Depression	Anxiety	Distress	Self-esteem	Stress	Alcohol Use	Sleep	PILL
Impact of Event Scale								
Pearson Correlation	.352**	.405**	.339**	.296**	.239**	.299**	.228**	.200*
Significance (2-tail)	<. 001	<. 001	<. 001	<. 001	.003	<. 001	.003	.010

* *p* < .05, ** *p* < .01

Table 5. Impact of frequency of cyberbullying experience on psychosocial and health outcome variables.

| | Cyberbullied in the past 30 days… | | | | | |
| | Yes | | No | | ANOVA | |
	M	SD	M	SD	F	*p*
Psychosocial Variable						
Depression	19.13	9.50	11.59	8.00	16.79	.000
Anxiety	9.13	4.46	6.43	4.15	8.56	.004
Distress	5.95	4.67	2.84	3.56	13.40	.000
Self-esteem	10.91	6.24	6.97	5.79	9.00	.003
Perceived stress	18.43	5.65	16.34	6.08	2.39	.124
Health Variable						
Alcohol use	10.08	7.00	6.10	6.32	8.06	.005
Sleep disturbance	21.04	5.79	19.68	7.30	.756	.386
Physical symptoms	62.83	36.17	48.64	28.62	4.75	.031