

Linkages between Depressive Symptomatology and Internet Harassment among Young Regular Internet Users

MICHELE L. YBARRA, M.P.H., Ph.D.

ABSTRACT

Recent reports indicate 97% of youth are connected to the Internet. As more young people have access to online communication, it is integrally important to identify youth who may be more vulnerable to negative experiences. Based upon accounts of traditional bullying, youth with depressive symptomatology may be especially likely to be the target of Internet harassment. The current investigation will examine the cross-sectional relationship between depressive symptomatology and Internet harassment, as well as underlying factors that may help explain the observed association. Youth between the ages of 10 and 17 ($N = 1,501$) participated in a telephone survey about their Internet behaviors and experiences. Subjects were required to have used the Internet at least six times in the previous 6 months to ensure a minimum level of exposure. The caregiver self-identified as most knowledgeable about the young person's Internet behaviors was also interviewed. The odds of reporting an Internet harassment experience in the previous year were more than three times higher (OR: 3.38, CI: 1.78, 6.45) for youth who reported major depressive symptomatology compared to mild/absent symptomatology. When female and male respondents were assessed separately, the adjusted odds of reporting Internet harassment for males who also reported DSM IV symptoms of major depression were more than three times greater (OR: 3.64, CI: 1.16, 11.39) than for males who indicated mild or no symptoms of depression. No significant association was observed among otherwise similar females. Instead, the association was largely explained by differences in Internet usage characteristics and other psychosocial challenges. Internet harassment is an important public mental health issue affecting youth today. Among young, regular Internet users, those who report DSM IV-like depressive symptomatology are significantly more likely to also report being the target of Internet harassment. Future studies should focus on establishing the temporality of events, that is, whether young people report depressive symptoms in response to the negative Internet experience, or whether symptomatology confers risks for later negative online incidents. Based on these cross-sectional results, gender differences in the odds of reporting an unwanted Internet experience are suggested, and deserve special attention in future studies.

INTRODUCTION

THE INTERNET IS INCREASINGLY an everyday fixture in the lives of young people and families. An estimated 97% of people in the United States between the ages of 12 and 18 years old use the Internet.¹ The Internet is cited as a tool for increased communication and social connectivity by young people.² As more youth gain access to the Internet, researchers have begun to investigate the social and psychological impacts of being online. Research related to adolescent mental health and Internet behavior has focused primarily on linking depressive symptomatology with intensive Internet use; the majority of findings indicate no significant association.³⁻⁵ Little research has gone further, however, to understand how youth with depressive symptomatology experience and interact with others online. For example, are these young people more vulnerable to negative experiences, such as Internet harassment? Establishing baseline associations between young people with depressive symptomatology and Internet harassment is the first step in identifying vulnerable subpopulations appropriate for intervention programs aimed at promoting the health and safety of young people on the Internet.

Internet communication

The Internet is a new form of communication, one that in many ways makes it easier to correspond with others, especially those who are far away. It also can heighten the challenge of interacting with others by stripping away many of the non-verbal cues, such as body language and voice fluctuations, that people use to understand what is being conveyed. In an online environment, each person's own state of mind and social interpretive ability becomes that much more influential than in-person environments.⁶ Young people with depressive symptoms generally have challenges effectively identifying social cues, as well as relating to peers in traditional environments.⁷ Young people with depressive symptoms may therefore be at an even greater disadvantage in online versus in-person exchanges to correctly interpret and react to others.

Internet harassment and in-person bullying

Internet harassment research is still in its infancy. It is useful to review the research on in-person bullying, a similarly aggressive, peer-to-

peer act. Bullying is a significant public health issue,⁸ for in addition to concurrent symptoms of depression,⁹⁻¹¹ long-term effects of bullying have been noted, including symptoms of depression four years later,¹⁷ poor health,¹³ and challenges in adult personal relationships.¹⁴

In order to account for the relationship between Internet harassment and depressive symptomatology, it is necessary to consider the possibility that a mutually underlying factor is confounding the observed association. For example, peer challenges, lack of social support, and lower social competence, are associated both with young people with depressive symptomatology^{15,16} and victims of bullying.^{9,17,18} It is possible then, that lack of social support is related to depressive symptomatology while also increasing the chances of being the target of Internet harassment. Another psychosocial challenge that may be related to both depressive symptomatology and being harassed on the Internet is substance use, which is significantly related to having a diagnosis of major depressive disorder^{19,20} as well as being a bully-victim (one who is both a bully as well as bullied).^{10,21} Substance use may be an indication of greater psychosocial challenges, thus potentially confounding the association between depressive symptoms and Internet harassment. The current investigation will examine these and other possible confounders to identify a detailed, cross-sectional profile of Internet harassment.

Gap in current literature

A recent investigation of harassment-involved young people in the Youth Internet Safety Survey indicates that victims of Internet harassment are more than two times as likely than non-harassment involved youth to have five or more symptoms of depression.²² The current study extends the literature first, by conducting a secondary data analysis to examine the complex relationship between depressive symptomatology and being a victim of Internet harassment. Second, based on indications of sex differences in depressive symptomatology,²³ boys and girls will be assessed separately to detect the characteristics uniquely related to Internet harassment for each sex.

MATERIALS AND METHODS

This study uses data from the Youth Internet Safety Survey (YISS), a telephone survey of young (i.e., 10-17 years old), regular Internet users (i.e., at

least six times in the previous 6 months). The study employed a national probability design. The survey was conducted between September 1999 and February 2000 to describe and quantify the harassment, unwanted sexual solicitation, and unwanted exposure to sexual material experiences young people were having while navigating the Internet in the previous year. The survey was approved and supervised by the University of New Hampshire's Human Subjects Committee, commissioned by the National Center for Missing and Exploited Children, supported by the Office of Juvenile Justice and Delinquency Prevention, and conformed to the Department of Justice's rules for research projects funded by the agency. The current analyses were approved by the Johns Hopkins Bloomberg School of Public Health's Committee for Human Research.

Sampling method

Details of the YISS sample selection can be found elsewhere.²² The sample was identified from eligible households contacted in a concurrently conducted, nationally representative telephone survey, the Second National Incidence Study of Missing, Abducted, Runaway, and Thrownaway Children.²⁴ Phone numbers were randomly generated using GENESYS, a commercial database maintenance and retrieval system. Phone numbers of households that indicated that at least one child between the ages of 9 and 18 lived at the residence were forwarded to YISS researchers for future contact. A sample size of 1,500 young people was predetermined for the YISS based upon a desired maximum expected sampling error of $\pm 2.5\%$ at the 5% significance level. All phone numbers received were dialed. Seventy-five percent of households contacted ($N = 2,572$) completed the eligibility screen, 72% ($N = 1,857$) of which were eligible for study participation. In total, 82% ($N = 1,501$) of eligible households contacted completed both the adult and young people surveys.²²

Study population

One young person and one caregiver, self-identified as the one most knowledgeable about the young people's Internet behavior, were surveyed in each participating household. Eligibility criteria for inclusion in the YISS required the young person to have lived in the identified household for at least 2 weeks in the previous year, to have used the Internet at least six times in the previous 6 months, to be English speaking, and to be between the ages of 10

and 17. Location of Internet access was left intentionally broad to include young people who accessed the Internet outside of the home (e.g., school, library). Informed consent was required for caregiver participants, and both caregiver and youth informed consent was required for youth participants.

Forty-eight percent of youth YISS respondents were female and were, on average, 14 years old. The majority of respondents identified themselves as white (75%), with 10% indicating Black race. Seven percent of young people report being of Hispanic ethnicity. Sixty-nine percent of caregiver respondents were female. Although some demographic characteristics of participating households are above the national average,²⁵ they were similar to other Internet households at the time of data collection.^{2,26} For example, both household income and adult education were higher than the national average, and non-Hispanic White young people are more prevalent than minority young people among households with lower incomes.^{2,26}

Measures

Internet harassment. Respondents were identified as having been harassed online in the previous year based on responses to two questions: (1) whether the respondent felt worried or threatened because of someone else bothering or harassing him or her while online (yes/no) and (2) whether the respondent felt threatened or embarrassed because someone had posted or sent a message about the young people for other people to see (yes/no). A dichotomous measure was created for young people who responded positively to one or more harassment incidents versus none.

Depressive symptoms. The measure of depressive symptoms consisted of nine variables representing the depressive symptoms outlined in the Diagnostic Statistical Manual-IV.²⁷ Each question (yes/no) referred to symptomatology within the last month except for dysphoria, which referred to all day, nearly every day, for the previous two weeks. Additionally, three dichotomous questions were asked about whether "feeling so down" created functional challenges within the previous month: (1) recent difficulties in personal hygiene, (2) challenges doing schoolwork, and (3) decreased feelings of self-efficacy. Young people are reliable reporters of their own depressive symptomatology and they tend to report more symptoms than caregivers report.^{28,29}

Young people were categorized into one of three groups: (1) major depressive-like symptomatology (i.e. five or more symptoms of depression, one of which was either dysphoria or anhedonia, and indication of functional impairment in at least one area); (2) minor depressive-like symptomatology (i.e., three or more symptoms of depression); and (3) mild/no depressive symptoms (i.e., less than three depressive symptoms).

Internet use. Based upon exploratory factor analysis, a latent factor, "interactive Internet activities," was included in the analyses. Nine variables loaded highly on the factor (Eigenvalue>1): using the Internet (ever) for Instant messaging, emailing, downloading files, updating a web page, connecting to a news group, visiting chat rooms, or looking up movie information; logging onto the Internet from home versus all other places; using the Internet five or more days a week; self-rated Internet expert (almost, definitely) versus being less skilled; and importance of Internet to self (very, extremely) versus little importance. Because of indications of non-linearity, the factor score was split into three categories: (1) highly interactive (1 SD above the mean and higher), (2) average usage (scores centered around the mean), and (3) little interactive activity (1 SD below the mean and lower; reference group).

Young people additionally were asked to estimate the number of hours spent online on a typical day when the Internet was accessed (range: 0–11, with an artificial ceiling at 11). This was categorized as (1) intensive (3+ hours per day), (2) average (2 hours per day), and (3) below average (less than or equal to 1 hour per day; reference group). Young people also were asked to indicate the activity for which they used the Internet most. This was categorized based upon the potential for peer-to-peer interaction: (1) E-mail, (2) instant messaging, (3) chat rooms, and (4) all other (reference). Because marketing reports indicate that households that subscribe to America Online are different from other Internet-using households in terms of desire for parental controls and interactive online communication,⁴⁰ Internet Service Provider was categorized into three groups: (1) definitely AOL, (2) definitely another ISP, and (3) other, including missing, don't know, and refused responses (reference). An indication of young people engaging in Internet harassment toward others was included as a dichotomous variable. Young people who reported at least one of two activities: (1) making rude or nasty comments to someone else online or

(2) harassing or embarrassing someone else on the Internet, were compared to young people reporting neither activity.

Substance use. Young people were asked the number of times they had used controlled substances in the previous year, including: alcohol, tobacco, marijuana, inhalants, and all other drugs. Exploratory factor analysis suggested a latent factor that included all five variables (eigenvalue>1). Based upon data distribution, scores were categorized into three groups: (1) low users (1 standard deviation below the mean; Reference), (2) moderate users (scores centered around the mean), and (3) high users (1 standard deviation above the mean).

Peer relationships. Two indications of peer relationships were created. Young people were asked to estimate the number of close friends they had. This was treated as a continuous variable (range: 0–11, with an artificial ceiling at 11). Second, the average number of times per week the youth respondent spent time with friends was dichotomized at the sample mean (4 or more days per week versus fewer).

Additional psychosocial challenge. Additional indication of multiple life challenges was also included because of its association with depressive symptoms.^{30,31} The accumulation of life stressors (range: 0–4) within the previous year included: death in the immediate family, moving to a new community, caregiver divorce, and loss of job among the caregivers. This was dichotomized to compare young people reporting two or more versus fewer. Additionally, a dichotomous variable to indicate serious victimization was created, comparing young people with either sexual or physical abuse within the previous year with young people reporting neither type of victimization. Indication of interpersonal victimization was also included as a dichotomous variable, comparing young people who reported two or more of the following experiences: being attacked by one person, being attacked by a gang, something stolen from the young people, being hit by a peer, and being "picked on" by a peer.

Demographic characteristics. Youth-reported age was categorized into three groups: (1) 10–12 year olds (reference group), (2) 13–14 year olds, and (3) 15–17 year olds. Race and ethnicity, also reported by young people, was categorized into four groups: (1) non-Hispanic white (reference), (2) non-Hispanic

Black, (3) Hispanic, and (4) other. Caregivers reported the child's gender and 1998 household income. At the time of data collection, household income was coded into one of four categories; for the purposes of the current analyses, household income was dichotomized at \$75,000 or more, versus lower.

Statistical methods

Once data cleaning and exploratory data analyses (e.g., graphical displays) were complete, logistic regression models were used to estimate the odds of Internet harassment given the report of depressive symptomatology.³² For the purposes of the current analyses, cases were required to have valid (i.e., non-missing) data for the majority of variables analyzed. Cases missing more than two variables in any subcategory of child characteristics (i.e., parent-child relationships, Internet use, demographic characteristics, depression, negative life events, substance use, and negative Internet experience) were dropped from the analyses. Nine cases met these criteria; an additional three cases were dropped because factor scores could not be estimated due to extreme responses. There were 1,489 young people in the resulting sample.

Missing information was imputed to maximize available data using best-set regression techniques.³² For all but two variables, this was less than 1% of the sample, the exceptions being the estimated average number of hours spent on a typical day the young people use the Internet (1.1%) and household income (7.3%). "Don't know" and "refused" responses were coded at the sample mean, and therefore most often coded as indicator-absent. For all measures except race/ethnicity (1.3%), this affected less than 1% of responses. To adjust analyses for their influence on model estimation, three "dummy" indicators were created to reflect cases for which data was (1) imputed, or replaced because of (2) don't know or (3) refused answers, and were included in the final models.

Exploratory factor analysis was used to estimate factor scores of several latent variables using MPlus.³³ Variables for all hypothesized factors were included in the same analysis to adjust for unanticipated cross-correlations. Seven factors were identified using the combination of scree plots, eigenvalues, and the root mean square of approximation ($p < 0.05$).³³ Varimax rotation was used to estimate the factor scores for: interactive Internet use, substance use, depressive symptomatology, and four caregiver-child relationships (not included in the current analyses).

First, total and unadjusted effects of specific young people characteristics on harassment were estimated using logistic regression. Based on indications of sex differences in depressive symptomatology,^{7,23,34} further analyses were stratified by gender. A separate parsimonious logistic regression model of the odds of Internet harassment was constructed first for males and then for females.

For each parsimonious model, two characteristics were tested for effect modification. Because of differences in depressive symptomatology by age,³⁵⁻³⁷ differences in the association between depressive symptoms and Internet harassment by age was investigated. Second, substance use is highly comorbid with depression^{19,23} and may be an indication of greater challenge; this may affect the association between depressive symptoms and Internet harassment, with those with greater dysfunction (i.e., high substance use) more likely to also report Internet harassment.

Final variables were identified via backward and forward stepwise deletion (p -value of individual variable < 0.10). Next, characteristics identified in either stepwise solution were included in one model and each variable was tested for significant contribution to the overall parsimonious model based upon likelihood ratio tests ($p < 0.05$). Indicators of depressive symptomatology were included in the final model irrespective of statistical significance because their relationship with the outcome is the crux of the current investigation. The three dummy variables (i.e., indication of a refused response, don't know response, or imputed variable) were also forced into the final models. Each model was then tested using Hosmer-Lemeshow's Goodness of Fit test ($p > 0.05$ indicates a better fit).³²

RESULTS

Descriptive results

Six and a half percent ($N = 97$) of young, regular Internet users in the current analyses reported at least one form of Internet harassment in the previous year. One in 20 respondents reported feeling worried or threatened because they were bothered or harassed by someone else on the Internet, and 3% of young people reported feeling threatened or embarrassed by others on the Internet. Most victims (55%) reported multiple harassment incidents within the previous year. As reported previously,²² 72% of respondents were harassed by someone they met online.

Depressive symptomatology

Depressive symptomatology was significantly related to the report of online harassment. Specifically, 13.4% of young people who were the target of Internet harassment also reported symptoms of major depression as compared to 4.6% of young people who indicate major depressive-symptomatology and were not the victim of Internet harassment (OR: 3.38, CI: 1.78, 6.45). In contrast, a similar percentage of young people who reported Internet harassment (16.5%) or no Internet harassment (14.0%) also reported symptoms of minor depressive symptomatology (OR: 1.37, CI: 0.78, 2.41). Eighty-one percent of young people who reported no Internet harassment incident also reported few or no symptoms of depression, as compared to 70.1% of young people who indicated an unwanted Internet incident (reference groups).

Among young people who reported Internet harassment in the previous year, a trend for increased odds of emotional distress was observed for young people who also reported symptoms of major depression (OR: 2.01, CI: 0.60, 6.68) compared to mild/absent depressive symptomatology.

The association of depressive symptomatology and Internet harassment for male Internet users

Males who reported symptoms of major depression were more than eight times as likely (OR: 8.18, CI: 3.47, 19.26) to also report being the victim of Internet harassment compared males who reported mild/absent depressive symptomatology. A trend for increased odds of reporting harassment online

was also observed for males who reported symptoms of minor depression (OR: 1.99, CI: 0.94, 4.21).

A final parsimonious logistic regression model of significant characteristics related to Internet harassment was identified for male, young regular Internet users ($N = 782$); results are found in Table 1. Acceptable model fit was indicated (Hosmer-Lemeshow's Goodness of Fit: $\chi^2 = 6.60, p = 0.47$). Effect modification variables for substance use and age were unstable and could not be estimated for model inclusion. The final model was adjusted for the effects of imputed and "don't know" responses; all "refused" responses ($N = 7$) were non-harassed, thereby precluding adjustment.

After adjusting for all other significant characteristics, the odds of reporting Internet harassment for males who indicated symptoms of major depression are still more than threefold higher (AOR: 3.64, CI: 1.16, 11.39) than otherwise similar males who report mild or no symptoms of depression. In addition to depressive symptomatology, differences in Internet use, psychosocial challenge, and demographic characteristics emerged between targets and non-targets of Internet harassment. For example, using the Internet for an average of three hours or more versus one hour or less per day was related to a four-fold increase in the odds (AOR: 4.34, 2.12, 8.89) of reporting Internet harassment among otherwise similar males. The report of multiple victimizations was also associated with the report of harassment online among males, with those reporting interpersonal acts of victimization toward him or her (e.g., being attacked by another youth) in the previous year three times as likely (AOR: 3.07, CI: 1.57, 6.00) to also report being harassed online

TABLE 1. PARSIMONIOUS, MULTIVARIATE LOGISTIC REGRESSION MODEL OF INTERNET HARASSMENT FOR YOUNG, REGULAR MALE ($N = 782$) INTERNET USERS

	Adjusted odds ratio (95% CI)	P-value
Depression		
Symptoms of major depression	3.64 (1.16, 11.39)	0.03
Symptoms of minor depression	1.60 (0.68, 3.76)	0.28
Mild or no symptoms	1.00 (reference group)	
Internet usage characteristics		
Average daily Internet use		
Intense (3+ h/day)	4.34 (2.12, 8.89)	<0.001
Moderate (2 h/day)	1.00 (0.43, 2.31)	1.00
Low (≤ 1 h/day)		
Harasser of others online	4.19 (2.06, 8.50)	<0.001
Psychosocial characteristics		
Interpersonal victimization (2+)	3.07 (1.57, 6.00)	<0.001

compared to males who reported fewer events, adjusting for additionally significant characteristics.

The association of depressive symptomatology and Internet harassment for female Internet users

A logistic regression model of depressive symptomatology and additional characteristics significantly related to the report of Internet harassment for females ($N = 707$) is found in Table 2. Goodness of fit testing indicated acceptable fit (Hosmer-Lemeshow's Goodness of Fit $\chi^2 = 4.24, p = 0.84$). Effective modification terms for substance use were too unstable to estimate and were dropped from the model building procedure; terms for age were tested but not retained in the final model. Estimates in the final model were adjusted for the effects of "don't know" and imputed responses; "all refused" responses ($N = 5$) were non-harassed cases.

Self-reported depressive symptomatology was not significantly related to the report of Internet harassment for females (major depressive symptoms: OR: 1.32, CI: 0.45, 3.87; minor depressive symptoms: OR: 0.90, CI: 0.37, 2.19). After adjusting for other significant characteristics, depressive symptomatology continued to be non-significantly related to unwanted Internet harassment for young

female Internet users (AOR: 0.90, CI: 0.27, 3.04; see Table 2). Beyond the report of depressive symptomatology however, many Internet use characteristics were influential in estimating the odds of Internet harassment. For example, females who reported using the Internet for three hours or more a day were 3.5 times as likely (AOR: 3.67, CI: 1.53, 8.81), and those who use the Internet for two hours a day are twice as likely (AOR: 2.34, CI: 1.16, 4.73) to indicate harassment online compared to otherwise similar females who used the Internet for one hour or less a day. Using the Internet most frequently for Instant Messaging (AOR: 2.92, CI: 1.19, 7.79) or E-mail (AOR: 2.75, CI: 1.20, 6.26) were additionally related to an increased likelihood of reporting Internet harassment after adjusting for all other characteristics. Further, otherwise similar females who reported harassing others online were almost three times as likely (AOR: 2.82, CI: 1.43, 5.53) to also report harassment online compared to females who did not act out towards others online. The household Internet service provider (ISP) was also associated with Internet harassment; compared to those with America Online, young people in households with any other ISP were 65% less likely (AOR: 0.36, CI: 0.17, 0.75), and those whose caregiver did not know or refused to disclose the ISP

TABLE 2. PARSIMONIOUS, MULTIVARIATE LOGISTIC REGRESSION MODEL OF INTERNET HARASSMENT FOR YOUNG, REGULAR FEMALE ($N = 707$) INTERNET USERS

	<i>Adjusted odds ratio (95% CI)</i>	<i>P-value</i>
Depressive symptoms		
Symptoms of major depression	0.90 (0.27, 3.04)	0.87
Symptoms of minor depression	0.88 (0.34, 2.31)	0.80
Mild or no symptoms	1.00 (reference)	
Internet usage characteristics		
Average daily Internet use		
Intense (3+ h/day)	3.67 (1.53, 8.81)	<0.01
Moderate (2 h/day)	2.34 (1.16, 4.73)	0.02
Low (≤ 1 h/day)	1.00 (reference)	
Most frequent Internet activity		
Instant Messaging	2.92 (1.10, 7.79)	0.03
E-mail	2.75 (1.20, 6.26)	0.02
Chat room	1.68 (0.51, 5.50)	0.39
Other	1.00 (reference)	
Harasser of others online	2.82 (1.43, 5.53)	<0.01
Internet service provider		
Don't know	0.31 (0.13, 0.74)	<0.01
Other	0.36 (0.17, 0.75)	<0.01
America On Line	1.00 (reference)	

were 70% less likely (AOR: 0.31, CI: 0.13, 0.74) to also report harassment online after adjusting for other significant factors.

DISCUSSION

More than one in 20 (6.5%, N=97) young Internet users have been the targets of Internet harassment in the previous year. This prevalence rate is lower than that of in-person bullying, which reportedly affects 10–20% of young people.^{17,18,21} Results indicate however, that three times as many young people who report being harassed also indicate major depressive-like symptomatology compared to non-targets. Further, 30% of targeted young people report feeling very or extremely upset by the online incident.²² Internet harassment is a significant public mental health issue indeed.

Differences in male versus female victims

Subsequent analyses reveal that males who report major depressive-like symptomatology are more than eight times as likely to indicate Internet harassment. Even more intriguing, this association fails to be accounted for by underlying variations in Internet use. Thus, it is not that males with depression are simply more likely to spend more time online and therefore more time at risk. When exposure time online is held constant, depressive symptomatology continues to play a major explanatory role in the odds of reported Internet harassment. This is in direct contrast to females, for whom differences in Internet usage play the largest role in explaining the report of harassment online. It is unclear why depressive symptomatology is an important factor in the odds of being the target of Internet harassment for males, but not for females, especially because overall, males and females are equally likely to report Internet harassment.²² It is possible that being the target of Internet harassment is part of a larger pattern of psychosocial challenge for males; although additional psychosocial characteristics are unrelated to Internet harassment for females, multiple interpersonal victimizations are associated with an increased likelihood of being a target among otherwise similar males. This is clearly an important question for future research.

Perception versus reality

Young people with depressive symptoms may be more likely to report Internet harassment because

they are more likely to *perceive* a situation as threatening compared to young people without symptoms of depression. The lack of social cues that can be conveyed on the Internet (e.g., volume and pitch of voice) places a burden on the user to interpret incoming social stimuli without information otherwise received during in-person communications.⁶ One's current emotional state and ability to navigate unclear social interaction becomes that much more important; and for young people with depressive symptomatology, their state of mind and generally poorer social skills may "skew" the interpretation negatively. Whether or not an independent observer would agree with the young person's perception of harassment is not however, the main issue. It is instead the young person's perception that he or she is exposed to harassment that places him or her at risk for subsequent emotional distress. This point may be especially noteworthy for young people with depressive symptomatology because negative life experiences have been shown to contribute to a subsequent major depressive onset in some cases.⁷ Indeed, a higher percentage of youth with depressive symptomatology are negatively affected by the experience; 54% of young people with symptoms of major depression reported emotional distress following the Internet harassment compared to 35% of young people with few or no symptoms of depression.

Interplay of aggression

Findings indicate that targeting others for harassment online is associated with being the target of Internet harassment for both males and females, even after adjusting for all other characteristics. This suggests there may be a group of young people online who are actively engaging each other in aggressive interactions. Thus, not all youth that report Internet harassment are helpless victims. They are both acting out toward others as well as being the target of aggressive acts from others. Future research should focus on this group and understand the personal characteristics as well as group dynamics fueling this behavior. Further, understanding the similarities and differences between youth who act aggressively online versus offline could be an important aspect to understanding delinquent behavior of the future.

Limitations

This study adds an important first step in understanding the links between mental health chal-

allenges and Internet experiences for young people. It has several limitations. The current measure of depressive symptomatology is statistically robust, with strong inter-correlations between symptoms, and is closely mapped to the DSM-IV definition of major depression. It is not however, a measure of "caseness" of major depression and therefore does not necessarily extend to all young people with major depression. In addition, the cross-sectional nature of the data precludes temporal inferences. It therefore cannot be determined whether young people first experienced depressive symptoms and then were harassed, or alternatively were harassed and experienced depressive symptoms as a result. As with all telephone surveys, households without telephones were excluded from the current sample population. Frequent users who use the Internet exclusively at school, the library, or other location outside of the home may have been undercounted because persons without a home phone were excluded from the sampling frame. Given the large number of Internet households however, the influence these regular Internet using young people would have in final analyses is probably minimal. The survey did not include non-English speaking respondents; it would be interesting to explore in future surveys how these results extend to young people of non-English speaking households.

Implications

Despite limitations, the current study adds multiple important implications to the literature. With the rapid growth of Internet use among young people,¹ the number of children and adolescents with mental health challenges navigating the Internet will increase as well. Given the indication that young males who report depressive symptomatology are also more likely to be the target of Internet harassment, even after adjusting for underlying characteristics, mental health and other healthcare providers serving young people must educate themselves about Internet-related issues. Treatment must necessarily be a partnership between the youth and the service provider, a scenario much more likely to be effective if the provider is well-versed in experiences young people are likely facing.

CONCLUSION

The Internet is a pervasive mode of peer interaction in the lives of young people today. The link-

ages between mental health and experiences online must therefore be foremost in the minds of child public health researchers and providers. More than one in 20 young people report being the target of Internet harassment in the previous year. Results suggest that youth who indicate symptoms of major depression are more than three times as likely than youth with milder symptomatology to report such an incident. Given the significant morbidity associated with youth depressive symptomatology,³⁹ its association with Internet harassment is a significant public health and mental health issue worthy of future research.

ACKNOWLEDGMENTS

This research was supported in part by two grants from the Centers for Disease Control and Prevention Research Centers Grant 448/CC4309674 and R49/CCR318627. I thank Dr. Philip Leaf for his mentorship and guidance in drafting this manuscript. Thank you also to Dr. David Finkelhor and colleagues at the University of New Hampshire Crimes Against Children Research Center for the use of the Youth Internet Safety Survey data.

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Address reprint requests to:
Michele Ybarra, M.P.H., Ph.D.
Internet Solutions for Kids, Inc.
76 Ashford
Irvine, CA 92618

E-mail: Michele@ISolutions4kids.org