ARTICLE

Internet Prevention Messages

Targeting the Right Online Behaviors

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Background: Internet safety programs urge youth to avoid sharing personal information and talking with "strangers" online.

Objective: To examine whether sharing personal information and talking with strangers online or other behaviors are associated with the greatest odds for online interpersonal victimization.

Design: The Second Youth Internet Safety Survey was a cross-sectional random digit–dial telephone survey.

Setting: United States.

Participants: A total of 1500 youth aged 10 to 17 years who had used the Internet at least once a month for the previous 6 months.

Main Exposure: Online behavior, including disclosure of personal information, aggressive behavior, talking with people met online, sexual behavior, and downloading images using file-sharing programs.

Outcome Measure: Online interpersonal victimization (ie, unwanted sexual solicitation or harassment).

Results: Aggressive behavior in the form of making rude or nasty comments (adjusted odds ratio [AOR], 2.3; $P<.001$) or frequently embarrassing others (AOR, 4.6; $P=.003$), meeting people in multiple ways (AOR, 3.4; $P<.001$), and talking about sex online with unknown people (AOR, 2.0; $P=.02$) were significantly related to online interpersonal victimization after adjusting for the total number of different types of online behaviors youth engaged in. Engaging in 4 types of online behaviors seemed to represent a tipping point of increased risk for online interpersonal victimization (OR, 11.3; $P<.001$).

Conclusions: Talking with people known only online ("strangers") under some conditions is related to online interpersonal victimization, but sharing personal information is not. Engaging in a pattern of different kinds of online risky behaviors is more influential in explaining victimization than many specific behaviors alone. Pediatricians should help parents assess their child's online behaviors globally in addition to focusing on specific types of behaviors.

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An estimated 9% of youth online are targets of harassment, and 13% are targets of unwanted sexual solicitation in 1 year.[1] These online interpersonal victimizations are associated with emotional distress and concurrent psychosocial problems, including symptoms of depression and offline victimization (eg, physical assault by peers).[2,3] With 9 of 10 youth online,[4,5] pediatricians and other child and adolescent health professionals have increasingly been called on to offer Internet safety advice to parents concerned about protecting their children online. Most Internet safety advocates suggest discouraging youth from sharing personal information and talking with unknown people online.[6-9] It is logical to believe that making personal information available to unknown people may increase one's risk for online interpersonal victimization, yet there is a paucity of empirical evidence either supporting or refuting this supposition. Given finite consultation time and the limited attention spans of youth, identifying the most influential online behaviors for increasing one's likelihood for victimization is a necessity.

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Based on Internet safety messages and documented concerns about youth behavior online,[6-9] 5 types of online behaviors will be assessed: disclosure of personal in-

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formation, aggressive behavior, talking with unknown people, sexual behavior, and downloading images using file-sharing programs. We will examine 4 research questions: (1) What are the prevalence rates and characteristics of online behaviors commonly referred to as "risky"? (2) Are behaviors targeted in Internet safety and prevention messages associated with increased likelihood of online interpersonal victimization? (3) Do psychosocial and personal behavior problems account for these associations? (4) Does the total number of online behaviors engaged in affect the association between specific behaviors and victimization online?

METHODS

The Second Youth Internet Safety Survey (YISS-2) was a national telephone survey of 1500 youth conducted between March 2 and June 11, 2005. Households were identified via random digit dialing. No oversampling scheme was used. Based on American Association for Public Opinion Research calculations, the response rate was 45%.[10] The research was approved and supervised by the University of New Hampshire institutional review board. Further details about YISS-2 sampling are published elsewhere.[1]

SAMPLE

Eligible youth were English speaking and used the Internet at least monthly for the past 6 months. Internet access could be anywhere. Three youth had valid data for fewer than 85% of the variables assessed and were dropped, resulting in a final sample size of 1497 youth. Participants in the current investigation were aged 10 through 17 years (mean, 14.2 years; SD, 2.1 years). Of the participants, 50.8% were female and 76.2% self-identified as white. Almost 1 in 10 (133 [8.9%]) self-identified as Hispanic. Consistent with similar national surveys of the Internet population,[4,5] well-educated and high annual income households were overrepresented in the YISS-2 sample compared with the national average.[11]

MEASURES

Online Behaviors

Youth reported the frequency with which they engaged in 9 online behaviors posited to increase the odds of online victimization based on Internet safety messages and documented concerns about youth behavior online.[6-9] All questions refer to the previous year. Disclosure of personal information included either posting or sending personal information online. Posting personal information was defined as displaying online any of the following information at least once: real name, telephone number, school name, age or year born, or pictures of oneself. Sending personal information was defined as sending one's real name, telephone number, school name, age or year born, or pictures of oneself to someone met online. Aggressive behavior was defined as making rude or nasty comments to someone online or using the Internet to harass or embarrass someone the respondent was mad at.

Interacting with someone met online was defined based on whether youth had people in their buddy list they did not know in person and on the number of different ways youth met people online: (1) getting information online, (2) getting information while at an online dating site, (3) through family, or (4) some other way (eg, while instant messaging).

Two types of sexual behavior were asked: talking about sex with someone known only online and purposefully visiting an X-rated Web site. Youth were additionally asked if they had downloaded pictures, videos, or movies from a file-sharing program.

Recent findings[12] (and K.J.M., M.L.Y., and D.F., unpublished data, 2005) suggest that experiencing multiple types of victimizations, also called polyvictimization, is more influential than specific types of victimizations in explaining related psychosocial problems. In addition to examining each of the 9 online behaviors individually, a "polyrisk" summation variable was created, reflecting the total number of different types of online behaviors engaged in (mean, 2.3; SD, 2.1).

Online Interpersonal Victimization

Online interpersonal victimization was defined by the report of either an unwanted sexual solicitation or harassment online in the previous year. Unwanted sexual solicitation was defined by 3 questions (with yes or no answers): "In the past year, did anyone on the Internet: (1) [E]ver try to get you to talk online about sex when you *did not want to*? (2) [A]sk you for sexual information about yourself when you did not want to answer such questions? I mean very personal questions, like what your body looks like or sexual things you have done? and (3) [A]sk you to *do* something sexual that you did not want to do?" As reported elsewhere,[1] 13% of respondents to the YISS-2 reported an unwanted sexual solicitation in the previous year.

In addition, youth were asked whether they had developed a close friendship or romance with someone they had met online, including the age of the person and whether the relationship "was sexual in any way" (yes or no). Youth who reported such relationships with adults were categorized as being sexually solicited to capture incidents involving underage youth in possibly illegal sexual relationships with adults.

Harassment was identified using 2 questions (yes or no): (1) Did you ever feel worried or threatened because someone was bothering or harassing you online? and (2) Did anyone ever use the Internet to threaten or embarrass you by posting or sending messages about you for other people to see? As reported previously,[1,13] 9% of YISS-2 respondents reported being the target of Internet harassment in the previous year.

Associations between online behaviors and harassment, as well as online behaviors and unwanted sexual solicitation, were assessed separately in bivariate analyses. Similar psychosocial correlates and online risk behaviors were observed for both. For parsimony, the 2 victimization types were combined into a global interpersonal victimization variable. Although we refer to this combined variable as online interpersonal *victimization*, youth experiences represent a spectrum of incidents ranging from the relatively benign to serious.[1] Terms such as *unwanted*, *inappropriate*, and *offensive* apply to many episodes, but online incidents do not generally have the violent and criminal aspects of more familiar child victimizations, such as sexual or physical abuse.

Psychosocial and Behavioral Problems

By using selected questions from the Juvenile Victimization Questionnaire,[14] youth were asked whether they had been sexually abused or physically abused in the previous year (yes or no); these 2 victimizations were combined to ensure sufficient numbers of youth within categories to allow statistical comparisons. Offline interpersonal victimization happened when youth experienced at least 1 of the following in the previous year (yes or no): being attacked generally, being hit or jumped by a gang, being hit by peers, or being picked on by peers. Youth also were asked to rate, on a 4-point Likert scale (where 1 indicates all of the time; and 4, never or rarely), how frequently their caregiver did the following 3 things: (1) nagged them, (2) yelled at them, and (3) took away their privileges. After reverse-coding all 3 items, exploratory factor analysis suggested a

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Table 1. Frequency of Specific Online Behaviors in 1497 Youth in the Last Year*

Online Behavior	No. of Times 0	1	2	3-5	≥6	≥1 Times
Disclosure of personal information						
Posted personal information	666 (44.5)	199 (13.3)	184 (12.3)	293 (19.6)	155 (10.4)	831 (55.5)
Sent personal information	1107 (74.0)	93 (6.2)	82 (5.5)	140 (9.4)	75 (5.0)	390 (26.1)
Harassing behavior						
Made a rude or nasty comment	1082 (72.3)	145 (9.7)	95 (6.4)	89 (6.0)	86 (5.7)	415 (27.7)
Harassed or embarrassed someone	1368 (91.4)	76 (5.1)	29 (1.9)	16 (1.1)	8 (0.5)	129 (8.6)
Talking with someone met online						
Meeting someone online (number of ways)	853 (57.0)	277 (18.5)	253 (16.9)	114 (7.6)	0	644 (43.0)
People in buddy list known only online (number of people)	974 (65.1)	118 (7.9)	106 (7.1)	166 (11.1)	133 (8.9)	523 (34.9)
Sexual behavior						
Visited an X-rated Web site on purpose	1297 (86.6)	76 (5.1)	46 (3.1)	34 (2.3)	44 (2.9)	200 (13.4)
Talk about sex with someone known only online	1420 (94.9)	33 (2.2)	30 (2.0)	7 (0.5)	7 (0.5)	77 (5.1)
Other online activities						
Downloaded images from file-sharing programs	1271 (84.9)	48 (3.2)	48 (3.2)	46 (3.1)	84 (5.6)	226 (15.1)

*Data are given as number (percentage) of youth. Row percentages may not total 100 because of rounding.

common latent factor (eigenvalue, 1.69; percentage of variance, 56.2). A composite variable was created to measure global parent-child conflict (mean, 3.98; SD, 1.43). Because of indications of nonlinearity, this was dichotomized at 1 SD above the mean to reflect high conflict vs all else.

Child behavioral and emotional problems were assessed using the Youth Self-report of the Child Behavior Checklist.[15] All items referred to the past 6 months. A higher item score reflected greater challenge (0 indicates not true; and 2, very or often true). The present study includes 2 subscales measuring externalizing problems. The rule breaking subscale has 15 items, such as "I steal at home" and "I cut classes or skip school" (mean, 53.7; SD, 5.6; $\alpha = .81$). Seventeen items are in the aggressive behavior subscale, including "I physically attack people" and "I am mean to others" (mean, 53.5; SD, 5.5; $\alpha = .86$). Three subscales measuring internalizing problems were also analyzed. Social problems has 11 items, such as "I get teased a lot" and "I am jealous of others" (mean, 53.8; SD, 5.7; $\alpha = .74$). Nine items are in the attention problems subscale, including "I have trouble sitting still" and "I act without stopping to think" (mean, 51.7; SD, 3.6; $\alpha = .79$). The withdrawn or depressed subscale has 8 items, including "I refuse to talk" and "I don't have much energy" (mean, 53.2; SD, 5.4; $\alpha = .71$). For each subscale, scores were categorized according to the Achenbach recommendations: nonclinical (≤92nd percentile of the normative sample of nonreferred children), borderline (93rd-97th percentile of the normative sample of nonreferred children), and clinical (>97th percentile of the normative sample of nonreferred children). As expected in a community sample, few youth scored within the clinical range of behavior problems. As such, youth in the borderline and clinical ranges were combined to allow statistical comparisons with normative youth.

Internet Use and Demographics

Youth estimated the average number of days a week and hours per day they spent online in a typical week, their Internet expertise, and the importance of the Internet to themselves. These 4 variables were included in a factor analysis, with 1 latent variable indicated (eigenvalue, 1.71; percentage of variance, 42.9). As such, a summation score was created (mean, 0.41; SD, 0.31) and dichotomized at 1 SD above the mean to reflect a high level of Internet use. Youth were also asked about specific online activities related to interaction with others: blogging, instant messaging, and chat room use.

Caregivers reported the child's sex and age, the highest household educational level, and the previous year's annual household income. Youth reported their race and Hispanic ethnicity.

STATISTICAL ANALYSES

First, descriptive statistics about the type and frequency of specific online behaviors deemed risky in current prevention messages were reported. Underlying details related to the behavior (eg, whether done with peers) were described. Second, logistic regression was used to estimate the odds of reporting online interpersonal victimization given specific online behaviors, psychosocial problems, and personal behavioral problems, while adjusting for demographic and Internet use characteristics. To understand the influence of online behaviors over and above personal behavior problems and vice versa, odds ratios were reestimated by additionally adjusting for the other domain. Next, to examine the influence the quantity of online behaviors had over specific types of behaviors, the odds of online interpersonal victimization were estimated given specific online behaviors while adjusting for the total number of online behaviors. To avoid double counting, summation variables were created separately for each of the 9 online behaviors listed in **Table 1** to reflect the number of other online behaviors assessed, excluding the behavior being examined (range, 0-8).

RESULTS

PREVALENCE OF SPECIFIC ONLINE BEHAVIORS AND INTERPERSONAL VICTIMIZATION

One in 5 (300 [20.0%]) youth reported unwanted interpersonal victimization online in the previous year. Potentially risky online behaviors also were reported relatively frequently: 1125 (75.0%) respondents engaged in at least 1 of the 9 online behaviors assessed. One in 4 (422 [28.2%]) youth engaged in 4 or more different types of online behavior in the previous year. As shown in Table 1, the most common behavior was posting personal information online. Talking about sex with someone known only online was the least common behavior.

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Table 2. Characteristics of Specific Online Behaviors in the Past Year for 1497 Youth*

Online Behavior	All Youth†	Youth Within Behavior Type‡	Subfraction of Youth Within Behavioral Details§
Disclosure of personal information			
Posted personal information	831 (55.5)	NA	NA
Age or year of birth	NA	666 (80.1)	NA
Real last name, telephone number, school name, or home address	NA	504 (60.7)	NA
Picture	NA	273 (32.9)	NA
Sent personal information	390 (26.1)	NA	NA
Age or year of birth	NA	341 (87.4)	NA
Real last name, telephone number, school name, or home address	NA	161 (41.3)	NA
Picture	NA	138 (35.4)	NA
Sent picture to >1 person	NA	NA	77 (55.8)
Harassing behavior			
Made rude or nasty comments to someone on the Internet	415 (27.7)	NA	NA
Someone else started making the rude and nasty comments	NA	342 (82.4)	NA
Made comments to someone youth knew in person	NA	306 (73.7)	NA
With friends or other kids when did this	NA	184 (44.3)	NA
To >1 person	NA	141 (34.0)	NA
Made comments to someone youth only knew online	NA	116 (28.0)	NA
Respondent started making the rude and nasty comments	NA	105 (25.3)	NA
Used Internet to harass or embarrass someone youth was mad at	129 (8.6)	NA	NA
Someone else started making the rude and nasty comments	NA	104 (80.6)	NA
Made comments to someone youth knew in person	NA	97 (75.2)	NA
With friends or other kids when did this	NA	57 (44.2)	NA
Respondent started making the rude and nasty comments	NA	40 (31.3)	NA
Made comments to someone youth only knew online	NA	28 (21.7)	NA
To >1 person	NA	27 (20.9)	NA
Talking with someone met online			
Had people on "buddy list" known only online	523 (34.9)	NA	NA
Meeting someone online (number of ways)	644 (43.0)	NA	NA
People met online in other ways (eg, instant messaging)	NA	400 (62.1)	NA
People you get information from	NA	219 (34.0)	NA
People met through online dating or romance sites	NA	24 (3.7)	NA
People met through family	NA	490 (76.1)	NA
Sexual behavior			
Talking about sex with someone met online	77 (5.1)	NA	NA
With friends or other kids when doing this	NA	33 (42.9)	NA
To >1 person	NA	26 (33.8)	NA
Thought person was an adult	NA	21 (27.3)	NA
Adult started the talk about sex first	NA	NA	15 (71.4)
Youth started the talk about sex with the adult	NA	NA	6 (28.6)
Posting a sexual picture of self	NA	2 (2.6)	NA
Sending a sexual picture of self	NA	1 (1.3)	NA
Pornography seeking	NA	NA	NA
Going to X-rated sites on purpose	200 (13.4)	NA	NA
With friends or other kids when doing this	NA	88 (44.0)	NA
Went to site because another kid you knew in person told you about it	NA	104 (52.0)	NA
Went to site because of an online search	NA	66 (33.0)	NA
Went to site because of pop-up advertisements in Web sites	NA	53 (26.5)	NA
Went to site because of spam e-mail	NA	28 (14.0)	NA
Went to site because another kid you met online told you about it	NA	16 (8.0)	NA
Went to site because an adult you met online told you about it	NA	2 (1.0)	NA
Downloaded images from a file-sharing program	226 (15.1)	NA	NA

Abbreviation: NA, data not applicable.
*Data are given as number (percentage) of youth.
†All percentages are based on a denominator of 1497.
‡Data in this column are based on the data given in the "All Youth" column.
§The denominators used for the percentages in this column are the last numbers given in the "Youth Within Behavior Type" column.

FREQUENCY AND EVENT CHARACTERISTICS OF SPECIFIC ONLINE BEHAVIORS

As shown in **Table 2**, disclosure of personal information most commonly took the form of posting or sending one's age or year of birth. Although only 138 youth sent pictures of themselves to someone, more than half who did sent pictures to more than 1 person. Event characteristics of aggressive behavior were similar whether youth were rude or nasty to someone, or embarrassed or harassed someone. Around 2 in 5 youth were with peers when harassing others online. Of all youth, 1 in 3 had

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someone in their buddy list they did not know in person and 2 in 5 met people online in at least 1 of the 4 ways assessed. Less than 1% of all youth posted or sent a picture that was sexual in any way. Downloading images from file-sharing programs was reported by less than 1 in 5 youth.

SPECIFIC ONLINE BEHAVIORS AND THE ODDS OF ONLINE INTERPERSONAL VICTIMIZATION

All online behaviors, and psychosocial and behavior problems, assessed were significantly related to online interpersonal victimization (**Table 3**). Results were adjusted for demographic and Internet use characteristics. Talking about sex with someone known only online 3 or more times, intentionally embarrassing someone online 3 or more times, and meeting people online in all 3 ways assessed were the behaviors most strongly associated with online interpersonal victimization.

RELATIVE INFLUENCE OF PSYCHOSOCIAL AND BEHAVIORAL PROBLEMS

In almost all cases, further adjustment for psychosocial and behavioral problems attenuated, but failed to explain, the observed relationship between online behaviors and online interpersonal victimization (Table 3).

RELATIVE INFLUENCE OF THE TOTAL NUMBER OF ONLINE BEHAVIORS

As the number of different types of behaviors online increased, so too did the odds of online interpersonal victimization (**Figure**). The largest increase in odds was noted for youth who engaged in 4 types of behaviors. These youth were 11 times more likely than those reporting none of the online behaviors to also report online interpersonal victimization (odds ratio, 11.3, $P<.001$). Indeed, compared with youth who engaged in 3 or fewer online behaviors, those who engaged in 4 or more were 7 times as likely to report online interpersonal victimization (odds ratio, 6.9; 95% confidence interval, 5.3-9.1).

The number of online behaviors a young person engaged in explained the relationships between specific online behaviors and online interpersonal victimization in many cases (Table 3). For example, frequently sending personal information was associated with a 4.6-fold increase in the odds of online interpersonal victimization ($P<.001$). Once the number of different other online behaviors was accounted for, this relationship was no longer significant.

COMMENT

With 1 in 5 youth who use the Internet reporting an unwanted interpersonal victimization in 1 year's time, identifying effective Internet safety messages is an adolescent health issue of great importance. Refraining from sharing personal information and engaging with unknown people online are the most commonly suggested Internet safety rules.[6-9] The current findings support messages urging care in engaging with unknown people online. Among young Internet users, meeting people online in multiple ways, talking about sex with unknown people, and having multiple unknown people in one's buddy list are associated with significantly higher odds of online interpersonal victimization. On the other hand, sharing personal information, either by posting or actively sending it to someone online, is not by itself significantly associated with increased odds of online interpersonal victimization once a youth's pattern of Internet risky behavior is taken into account. Instead, the current findings suggest that harassing behaviors are more strongly related to online interpersonal victimization for youth. Youth who engage in online aggressive behavior by making rude or nasty comments or frequently embarrassing others are more than twice as likely to report online interpersonal victimization. Overall, the 2 online behaviors most strongly related to online interpersonal victimization are intentionally embarrassing someone online 3 or more times and meeting people online in all 3 ways assessed.

SOME RISKY ONLINE BEHAVIORS ARE COMMONPLACE

Many types of online behaviors considered risky are becoming normative. Over half of young Internet users have posted personal information online. Similarly, 1 in 3 youth have had someone in their buddy list they know online but not in person. Internet safety measures generally and pediatricians specifically should take this into account when presenting prevention information to caregivers and youth. It may not be feasible to change the entire online culture, and the promotion of prevention messages that contradict or fail to recognize widely accepted online behavior may lack credibility with youth. Instead of imparting the message "don't talk to strangers online," a harm reduction approach may be more effective: "I know many young people your age are meeting people online. You probably know how easy it is to hide your identity. Be careful and know that you can discontinue a relationship any time by changing your login name or blocking someone." Acknowledge, too, that some online relationships can be positive and a source of social support; nevertheless, wariness is warranted. We need to acknowledge the online world youth are living in and arm them with the tools to reduce the risk that some of their behaviors may entail.

THE TIPPING POINT

A large increase in the odds for online interpersonal victimization is noted for youth who engage in 4 types of behaviors online vs none of the behaviors. This might be a useful cutoff for practitioners to quickly identify youth who may be signaling an excess of risky Internet behavior, potentially conferring higher odds of online interpersonal victimization. Pediatricians should help parents assess their children's overall Internet use and behaviors and identify rules that reduce the total number of different types of online behaviors in addition to

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Table 3. Odds of Online Interpersonal Victimization Given the Report of Online Behaviors in 1497 Youth

	Odds of Reporting Online Interpersonal Victimization					
	Adjusted for Demographic and Internet Use Characteristics		Adjusted for the Previous Characteristics and Psychosocial and Behavior Problems†		Adjusted for Total No. of Online Risk Behaviors‡	
Personal Characteristic*	AOR (95% CI)	*P* Value	AOR (95% CI)	*P* Value	AOR (95% CI)	*P* Value
Online behaviors						
Disclosure of personal information						
Posting personal information, No. of times						
0	1.0	NA	1.0	NA	1.0	NA
1-5	1.5 (1.1-2.0)	.02	1.4 (1.0-1.9)	.06	1.0 (0.7-1.4)	.91
≥6	3.2 (2.0-5.0)	<.001	2.7 (1.7-4.4)	<.001	1.3 (0.8-2.2)	.31
Sending personal information, No. of times						
0	1.0	NA	1.0	NA	1.0	NA
1-2	2.4 (1.6-3.6)	<.001	2.2 (1.4-3.3)	<.001	1.1 (0.7-1.7)	.72
3-5	3.9 (2.5-6.0)	<.001	3.4 (2.1-5.3)	<.001	1.6 (1.0-2.6)	.06
≥6	4.6 (2.6-8.1)	<.001	4.0 (2.2-7.1)	<.001	1.4 (0.7-2.6)	.35
Harassing behavior						
Rude or nasty comments, No. of times						
≥1	3.6 (2.6-4.8)	<.001	2.9 (2.1-4.0)	<.001	2.3 (1.7-3.3)	<.001
Embarrass, No. of times						
0	1.0	NA	1.0	NA	1.0	NA
1-2	2.3 (1.4-3.6)	.001	1.7 (1.1-2.8)	.03	1.4 (0.8-2.2)	.21
≥3	7.9 (3.1-20.6)	<.001	6.2 (2.2-17.3)	<.001	4.6 (1.7-12.6)	.003
Talking with someone met online						
No. of people in buddy list known only online						
0	1.0	NA	1.0	NA	1.0	NA
1	1.5 (0.9-2.5)	.16	1.3 (0.7-2.2)	.37	0.9 (0.5-1.5)	.62
≥2	3.4 (2.4-4.8)	<.001	3.0 (2.1-4.3)	<.001	1.7 (1.1-2.5)	.01
No. of ways of meeting people						
0	1.0	NA	1.0	NA	1.0	NA
1	3.1 (2.1-4.5)	<.001	2.7 (1.8-4.0)	<.001	2.1 (1.4-3.2)	<.001
2	5.1 (3.4-7.5)	<.001	4.5 (3.0-6.8)	<.001	2.7 (1.7-4.2)	<.001
≥3	7.6 (4.6-12.6)	<.001	5.9 (3.5-10.1)	<.001	3.4 (1.9-6.1)	<.001
Sexual behavior						
Talked about sex with someone known only online, No. of times						
0	1.0	NA	1.0	NA	1.0	NA
1-2	3.4 (1.9-6.0)	<.001	2.9 (1.6-5.2)	<.001	2.0 (1.1-3.7)	.02
≥3	8.8 (2.3-33.3)	.001	5.4 (1.3-22.1)	.02	2.8 (0.7-11.2)	.14
Pornography seeking, No. of times						
≥1	2.1 (1.4-3.2)	<.001	1.6 (1.1-2.5)	.02	1.4 (0.9-2.2)	.12
Other activities						
Download pictures, No. of times						
≥1	1.6 (1.1-2.2)	.01	1.4 (1.0-2.1)	.06	1.1 (0.7-1.6)	.72
Psychosocial characteristics						
Physical or sexual abuse	5.2 (2.7-10.2)	<.001	4.2 (2.0-8.9)	<.001	4.2 (2.0-8.6)	<.001
High parental conflict	2.2 (1.5-3.1)	<.001	1.6 (1.1-2.4)	.01	1.7 (1.2-2.5)	.004
Offline interpersonal victimization	2.0 (1.5-2.6)	<.001	1.4 (1.0-1.9)	.03	1.4 (1.1-2.0)	.02
Borderline or clinically significant behavior problems (YSR)						
Attention	3.0 (1.3-7.2)	.01	1.3 (0.5-3.6)	.61	1.6 (0.6-4.1)	.32
Rule breaking	2.7 (1.7-4.4)	<.001	1.3 (0.7-2.2)	.39	1.4 (0.9-2.4)	.16
Aggression	3.0 (1.8-5.0)	<.001	1.6 (0.9-2.9)	.10	1.8 (1.1-3.2)	.03
Withdrawn or depressed	2.2 (1.2-4.1)	.008	1.7 (0.9-3.4)	.10	1.7 (0.9-3.3)	.10
Social skills	2.5 (1.5-4.1)	<.001	1.5 (0.9-2.7)	.14	1.7 (1.0-3.0)	.05

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; NA, data not applicable; YSR, Youth Self-report.

*Each major row represents a separate logistic regression model (ie, 9 online behaviors plus 8 psychosocial characteristics totals 17 separate models per column).

†In addition to demographic and Internet use characteristics, estimates for each psychosocial variable are adjusted for all online behaviors, and each online behavior is adjusted for all psychosocial variables. For example, physical or sexual abuse is associated with 4.2 greater odds of reporting online interpersonal victimization after adjusting for all online behaviors, demographic characteristics, and Internet use.

‡Characteristics are adjusted for the sum of different types of online behaviors reported (range, 0-9) and demographic and Internet use characteristics. To avoid double counting, summation variables were created separately for each online behavior to reflect the number of other online behaviors assessed, excluding the behavior being examined (range, 0-8).

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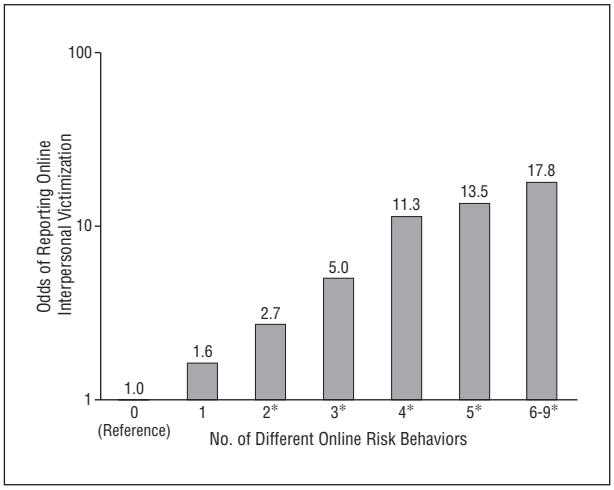

Figure. Odds of reporting online interpersonal victimization given the number of different types of online risk behaviors reported. Reporting none of the 9 online behaviors assessed is the reference group. The asterisk indicates $P \leq .001$.

rules about specific behaviors. This could be done with a simple checklist of the 9 behaviors documented herein. More broadly, prevention messages should be expanded to target youth with a pattern of online risky behaviors rather than focusing on specific behaviors alone.

OTHER ASPECTS OF RISK

The role of friends in many online behaviors should be acknowledged. More than 40% of online risky behavior occurred while youth were using the Internet with friends or peers. Childhood and adolescence is a time of individuating from parents and strengthening peer social ties.[16-18] We should help youth find strategies to stay safe while having fun with peers online. The normality of a behavior also should be taken into account. With more than 1 in 2 youth posting personal information online, it should not be a source of surprise to hear your patient has done this. On the other hand, with only 5% of youth talking about sex online with unknown people, this behavior should be a marker for concern and intervention. We must identify youth who are engaging in nonnormative behaviors online, especially sexual behaviors, because this may be a marker for personal challenge.

ONLINE BEHAVIORS AND VICTIMIZATION WITHIN THE CONTEXT OF PSYCHOSOCIAL AND BEHAVIOR PROBLEMS

Online behaviors seem related to online interpersonal victimization over and above personal psychosocial and behavioral problems. Nevertheless, physical or sexual abuse, high parental conflict, and offline interpersonal victimization continue to be associated with significantly elevated odds for online interpersonal victimization after controlling for the number of different online behaviors engaged in. Online interpersonal victimization may be a marker for greater personal challenge offline and a useful gateway for pediatricians to begin a more in-depth conversation with youth about their global functioning. Youth who report high parental conflict may need connections with other trusted adults and peers who can engage them and reduce their risky online behavior.

LIMITATIONS

Current findings should be assessed within the confines of the limitations. First, data are cross-sectional, precluding temporal inferences. Second, potential differences in intensity or severity of online victimization are not measured. It is possible that different online behaviors are differentially related to long-term vs single interpersonal victimization. Third, few youth in our community sample scored in the clinical range of behavior problems on the Youth Self-report. However, sufficient numbers scored in either the clinical or the borderline range, to allow comparisons between these youth and all others (ie, youth without behavior problems). It is likely that our findings are an attenuated reflection of the true relationship between clinical behavior problems and interpersonal victimization online. For a more sensitive analysis of this issue, a clinical population would be needed. Fourth, the response rate is reflective of a general decline in response rates for national telephone surveys.[19] National telephone surveys continue to obtain representative samples of the public, however, and provide accurate data about the views and experiences of Americans.[20] Finally, the present study reports the estimated relationship between posited online risky behaviors and unwanted interpersonal victimization. An experimental study is needed to identify the ideal mix of prevention messages to obtain the greatest public health impact.

CONCLUSIONS

In conclusion, the content and focus of most Internet safety and prevention messages correctly target meeting people online. However, concerns about sharing personal information seem to be less warranted than a focus on extinguishing harassing behaviors. Moreover, engaging in many different kinds of online risky behaviors explains online interpersonal victimization more than engaging in specific individual behaviors. Pediatricians and other child and adolescent health professionals should help parents assess their children's online behaviors globally in addition to focusing on specific types of behaviors.

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Announcement

Submissions. The Editors welcome contributions to Picture of the Month. Submissions should describe common problems presenting uncommonly, rather than total zebras. Cases should be of interest to practicing pediatricians, highlighting problems that they are likely to at least occasionally encounter in the office or hospital setting. High-quality clinical images (in either 35-mm slide or electronic format) along with parent or patient permission to use these images must accompany the submission. The entire discussion should comprise no more than 750 words. Articles and photographs accepted for publication will bear the contributor's name. There is no charge for reproduction and printing of color illustrations. For details regarding electronic submission, please see: http://archpedi.ama-assn.org.

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