Childhood Abuse, Avatar Choices, and Other Risk Factors Associated With Internet-Initiated Victimization of Adolescent Girls

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Abstract

Objective—The objective of the study was to determine the risk factors for Internet-initiated victimization of female adolescents. In particular, it was expected that girls who experienced childhood abuse would show higher vulnerability than their nonabused peers. In addition, the study examined how provocative self-presentations might be related to online sexual advances and offline encounters.

Patients and Methods—Adolescent girls aged 14 to 17 years who had experienced substantiated childhood abuse (*N* = 104) were demographically matched with nonabused girls (*N* = 69) and surveyed regarding Internet usage, maternal and paternal caregiver presence, substance use, high-risk sexual attitudes, and involvement with high-risk peers. To measure online self-presentation, participants each created avatars, which were quantified according to the degree of provocative physical features.

Results—Forty percent of the sample reported experiencing online sexual advances, and 26% reported meeting someone offline who they first met online. Abused girls were significantly more likely to have experienced online sexual advances and to have met someone offline. Having been abused and choosing a provocative avatar were significantly and independently associated with online sexual advances, which were, in turn, associated with offline encounters.

Conclusions—A history of childhood abuse may increase Internet-initiated victimization vulnerability. Parents should be aware of the ways in which their adolescents are presenting themselves online. Making adolescent girls and their parents aware that provocative online self-presentations may have implications for sexual solicitation might help to ward off sexual advances

and might help prevent Internet-initiated victimizations. Practitioners should consider standard inquiry into Internet and media usage an aspect of comprehensive care.

Keywords

abuse; adolescent sexual behavior; internet; victimization; path analysis

With the wide availability and proliferation of social networking Web sites, Internet safety is becoming a growing concern for parents, and there is increased impetus to more fully understand vulnerabilities for Internet-initiated victimization. Neither Internet naiveté nor sexual innocence poses the greatest risk for adolescents.[1,2] Instead, vulnerabilities such as family conflict, depression, conversing with unknown people about sex, and sending personal information to strangers have been identified.[3–7] Evidence also suggests that adolescents who have been victims of childhood abuse (including physical or sexual abuse and/or neglect) may be at particular risk, because they are more likely to visit chat rooms,[8] be solicited sexually online and offline,[9] and receive aggressive sexual solicitations[3] than their nonabused peers. Moreover, childhood abuse victims are likely to experience subsequent physical and sexual revictimizations and exploitations,[10–13] making it plausible that vulnerabilities for these types of revictimizations carry over to Internet-initiated victimization. Some forms of childhood abuse (sexual abuse in particular) are also associated with behaviors and attitudes that are explicitly sexual in nature, such as early coital initiations,[14,15] more sexual partners,[16] risky sexual behavior,[17] teen pregnancy,[18] and being preoccupied with sex and sexual thoughts.[15] These attitudes and behaviors could serve to heighten vulnerabilities, especially if adolescents approach social networking sites with intentions to satisfy curiosities and expand sexual knowledge and experience and have difficulty deterring advances from exploiters.

Many Internet-initiated sex crimes originate in social networking Web sites,[1] several of which use interactive virtual personas or avatars as a means of user interface. An avatar is a self-rendered, digital representation of the user and, in many social networking sites, the fundamental avenue by which virtual identities are presented to others (Fig 1). For example, Second Life presents users with hundreds of bodily characteristics to choose from spanning all shapes and sizes, allowing for limitless composite possibilities. The selection of an avatar is just 1 example of how social network users choose to present themselves to other users. Many social networking sites, such as MySpace and Facebook, allow self-descriptions and photographs as a means of self-presentation, and these, like avatar selections, may hold considerable influence in shaping online behavior and interactions. There is evidence that the ways in which users present themselves as avatars shape the behaviors of both users and perceivers.[19] For example, avatars with highly feminine features are among the most attractively rated virtual images.[20] A recent study found that people assigned to an attractive avatar were more likely to approach opposite-sex strangers and to engage in higher rates of self-disclosure than people with unattractive avatars.[21] The extent to which provocative self-presentations (including provocative avatars and other types of explicit self-descriptors) translates into increased online advances or offline encounters is unknown, but it is plausible that these types of presentations constitute an initial invitation for exploitation and a familiar avenue by which sexual advances are initiated.

The purpose of this study was to identify risk factors associated with increased rates of Internet-initiated victimization for female adolescents. The objective was to test a multivariate model that examined variables associated with both online sexual advances and offline, in-person encounters with persons first met online. Another central objective was to determine whether childhood abuse victims would show increased vulnerability as compared with their nonabused peers, with the specific hypothesis that abused adolescent girls would report higher rates of both online sexual advances and offline encounters.

Patients and Methods

Participants consisted of 104 abused and 69 nonabused comparison female adolescents aged 14 to 17 years. Abused adolescents were recruited from child protective service agencies. Physical neglect was defined as abandonment, lack of supervision, or failure to provide for a child's basic need of nutrition, clothing, hygiene, and safety. Physical abuse was defined as physical affronts by a caregiver (defined as an adult directly charged with the supervision of the victim) resulting in markings or that required physician care. Sexual abuse was defined as sexual affronts by a perpetrator ≥4 years older than the victim, which included genital contact (ie, fondling of the victim or victim-forced genital fondling of the perpetrator); digital, vaginal, anal, or oral penetration; or violent, forced attempted penetration. Abuse type was distributed as follows: sexual abuse, 73%; physical abuse, 16%; and physical neglect, 11%, with 59% having experienced multiple types. Because of the high overlap among types of abuse, we did not attempt to create discrete categories of isolated abuse types.

Girls for comparison were recruited from a large, hospital-based, primary care teen health center via posted flyers and were matched to ≥1 abused girl regarding race/ethnicity, family income level, age, and family constellation (1- or 2-parent households). At the time of the laboratory session, girls for comparison were screened for, and excluded in light of, reported (via caregiver and self-reports) childhood abuse experiences. The mean age of the sample was 15.5 years (SD: 1.17 years), the mean family income level was $40 000 (SD: $1735), 49% of households were single-parent households, and the sample was 54% white and 46% minorities (consisting of 82% black and 18% mixed-race girls). The sample was recruited to reflect the ethnic representation of the target geographic area according to the 2000 US Census Bureau statistics.[22]

Procedures

Adolescent participants resided in the catchment area of a children's hospital located in the Midwest region of the United States. Caregivers accompanied adolescents to the laboratory session to provide informed consent. All of the adolescents provided their own assent. After the consenting procedures, adolescents completed the avatar creation task and then completed the computerized questionnaires via multimedia computer assessment, where participants responded to a host of questions regarding their computer and Internet usage, their sexual attitudes and activities, substance usage, peer involvement, and the constancy of maternal and paternal caregiver presence. These measurement instruments were selected on the basis of their wide usage with adolescents and/or their use in large epidemiologic studies of adolescent development (eg, AddHealth[23] or Monitoring the Future[24]). The study was approved by the institutional review board of the Cincinnati Children's Hospital Medical Center, University of Cincinnati Department of Pediatrics.

Measures

Avatar Creation—We adopted the creation of an avatar as an indicator of online self-presentation. In a laboratory session, participants created an avatar using special software designed for this study by the authors and a bioinformatics team to mimic what they would encounter on a popular social networking Web site. The avatar creation software allowed participants to choose from a finite number of bodily and clothing choices. For each attribute, a large array of choices was available, each choice spanning a continuum from conservative to provocative. Resultant avatars were automatically quantified on the basis of a priori determined levels of conservative to provocative choices according to the following coding scheme: (1) body type, including a combination of bust (or upper-body) size and hip (or lower-body) size, where bust and hip choices were recorded on an incremental scale from 1 representing "very small" to 5 representing "very large"); (2) clothing type, including upper

and lower body attire, where choices were recorded on an incremental scale from 1 representing "conservative" (ie, high clothing/skin ratio) to 5 representing "provocative" (ie, low clothing/skin ratio); (3) visible navel piercings, where 0 represented "absent" or 1 represented "present"; and (4) skin, eye, and hair colors, which were also selected and quantified but were not used in the present set of analyses. Scores were stored in a data matrix for analysis. "Provocative avatar" scores were derived via a unit-weighted composite score composed of the following characteristics: provocative avatar = (bust/hip) + upper clothing + lower clothing + piercings. Hence, high scores on the provocative avatar variable reflect avatar choices characterized by high bust/hip ratios, provocative clothing choices, and the presence of navel piercings. The α reliability of the composite score was relatively high, indicating adequate internal consistency of choices ($\alpha = .81$).

Substance Use—Substance use was defined as regular smoking, alcohol, or illicit drug use during the past year via items excerpted from the Monitoring the Future national survey questionnaires.[24] Items in the unit-weighted composite ($\alpha = .84$) were queries pertaining to participants' being a regular smoker (yes or no), using alcohol (number of drinks and number of intoxications over the past year), and the number of marijuana and illegal drug uses over the past year.

Caregiver Presence—This is a composite scale of 12 items derived from the AddHealth survey[23] measuring the frequency of resident mother and/or father (or male and female proxy) presence at mealtimes, before school, after school, and at bedtime (summed) with a composite internal consistency of an α value of .91.

High-risk Peers—This variable was a unit-weighted composite of variables gleaned from both the Monitoring the Future[24] questionnaire and the Sexual Activities and Attitudes Questionnaire[15]. Items in the composite ($\alpha = .83$) were queries pertaining to participants' "closest friends," being a regular smoker (yes or no), using alcohol (number of drinks and number of intoxications over the past year), and the number of marijuana and illegal drug uses over the past year. Peer high-risk sexual activities pertained to the likelihood (1 representing "definitely no" to 5 representing "definitely yes") that participants' "best friend" engaged in risky sexual behaviors, including oral sex, multiple sex partners, 1-night stands, or intercourse without contraception or while drunk or high.

Sexual Preoccupation—This 15-item measure is a subscale of the computerized Sexual Attitudes and Activities Questionnaire[15] and assesses positive attitudes toward, and high frequency of, masturbation, being "turned-on" by pornographic pictures or sexual themes, and thinking about sex frequently ($\alpha = .91$).

Internet Usage, Online Sexual Advances, and Offline and In-person Encounters—Internet usage was measured via a composite of 2 items assessing the average amount of time each day that adolescents reported using the Internet and interacting on social networking Web sites with possible responses for each ranging from 0 representing "none" to 6 representing "6 or more hours." Online sexual advances were assessed via responses to the question, "How often have you had sexual advances from people online (explicit sexual chatting in virtual worlds)?" with possible responses ranging from 0 representing "never" to 4 representing "very often." Offline, in-person encounters were assessed via responses to the question, "How many times have you met someone in person who you first met online in a virtual world?" with responses ranging from 0 representing "never" to 5 representing "5 or more times."

Analytic Plan

After a series of descriptive statistics and paired *t* tests to assess abuse versus comparison differences, path analysis was used to assess the interrelationships among risk factors (predictors), online sexual advances, and offline encounters (outcomes). Path analysis is well suited to test a system of simultaneous relationships and to evaluate the unique contributions of individual risk factors while controlling the associations of others. Using LISREL 8.54, (Scientific Software International: Lincoln-wood, IL), a multivariate path analysis (Fig 2) was tested, with age, minority status, family income, and level of Internet usage covaried. Predictors included provocative avatar choice, preoccupation with sex, abuse status, substance use, caregiver presence, and high-risk peers and were freely correlated in the path model (reported in Table 1).

Results

The abused girls and girls for comparison were demographically similar. Forty percent of the total sample reported experiencing sexual advances online, and 26% reported meeting someone offline who they first met online in a social networking Web site. With no differences by abuse type, abused girls were significantly more likely to have experienced online sexual advances ($t_{172} = 3.79$; $P < .001$) and to have met someone offline ($t_{172} = 2.15$; $P = .03$). The path model fit the data well (χ^2: 45; degrees of freedom: 22; goodness-of-fit index: .96; root mean squared residual: .05). Results indicated that abuse status was significantly related to online sexual advances, which were, in turn, related to offline, in-person encounters. Model fit was not significantly improved by adding a direct path from abuse status and offline encounters ($\chi^2\Delta$: 2.56; degrees of freedom: 1; *P* value not significant), suggesting that the indirect path presented in Fig 1 adequately accounted for the relationships among abuse and aspects of Internet-initiated victimization.

Another purpose of the path analysis was to test the relative contributions of theoretically relevant, alternative risk factors that might account for the maximum amount of variability in Internet-initiated victimization. The resultant model is the best fitting model in that only the pathways demonstrating significance were retained and nonsignificant pathways were fixed to 0.[25] Although caregiver presence served as a protective factor, choosing a provocative avatar, being preoccupied with sex and sexual thoughts, and substance use were additional, independent risk factors for online sexual advances. Associating with high-risk peers was an additional risk factor for offline, in-person encounters.

Discussion

Approximately 55% of adolescent Internet users have or are currently using social networking Web sites.[26] Although the great majority of online interactions are benign,[27] the wide use of social networking Web sites has created increased opportunities for dangerous individuals to initiate contact with adolescents to set up offline sexual encounters. Results indicated that, on average, abused adolescent girls reported higher incidences of both online sexual advances and offline, in-person encounters. The confirmed path model suggests that abuse may not be directly associated with offline encounters but, via an indirect pathway, places abused adolescent girls at risk through the avenue of online sexual advances. Sexual advances and high-risk peers were the strongest predictors of offline, in-person encounters.

This is the first study to objectively quantify avatar choices in a laboratory setting and to simultaneously relate these choices with adolescent risk behaviors and Internet use. Results indicated that an adolescent who tends to present herself as provocative in terms of body and clothing choices is more likely to have had online sexual advances. The Proteus Effect,[21] or the idea that one's presentation of oneself can affect the behavior of the presenter as well as of

the receiver, has important implications in this age of wide reliance on Internet use, where users can portray themselves in a multitude of fashions. Self-presentations can change the way Internet users interact in a manner that increases the risk for online sexual advances.

The presentation of oneself in a provocative manner is not necessarily limited to Web sites that rely on avatars as the primary interface. For female adolescents in particular, self-presentations such as a compilation of photographs and narrative descriptions might also increase their vulnerability for Internet-initiated victimization. Those adolescents who may be unaware of how their appearance might be perceived may not, from a developmental perspective, possess the social sophistication necessary to field and ward off sexual advances in ways that protect them from sexually explicit suggestions. This may be a particularly important lesson to convey to female adolescents who are especially vulnerable to exploitation and victimization, such as those who have been victims of childhood abuse.

There are important caveats that should be taken into account when interpreting these results. The cross-sectional nature of the study precludes strong causal inferences. The path model merely suggests plausible pathways from childhood abuse to offline encounters. Although our intent was to measure provocative self-presentation, the extent of construct validity has not been fully realized. However, "provocative avatar" does correlate with "preoccupied with sex" (see Table 1), a construct that has been shown to be related to risky sexual behaviors and attitudes in adolescents.[15] Provocative features will vary across culture and even regions. Results should be generalized accordingly. We cannot speak directly to avatar choices that are actually used online, and it is difficult to know how this laboratory experiment might generalize in a more naturalistic environment. Finally, we did not directly assess whether offline, in-person encounters resulted in adolescents being actual victims of sex crimes. As such, these results should be carefully interpreted as indicating risk for Internet-initiated victimization.

Results from this study indicate that adolescents who have experienced relatively high rates of online sexual advances are more likely to agree to offline meetings, suggesting that such adolescents may have some inkling as to the potential sexual agenda of offline encounters. Indeed, 95% of Internet-initiated sex crimes were characterized as nonforcible sex, such as statutory rape.[1,28] Many of the reported crimes stemming from online interactions involved adolescents who were aware that the other person was older than they were, had previously engaged in some online discussion of sexual activity, and possessed at least some knowledge that the offline meeting might involve sexual relations.[1] Moreover, the ways in which adolescents present themselves online may have implications for the frequency and intensity of sexual solicitations, and adolescents who agree to meeting these individuals offline may not be completely naive regarding the sexual nature of such encounters.

Recognizing the characteristics of high-risk Internet users is warranted, and parents, in particular, can play an important role in preventing exposure to online sexual solicitations. As these results indicate, caregiver presence was associated with significantly fewer reports by adolescents of online solicitations. As such, the importance of parental monitoring of adolescent Internet use cannot be understated. Parental awareness should be raised as to adolescent behaviors, attitudes, and peer affiliations that are associated with online sexual solicitations and offline meetings. Parents should emphasize to adolescents ways in which to ward off sexual advances and should provide explanations of how virtual self-representations can influence behaviors and perceptions. In many respects, reacting to normal urges and curiosities about sex is a large part of normative adolescent development; however, doing so via virtual personas or provocative self-descriptors in social networking worlds may not be the healthiest or most safe avenue by which to explore. Youth who have been victims of childhood abuse are among the most vulnerable.

Pediatricians can also play an important role in the prevention of Internet-initiated victimization. Pediatricians who are aware of previous abuse and neglect should consider asking about adolescent online activity and provide education and resources to families regarding the risk factors associated with online sexual solicitation and offline meetings. Specifically, we join the National Center for Missing and Exploited Children in recommending that pediatricians do the following: (1) talk about online activity with children as young as 10 years old; (2) discourage the sharing of personal information over the Internet; (3) discuss the dangers associated with talking about sex with a stranger; (4) encourage parents to explore options for filtering, blocking, and monitoring adolescent computer and Internet usage; and (5) educate parents and adolescents about the risks associated with presenting oneself provocatively on the Internet.

What's Known on This Subject

Neither Internet naiveté nor sexual innocence poses the greatest risk for Internet victimization. Provocative online self-presentations may increase sexual advances and vulnerability. Because of their propensity to be victimized in other arenas, victims of childhood abuse appear especially vulnerable.

What This Study Adds

Along with a host of additional risk factors, provocative avatars and confirmed childhood abuse were among the significant and independent risk factors associated with risk for Internet-initiated victimization. Findings will enhance internet use education and Internet victimization prevention efforts.

Acknowledgments

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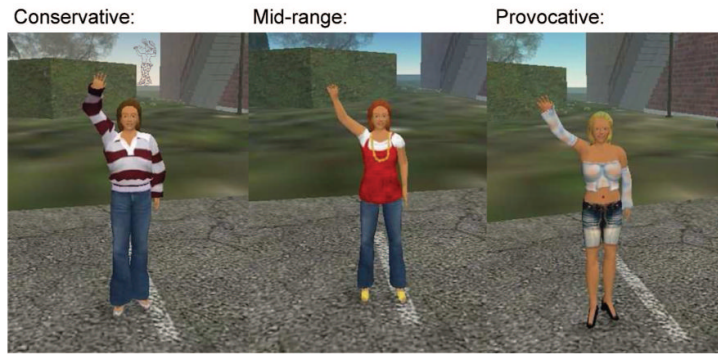
FIGURE 1.
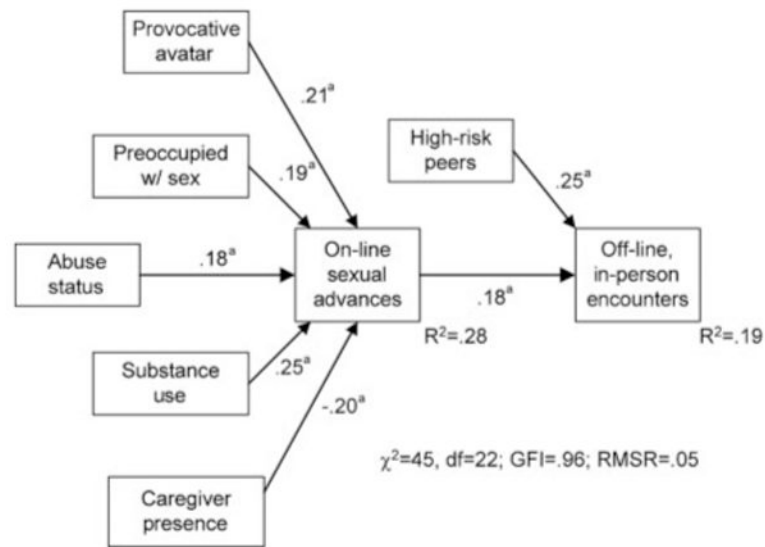Examples of avatars quantified as conservative, midrange, and provocative.

FIGURE 2.
Path analysis of adolescent risk factors associated with online sexual advances and offline, in-person encounters.[a]P <.05. Standardized $\boldsymbol{\beta}$-weights are shown. Age, minority status, family income level, and level of Internet usage were covaried. Correlations among exogenous variable were freely estimated and are reported in Table 1. *df* indicates degrees of freedom; GFI, goodness-of-fit index; RMSR, root mean squared residual. Path analysis was conducted using LISREL 8.54.

TABLE 1

Intercorrelations Among Exogenous Predictor Variables Included in the Path Model

Variable	1	2	3	4	5	6
Provocative avatar	1.00	—	—	—	—	—
Preoccupied with sex	0.15^a	1.00	—	—	—	—
Abuse status	0.08	0.20^a	1.00	—	—	—
Substance use	0.13	0.37^b	0.20^a	1.00	—	—
Caregiver presence	0.04	−0.05	−0.18^a	−.10	1.00	—
High-risk peers	0.13	0.32^b	0.10	0.48^b	−0.13	1.00

— redundant correlations.

^{a} $P < .05$.

^{b} $P < .01$; age, minority status, and family income level covaried.