Sexting and Sexual Behavior in At-Risk Adolescents

WHAT'S KNOWN ON THIS SUBJECT: Sending sexual messages and/or pictures (sexting) has been associated with sexual intercourse among high school–age students.

WHAT THIS STUDY ADDS: This study is the first to examine sexting's prevalence among at-risk middle school students and its associations with a range of sexual behaviors. It also examines differences in sexual risk between sending sexual messages and sexual photos.

abstract

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OBJECTIVES: This study aimed to examine the prevalence of sexting behaviors (sexually explicit messages and/or pictures) among an at-risk sample of early adolescents as well as the associations between sexting behaviors and sexual behaviors, risk-related cognitions, and emotional regulation skills. It also aimed to determine whether differences in risk were associated with text-based versus photo-based sexts.

METHODS: Seventh-grade adolescents participating in a sexual risk prevention trial for at-risk early adolescents completed a computer-based survey at baseline regarding sexting behavior (having sent sexually explicit messages and/or pictures), sexual activities, intentions to have sex, perceived approval of sexual activity, and emotional regulation skills.

RESULTS: Twenty-two percent of the sample reported having sexted in the past 6 months; sexual messages were endorsed by 17% (n = 71), sexual messages and photos by 5% (n = 21). Pictures were endorsed significantly more often by females ($\chi^2[2] = 7.33$, $P = .03$) and Latinos ($\chi^2[2] = 7.27$, $P = .03$). Sexting of any kind was associated with higher rates of engaging in a variety of sexual behaviors, and sending photos was associated with higher rates of sexual activity than sending text messages only. This was true for a range of behaviors from touching genitals over clothes (odds ratio [OR] = 1.98, $P = .03$) to oral sex (OR = 2.66, $P < .01$) to vaginal sex (OR = 2.23, $P < .01$).

CONCLUSIONS: Sexting behavior (both photo and text messages) was not uncommon among middle school youth and co-occurred with sexual behavior. These data suggest that phone behaviors, even flirtatious messages, may be an indicator of risk. Clinicians, parents, and health programs should discuss sexting with early adolescents. *Pediatrics* 2014;133:e276–e282

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KEY WORDS
early adolescence, sexting, sexual behavior

ABBREVIATION
OR—odds ratio

Dr Houck conceptualized and designed the study, coordinated and supervised data collection, interpreted analyses, and drafted the initial manuscript; Dr Barker conducted and interpreted analyses, assisted in drafting the manuscript, and reviewed and revised the manuscript; Dr Rizzo assisted in drafting the manuscript, interpreted analyses, and reviewed and revised the manuscript; Mr Hancock assisted in drafting the manuscript, assisted in data collection and management, and reviewed and revised the manuscript; Ms Norton assisted in data collection and management and reviewed and revised the manuscript; Dr Brown conceptualized the study, designed the primary study measure, and reviewed the manuscript; and all authors approved the final manuscript.

This trial has been registered at www.clinicaltrials.gov (identifier NCT01197404).

www.pediatrics.org/cgi/doi/10.1542/peds.2013-1157

doi:10.1542/peds.2013-1157

Accepted for publication Nov 6, 2013

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PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: Research supported by National Institute of Mental Health grant R01 NR 011906 and by the Lifespan/Brown/Tufts Center for AIDS Research. Funded by the National Institutes of Health (NIH).

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

Electronic mobile communication, such as instant messaging and text messaging, has altered the social environment of today's youth. A recent survey found that, among 12- to 13-year-olds, 93% of youth had access to the Internet, 71% had mobile access to the Internet (eg, cell phone), and 68% owned a cell phone; 23% of those owned smart phones.[1] With the proliferation of Internet-enabled handheld devices, sending messages and images has become easier than ever before. In fact, texting is the most common form of daily communication used by teenagers (more than phones or face to face), with a median of 60 texts sent per day.[2] Although adolescents may be more digitally savvy than their parents, their lack of maturity and inattention to consequences can quickly lead to serious negative outcomes. This may be particularly true for youth identified as at-risk because of emotional and behavioral difficulties, for whom research has identified higher rates of sexual risk behaviors.[3,4]

"Sexting" has often been defined as the transmission of nude (or seminude) images via an electronic device. Some definitions also include the transmission of sexually explicit text messages.[5] To date only 1 study has examined the relationship of sexually explicit messages and photos with sexual behavior.[6] However, because sending messages and photos were measured as 1 item, the authors could not assess the equivalence of these 2 behaviors. This distinction may be important because sending a sexually explicit message may not have the same social consequences as sending a photo. In addition, no studies have explored the relationship between these 2 types of sexting behaviors with sexual risk.

Published data on adolescent sexting behaviors are scant, making it difficult to determine prevalence. Studies of high school youth have suggested that sending nude or seminude photos is somewhat common, with 18% to 28% endorsing having done so.[7,8] The only study that included early adolescents found that between 1% and 2.5% (depending on the definition of sexting) of Internet users aged 10 to 17 reported having appeared in or created a sexually explicit photo.[9] However, methodologic limitations with this study (eg, interviewing teenagers on the phone with parents present, sampling methods that resulted in a largely white, upper socioeconomic status, 2-parent household sample)[7,8] make it challenging to draw firm conclusions. Even in the absence of clear data regarding prevalence, sexting may still serve as a potentially important marker of risky behavior. Furthermore, because youth become more interested in romantic relationships and sexuality during puberty,[10] sexting is likely to emerge during the middle school years; however, no studies have exclusively examined sexting among early adolescents, particularly at-risk middle school students.

Little is known about the characteristics that separate teenagers who engage in sexting versus those who do not. Findings from cross-sectional studies of high school students suggest that teenagers who sext engage in higher rates of sexual activity, which may put them at further risk for unintended pregnancy, HIV, and sexually transmitted diseases. Rice and colleagues found that teenagers who sexted were 7 times more likely to be sexually active and nearly twice as likely to engage in unprotected sex than their peers.[6] Similarly, a study by Temple and colleagues found 10th and 11th graders who sexted were more likely to have had sex. They also found that girls who had sent naked photos of themselves had a higher chance of engaging in risky sex, including having multiple partners and using substances before sex.[8]

Other factors that may differentiate adolescents who sext versus those who do not include being nonheterosexual, white or African American, and older age.[6–8] Although research is limited regarding cognitive factors related to sexting, several studies have identified relationships between cognitions and other sex-related behaviors among adolescents. Reports of sexual intentions are related to sexual behaviors among youth with mental health problems,[11,12] but it is unknown whether teenagers with greater intentions to have sex engage in sexting. In addition, a number of studies have found that perceptions of peers' sexual attitudes and behaviors predict sexual risk behavior among teenagers.[13–15] Teenagers who sext may hold similar beliefs, perceiving their peers, parents, and even the media to approve of sexual activity. Sexting may also relate to difficulties with managing emotions. Adolescents who report more intense and labile emotions and less effective regulation of these emotions have been found to report more problem behaviors[16] and more sexual partners.[17] In addition, among a high-risk group of adolescents attending therapeutic schools, affect dysregulation was found to be significantly associated with recent sexual risk (ie, not using condoms at last sex).[18] Given that sexting appears linked with sexual risk behavior, deficits in emotion regulation may characterize teenagers who sext versus those who do not.

Given the existing gaps in the literature, the goal of the current study was to examine the prevalence of sexting behaviors among a sample of at-risk early adolescents. We aimed to determine whether sexual activity (including a continuum of low-risk to high-risk behaviors), intentions to have sex, perceived approval of sexual activity, and affect regulation skills are related to sexting behavior. Also, as suggested by

Rice and colleagues,[6] we examined the differing impact of sending sexually explicit messages versus photos to determine if these behaviors represent different levels of risk.

METHODS

Subjects

The sample consisted of adolescents participating in Project TRAC (Talking about Risk and Adolescent Choices), a sexual risk prevention trial for at-risk early adolescents that enrolled 420 participants from 5 urban public middle schools in Rhode Island between 2009 and 2012. Eligible youth were in the seventh grade, between 12 and 14 years of age, and identified by school counselors, nurses, and administrators for symptoms of behavioral or emotional difficulties. These school professionals were provided with a standardized checklist of symptoms (eg, withdrawing, hyperactivity, nervousness, declining grades) to assist in identifying students. Students were excluded if they were pregnant, self-identified as HIV-positive, were developmentally delayed, had a history of sexually aggressive behavior, were unable to participate in groups in English, or had a sibling in the project. School staff obtained permission for study staff to contact families and obtain face-to-face consent and assent.

Measures

Sexting

Using language similar to that of Rice and colleagues,[6] 4 yes/no items about the distribution of sexual messages were asked: (1) "In the last 6 months . . . have you texted someone a sexual picture of yourself?" (2) ". . . have you texted someone a sexual message to flirt with them?" (3) ". . . have you e-mailed or messaged (like on Facebook) someone a sexual picture of yourself?" and (4) ". . . have you e-mailed or messaged (like on Facebook) someone a sexual message to flirt with them?" Because the consequences associated with sexting appear similar regardless of modality, analyses were conducted by reports of content (text or photo) rather than method of transmission. Adolescents were classified as not engaging in any sexting behaviors (No Sexting), as having sent sexual messages only (Text Only), or as having sent sexual photos, with or without texts (Photo).

Sexual Risk Behaviors

Items from the Adolescent Risk Behavior Assessment[19] and Psychosexual Development Inventory (Meyer-Bahlburg H, Dugan T, Ehrhardt A. Psychosexual Development Interview: child version for sexual risk behavior, female [PDI-RISK-CF]. 1998. Unpublished manuscript, Columbia University, New York, NY) were used to assess whether participants had ever engaged in a variety of sexual behaviors. Adolescents were, separately, asked if they had had romantic partners, had a "friend with benefits" (done sexual things, such as kissing, touching, or having sex, with a boy who wasn't their boyfriend), engaged in nonpenetrative sexual activities (making out, touching genitals) with both opposite- or same-sex partners, or engaged in oral or vaginal sex.

Risk-Related Cognitions

Adolescents' intentions to engage in vaginal, anal, oral, and protected vaginal or anal sex over the next 6 months (1 = not at all likely to 5 = very likely) were assessed via 4 items from the Adolescent Risk Behavior Assessment. The 3-item Perceived Parental Approval[20] (administered separately regarding mothers and fathers, as appropriate), 3-item Perceived Peer Approval,[20] and 4-item Perceived Sexual Permission from the Media[21] scales were used to assess perceived environmental approval of sexual activity. Items asked how they believed their parents or peers would react if they knew they were engaging in kissing, sexual touching, or intercourse (1 = strongly disapprove to 4 = strongly approve). On the media scale, adolescents reported whether the messages they receive from television, music artists, magazines, and movies endorse sex for teenagers their age (1 = strongly disagree to 5 = strongly agree). On all scales, higher scores indicate greater perceived approval for sexual activity.

Emotional Competency

Emotion regulation capabilities were measured by using 2 subscales of the Difficulties in Emotion Regulation Scale,[22] Lack of Emotional Awareness (6 items), and Limited Access to Emotion Regulation Strategies (8 items), by using a 5-point scale. Higher scores indicate more difficulty with emotions. The Emotional Self-Efficacy subscale of the Self-Efficacy Questionnaire for Children (8 items)[23] was used to measure adolescents' perceived efficacy for managing their emotions (1 = not at all to 5 = very well). Higher scores represent greater emotional self-efficacy.

Demographics

Adolescents and their parents provided self-reports of age, gender, race, ethnicity, and family income. Adolescents provided pubertal status information via the Pubertal Development Scale.[24]

Procedures

Four hundred eighteen youth completed baseline questionnaires by using audio computer-assisted self-interview on private laptop computers and were reimbursed for their time with gift cards. All procedures were approved by the hospital institutional review board.

Statistical Analysis

Three groups were defined by their sexting behavior: (1) no sexting, (2) sexting with only text, and (3) sending a suggestive photo to someone. Logistic regression models were used to make comparisons among the 3 groups for sexual risk behaviors, and general linear models were used to make comparisons for risk-related cognitions and affect regulation. Models included planned comparisons that compared the no-sexting category with the combined sexting categories and then compared the text only category with the photo category. All analyses controlled for gender, ethnicity, and pubertal development and were performed by using PASW Statistics 18 software. Effect sizes for risk-related cognitions and emotional competency were computed by using partial η^2 and converted to Cohen's δ using standard conversion formulas.[25]

RESULTS

Of the 410 youth who provided data on their sexting behavior, 22% reported engaging in sexting in the past 6 months, with 17% sending texts only and 5% sending texts and photos. Sending pictures by phone was endorsed by 5%, messages by phone by 19%, pictures by Internet by 2%, and messages by Internet by 9%.

Demographics

Demographics for each sexting group are presented in Table 1. Youth who engaged in sexting self-reported greater physical maturity (Pubertal Development Scale: $F_{2,400} = 4.47$; $P = .01$), with those in the Text Only group reporting greater maturity than those in the No Sexting group (Tukey-Kramer adjusted $P = .01$); there were no other significant differences for physical maturity. There were also differences in ethnicity ($\chi^2_2 = 7.27$, $P = .03$) and gender ($\chi^2_2 = 7.33$, $P = .03$), with more youth in the Photo group identifying as Hispanic and female than those in the No Sexting (ethnicity: $\chi^2_1 = 7.07$, $P = .01$; gender: $\chi^2_1 = 7.07$, $P = .01$) or Text Only groups (ethnicity: $\chi^2_1 = 4.64$, $P = .03$; gender: $\chi^2_1 = 7.29$, $P = .01$).

Sexual Risk Behaviors

Differences among the sexting groups in sexual risk behaviors are depicted in Fig 1 and listed in Table 2. Youth who reported sexting were more likely to engage in other sexual behaviors, with covariate-adjusted odds ratios (ORs) ranging from 4.45 to 7.34. There were also differences between the Text Only and Photo groups, with youth in the Photo group being more likely to report sexual behaviors (adjusted ORs: 1.10–2.66).

Risk-Related Cognitions

Differences on risk cognitions emerged among the sexting groups (Table 2). Youth in the 2 sexting groups reported greater intentions to engage in sexual activity as well as more perceived approval for sexual activity from peers, family, and the media (adjusted effect sizes [Cohen's δ]: 0.40–0.69). There were no significant differences between the Text Only and Photo groups on these measures.

Emotional Competence

Youth who reported sexting reported more difficulties with emotional competence (Cohen's δ: 0.19–0.42), with the sexting group reporting significantly more difficulties with emotional awareness and lower emotional self-efficacy. Youth in the Photo versus Text Only group also reported more difficulties with emotional competence (Cohen's δ: 0.19–0.22), but these differences were not statistically significant.

DISCUSSION

These data represent one of the first examinations of sexting in an at-risk sample of early adolescents. Because this study inquired about both suggestive texting and sending photos and because it examined sexting in the context of other sexual and presexual behaviors, risk-related cognitions, and emotional competency, the study provides important insights into the phenomenology of early adolescent sexting. Results suggest several important conclusions. First, 22% of at-risk early adolescents (ages 12–14) reported sexting, higher than reports in the general population.[6,9] This higher prevalence among at-risk teenagers suggests that the emotional and behavioral symptoms on which this sample was selected may increase the likelihood that early teenagers will engage in sexting. Consistent with this assertion were the findings for risk-related cognitions and emotional competence. Youth who sexted reported higher perceptions of approval for sexual behavior from parents, peers, and the media, higher intentions to engage in sexual behavior, lower emotional awareness, and lower emotional self-esteem. The fact that those who sexted stand out regarding sexual risk in this at-risk sample selected due to emotional or behavioral symptoms is important. More work is needed to better define the link between behavioral and emotional symptoms and sexting during early adolescence.

Second, sexual text messaging behavior of any kind, with or without pictures, was associated with greater likelihood of engaging in a variety of sexual behaviors, including touching genitals, having a "friend with benefits," oral sex, or vaginal sex. Teenagers who had sexted were between 4 and 7 times more likely to have engaged in these sexual behaviors. For example, teenagers who had sexted were 5 times as likely to have had vaginal sex, putting them at greater risk for pregnancy or sexually transmitted infections.

TABLE 1 Demographic Comparisons by Sexting Group

	None (n = 318)	Text Only (n = 71)	Photo (n = 21)	Test Statistic
Age	12.91 (0.52)	13.05 (0.64)	13.10 (0.61)	F_{2406} = 2.58; P = .08
Pubertal development	11.01 (4.56)	12.77 (3.61)	11.91 (6.11)	F_{2400} = 4.47; P = .01
Family income	27.51 (16.99)	31.10 (15.20)	31.11 (15.77)	F_{2333} = 1.39; P = .25
Female	47%	38%	71%	χ^2_2 = 7.33; P = .03
Hispanic	37%	37%	67%	χ^2_2 = 7.27; P = .03
Race, %				χ^2_{10} = 11.24; P = .34
White	36	43	42	
Black or African American	33	41	21	
Multirace	22	13	26	
Asian	1	0	5	
American Indian or Alaskan native	3	2	0	
Native Hawaiian or other Pacific Islander	5	2	5	

Consistent with previous literature,[6] sexting was also associated with same-sex sexual behaviors (making out, touching genitals). In short, sexting appears to co-occur with sexual behaviors and may represent an indicator of sexual risk.

Although any sexting appears to be a marker for sexual risk, sending photos is associated with even greater likelihood of early sexual activity. Students who sent photos were more likely than text-only peers to engage in all of the behaviors above, with the exception of same-sex genital touching. Some demographic factors were associated with sending photos; photos were more likely to have been sent by female adolescents and Latinos. This may be related to the demographics of those who are requesting sexual photos; for example, boys may request pictures (of young women) more often; however, this study did not assess characteristics of sexting partners.

Most risk-related cognition and emotional competence measures demonstrated differences between adolescents who engaged in sexting compared with their nonsexting peers (although not between those who sent texts only versus photos). Those who had sexted endorsed more intentions than their peers to have sex in the next 6 months, suggesting that targeted interventions with this group are warranted. Other differences suggest that adolescents who sexted had less awareness of their emotional state and perceived less self-efficacy for managing their emotions. These deficits may make it difficult for youth to react to others or

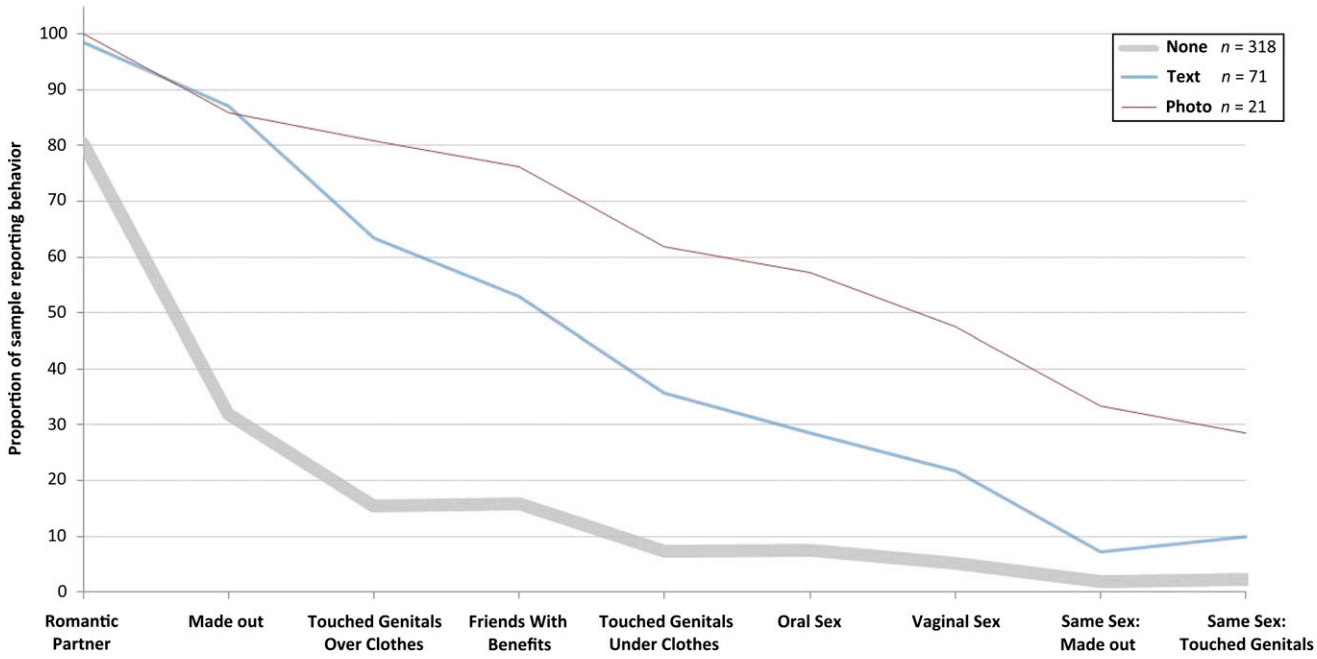

FIGURE 1
Sexual behaviors by sexting group.

TABLE 2 Comparisons Among Sexting Groups on Sexual Behaviors, Cognitions, and Emotional Competence Variables

	Unadjusted Parameter Estimates			Adjusted Effect Size			
	None (n = 318), %	Text only (n = 71), %	Photo (n = 21), %	Sexting Versus None		Photo Versus Text	
Sexual risk behaviors				OR (95% CI)	*P*	OR (95% CI)	*P*
Romantic partner	80	99	100	—	—	—	—
Made out	32	87	86	5.97 (3.59–9.94)	<.01	1.10 (0.53–2.25)	.81
Touched genitals over clothes	16	63	81	7.34 (4.54–11.89)	<.01	1.98 (1.06–3.70)	.03
Friends with benefits	16	53	76	4.86 (3.14–7.55)	<.01	1.77 (0.99–3.19)	.06
Touched genitals under clothes	7	36	62	5.38 (3.41–8.49)	<.01	1.85 (1.08–3.17)	.02
Oral sex	8	29	57	5.40 (3.32–8.80)	<.01	2.66 (1.49–4.73)	<.01
Vaginal sex	5	22	48	5.01 (2.99–8.40)	<.01	2.23 (1.26–3.95)	<.01
Same sex: made out	2	7	33	4.45 (2.19–9.06)	<.01	2.18 (1.07–4.43)	.03
Same sex: touched genitals	2	10	29	4.63 (2.37–9.05)	<.01	1.71 (0.87–3.37)	.12
Risk-Related Cognitions	Mean (SD)	Mean (SD)	Mean (SD)	Cohen's δ[a]	*P*	Cohen's δ[a]	*P*
Sexual intentions	1.88 (1.18)	2.86 (1.24)	3.05 (1.63)	0.69 (0.48–0.89)	<.01	0.17 (0.00–0.36)	.06
Perceived peer approval	2.35 (0.80)	3.05 (0.77)	2.65 (0.68)	0.46 (0.26–0.66)	<.01	0.06 (0.00–0.25)	.50
Perceived media approval	2.02 (0.95)	2.63 (1.05)	2.50 (1.00)	0.40 (0.20–0.59)	<.01	0.00 (0.00–0.06)	.97
Perceived parental approval	1.54 (0.55)	1.84 (0.67)	1.85 (0.60)	0.43 (0.23–0.62)	<.01	0.14 (0.00–0.33)	.11
Emotional competence							
DER awareness	2.99 (1.08)	3.12 (1.17)	3.62 (0.98)	0.28 (0.08–0.47)	<.01	0.22 (0.00–0.42)	.06
DER regulation	2.07 (0.83)	2.11 (0.75)	2.52 (1.00)	0.19 (0.00–0.39)	.07	0.19 (0.00–0.39)	.07
Emotional self-efficacy	2.99 (0.85)	2.76 (0.87)	2.18 (0.72)	0.42 (0.22–0.61)	<.01	0.22 (0.00–0.41)	.07

CI, confidence interval; DER, Difficulties in Emotion Regulation scale.

[a] Effect sizes were computed by using partial η^2 and converted to Cohen's δ using standard conversion formulas.[25]

may lead to impulsive actions driven by feelings (such as sexting). These characteristics may also lead adolescents to use sexting as a form of self-expression, instead of more emotionally challenging direct interactions. Findings also were consistent that those who sexted perceived more acceptance of sexual activity from their environment. These perceptions may normalize and reduce inhibitions related to sex, including sexting. Alternatively, teenagers who sext may selectively attend to attitudes that condone these behaviors. Longitudinal research will be needed to clarify these relationships, but these constructs may provide direction for interventions with at-risk youth and their families, who should be encouraged to monitor sexting like other sexual behaviors.

Limitations to these data exist. These cross-sectional data do not allow for temporal conclusions. The sample was selected due to symptoms of emotional or behavioral difficulties and thus may not generalize to all middle school students; however, at-risk teenagers similar to this sample are prevalent in many communities, making these data relevant to practitioners in a variety of settings. The sample had a minority of youth with a history of sexual activity, and this limits power to discern subgroups of sexual risk patterns among those who were active. These data were collected by self-report and are subject to reporting biases of these methods, although use of audio computer-assisted self-interview to provide additional privacy may have reduced these biases. Question phrasing allowed for a range of possible interpretations of "sexual picture" or "sexual message." Although this allowed adolescents to define the intent of their message, it does not clearly connote the content. Finally, this study did not collect information about technology and phone ownership or usage; however, recent data suggest that access to such technology is widespread.[1] Future studies should assess the frequency of sexting among teenagers, as well as information related to the influence of receiving sexts on sexual behavior, rather than just sending them.

This study further emphasizes that, as early as middle school, attention should be paid to adolescents' electronic communication because sexting may be a marker for sexual risk behaviors that can have significant consequences, including pregnancy or disease. Pediatricians should encourage parents to monitor cell phone and computer use and limit unrestricted access, as well as use electronic communications as opportunities to discuss relationship health. Clinicians can also use sexting as an entrée to discussing sexual health and should monitor patient engagement in sexting like they do other sexual behaviors.

As has been previously suggested,[6] messages regarding sexting and sexual risk behaviors can be incorporated into sexual health education for youth, including early adolescents who are often heavy consumers of mobile technology. Educating young people about possible consequences of sexting, strategies

for maintaining healthy relationships, and the relationship of sexting to other risk behaviors may reduce adolescent risk. Affect regulation and risk-related cognitions, both of which significantly differed among those who sexted in this study, may also represent important avenues for risk reduction interventions.

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