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Adolescent sexual risk behavior on the internet

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Publication date
2013

[Link to publication](#)

Citation for published version (APA):

Baumgartner, S. E. (2013). *Adolescent sexual risk behavior on the internet*. [Thesis, fully internal, Universiteit van Amsterdam].

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8

Summary and Discussion

Adolescents today spend considerable amounts of their leisure time on the internet. Because adolescence is marked by a strong increase in sexual interest, individuals during this developmental period may turn to the internet to satisfy their sexual curiosity and to explore their sexuality (Boies, Cooper, & Osborne, 2004; Subrahmanyam & Smahel, 2011; Valkenburg & Peter, 2011). At the same time, this period is marked by an increased propensity to engage in risk behaviors (e.g. Dahl, 2004; Steinberg, 2007). Therefore, it has been argued that the internet may provide adolescents with new opportunities to engage in sexual risk behavior. Despite many concerns about this behavior, empirical evidence has been scarce. Therefore, the aim of this dissertation was to provide a comprehensive picture of online sexual risk behavior during adolescence. More specifically, this dissertation investigated a) the prevalence of online sexual risk behavior among Dutch adolescents, b) the demographic, cognitive, psychological, social, and cultural predictors of online sexual risk behavior, c) the relationship between online sexual risk behavior and offline sexual risk behavior, and d) the relationship between online sexual risk behavior and negative online experiences. Figure 8.1 displays an overview of the main findings of this dissertation.

Prevalence and Predictors of Online Sexual Risk Behavior

One of the main findings of this dissertation is that online sexual risk behavior is confined to a small group of adolescents (Chapter 2, Chapter 5). Most Dutch adolescents do not engage in this behavior during the course of adolescence. The prevalence of this behavior in the Netherlands seems to be comparable to other European countries. As Chapter 7 reveals, the prevalence of sexting among teenagers from 20 European countries was rather low (below 5% in most European countries). This finding is in line with recent

nationally representative studies from the United States showing that sexting is limited to a few adolescents (Lenhart, 2009; Mitchell, Finkelhor, Jones, & Wolak, 2012). Interestingly, the prevalence of online sexual risk behavior did not differ among adolescents and adults (Chapter 2). These findings qualify previous concerns about the extent of this behavior among youth. In contrast to parental and public fears (European Commission, 2008; Turow, 1999; Wartella, 2001), online sexual risk behavior is not a mass phenomenon among teens; instead, it is confined to a small group of adolescents.

Although only a small group of adolescents regularly engages in online sexual risk behavior, it is important to know who these adolescents are. This dissertation identified several predictors of online sexual risk behavior. These predictors can be categorized into demographic (age, gender, education), cognitive (risk perceptions), psychological (sensation seeking, life satisfaction), social (family cohesion, peer norms), and cultural factors (traditionalism).

Demographic Predictors

Concerning age differences, most previous studies have shown that older adolescents are more likely to engage in online sexual risk behavior than younger adolescents (Lenhart, 2009; Mitchell et al., 2012). However, developmental theories of risk behavior suggest a peak in risk behavior in mid-adolescence (Dahl, 2004). In Chapter 5, we investigated the development of online sexual risk behavior during the course of adolescence. The findings from the trajectory analysis suggest that online sexual risk behavior peaks in mid-adolescence and decreases thereafter. These findings are in line with the results from the cross-national analysis showing that in all 20 European countries, mid-adolescents are most likely to engage in sexting. The findings that online sexual risk behavior decreased in the transition to adulthood in Chapter 5 somewhat contradicts the findings reported in Chapter 2, which suggested limited differences between adolescents and adults in risk engagement. These differences in findings may be due to the fact that in Chapter 2, we compared different groups of adults and adolescents cross-sectionally whereas in Chapter 5, adolescents were followed longitudinally. Most adolescents in Chapter 5 seemed to decrease their online sexual risk behavior during the transition to adulthood. However, it is likely that some individuals only start engaging in online sexual risk behavior later during adulthood. These adults were not captured in the trajectory analysis in Chapter 5. Further research is needed to investigate the development of this behavior during the transition and throughout adulthood.

Gender differences in online sexual risk behavior in the Dutch sample were limited (see Chapter 2). The engagement of Dutch boys and girls in online sexual risk behavior did not differ in the cross-sectional study in Chapter 2. However, boys were somewhat more

likely to belong to the high online sexual risk group in Chapter 5. One reason for this may be that boys are more consistent in this behavior over time whereas girls may only try it once and stop thereafter. Interestingly, gender differences in sexting varied across European countries. The findings presented in Chapter 7 showed that in countries that are more traditional, boys were more likely to engage in sexting compared to girls. In less traditional countries, such as Sweden, Norway, and Denmark, gender differences were smaller. In these countries, similar amounts of girls and boys engaged in sexting.

Next to age and gender, educational level was also a predictor of online sexual risk behavior. The educational level of adolescents is a consistent predictor of many types of risk behavior (de Graaf, Meijer, Poelman, & Vanwesenbeeck, 2005; Murphy et al., 2009; Petersen & Hyde, 2010). Educational level consistently predicts risk behavior for several reasons. Adolescents following lower education often have parents with lower educational levels and frequently come from lower socio-economic status. Previous research has shown that children of parents with lower educational level are exposed to more health-related risk behaviors, including sexual risk behavior (Santelli, Lowry, Brener, & Robin, 2000; Vesely et al., 2004). Moreover, it has been shown that adolescents who have lower expectations for their future – including the expectation of following higher education - are more likely to engage in health risk behaviors (Harris, Duncan, & Boisjoly, 2002; McDade et al., 2011). Poor future expectations may lead to a ‘nothing to lose’-attitude (Harris, Duncan, & Boisjoly, 2002) that may result in a preference for immediate pleasure and a disregard of potential negative consequences. Finally, adolescents following lower education have been found to be more sexually active compared to adolescents following higher educational levels (de Graaf et al., 2005) and may therefore be more prone to engage in sexual activities on the internet.

Cognitive Predictors

Overall, Chapter 2 showed that adolescents perceive the risks associated with online sexual risk behavior as high, and the benefits as low. Adolescents' perceptions of risks and benefits were comparable to those of adults. Adolescents thus seem to acknowledge the dangers associated with this behavior as much as adults do. Chapter 3 further revealed that perceptions of risks and personal vulnerability to potential negative consequences predicted subsequent engagement in online sexual risk behavior six months later. This indicates that adolescents who engage in this behavior perceived this behavior as less risky and considered themselves as less vulnerable to negative consequences. Estimations of risks may therefore have an influence on online sexual risk behavior. If adolescents are aware of the potential dangers associated with this behavior, they are less likely to subsequently engage in online sexual risk behavior. This finding is consistent with

several studies on the predictors of offline risk behavior which emphasized the importance of risk perceptions (Beyth-Marom, Austin, Fischhoff, Palmgren, & Jacobs-Quadrel, 1993; Gerrard, Gibbons, Benthin, & Hessling, 1996). However, when considering the perceptions of peer behavior, perceptions of risks and vulnerability were no longer significant. This indicates that the perceived behavior of peers is more important than are perceptions of risks and vulnerability.

Psychological Predictors

Sensation seeking was one of the most consistent predictors of online sexual risk behavior (Chapter 5, Chapter 7). Adolescents with high levels of sensation seeking were more likely to engage in online sexual risk behavior. This holds for all 20 European countries that we studied. This finding is consistent with studies, which have shown that sensation seeking is one of the most important predictors of many types of offline risk behaviors (Arnett, 1996; Zuckerman, 1990). This dissertation showed that this is also the case for online risk behavior. Adolescents with high levels of sensation seeking are characterized by the willingness to engage in risks in order to increase stimulation and arousal (Zuckerman, 1990). Engaging in online sexual risk behavior may provide these high levels of arousal.

Adolescents with lower levels of life satisfaction were also more likely to engage in online sexual risk behavior. This is in line with previous studies which showed that adolescents who are dissatisfied with their lives are more likely to engage in various risk behaviors, including sexual risk behavior (MacDonald, Piquero, Valois, & Zullig, 2005; Schwartz et al., 2011; Valois, Zullig, Huebner, Kammermann, & Drane, 2002). Several factors may explain decreased life satisfaction among adolescents, such as lack of social support, negative life events, family and school problems. Adolescents who are dissatisfied with their lives may turn to the internet as a substitution for missing offline gratifications (Baker & Moore, 2008; Livingstone & Helsper, 2007; Peter & Valkenburg, 2006). Engaging in online sexual communication with strangers may thus serve as a coping strategy to deal with various offline problems and with lack of offline support from family and friends.

Social Predictors

This dissertation investigated three social predictors, descriptive and injunctive peer norms as well as family cohesion. Descriptive peer norms are estimations of the amount of friends that engage in a specific behavior. Injunctive peer norms are perceptions of the approval of this behavior among friends. In this dissertation, perceived peer norms were the most important and consistent predictors of online sexual risk behavior. Adolescents

who had more friends who engaged in online sexual risk behavior were more likely to subsequently engage in this behavior as well. Moreover, if adolescents had friends who approved of this behavior, they were also more likely to engage in online sexual risk behavior (Chapter 4). This finding emphasizes the role of peers in the engagement in online sexual risk behavior. Similar to many types of offline risk behavior (e.g., Ali & Dwyer, 2011), also for online sexual risk behavior the behavior of peers is directive.

In addition to peers, family environment influences adolescents' engagement in online sexual risk behavior. Chapter 5 shows that adolescents who have less cohesive families are more likely to belong to the 'high-online-risk' group. Adolescents who feel that they are not able to turn to their family if they have problems may be more likely to talk to strangers on the internet. Adolescents from less cohesive families may also be less supervised in their online and offline behavior by their parents. They may thus have more opportunities to engage in online sexual risk behavior.

Cultural Predictors

In contrast to the demographic, cognitive, psychological, and social factors investigated in this study, cultural factors at the country level had no direct influence on adolescents' engagement in one specific type of online sexual risk behavior – sexting (see Chapter 7). This is not surprising because the prevalence of sexting in the 20 European countries investigated in this study was comparable, except for two countries (Sweden and Czech Republic). In these countries, sexting was more prevalent. Although the countries' traditionalism, broadband penetration, and gross domestic product had no direct effect on sexting, traditionalism explained gender differences in sexting. This indicates that these broader, more distal country level factors may still influence individual behavior.

In sum, these findings emphasize that predictors at several levels influence online sexual risk behavior. Age, sensation seeking, and descriptive peer norms emerged as the strongest and most consistent predictors of online sexual risk behavior.

Relationship to Offline Sexual Risk Behavior

Another main finding of this dissertation is that adolescents who engage in online sexual risk behavior were also more likely to engage in offline sexual risk behavior. Chapter 5 shows that online and offline sexual risk behaviors were highly related. The overlap between these two behaviors may have two different reasons. The first explanation is that some adolescents may be predisposed by psychological, social, as well as demographic factors to engage in various risks, including online and offline sexual risk behavior. A second explanation is that online sexual risk behavior leads to engagement in offline sexual risk behavior. For example, adolescents may first experiment with this

behavior on the internet before they dare to engage in sexual activities offline. Our findings partly support this argument because online sexual risk behavior peaks earlier during adolescence compared to offline sexual risk behavior. It may thus be that online sexual risk behavior is a precursor of offline sexual risk behavior (Chapter 5). Future research is needed to disentangle the causal relationship between online and offline sexual risk behavior.

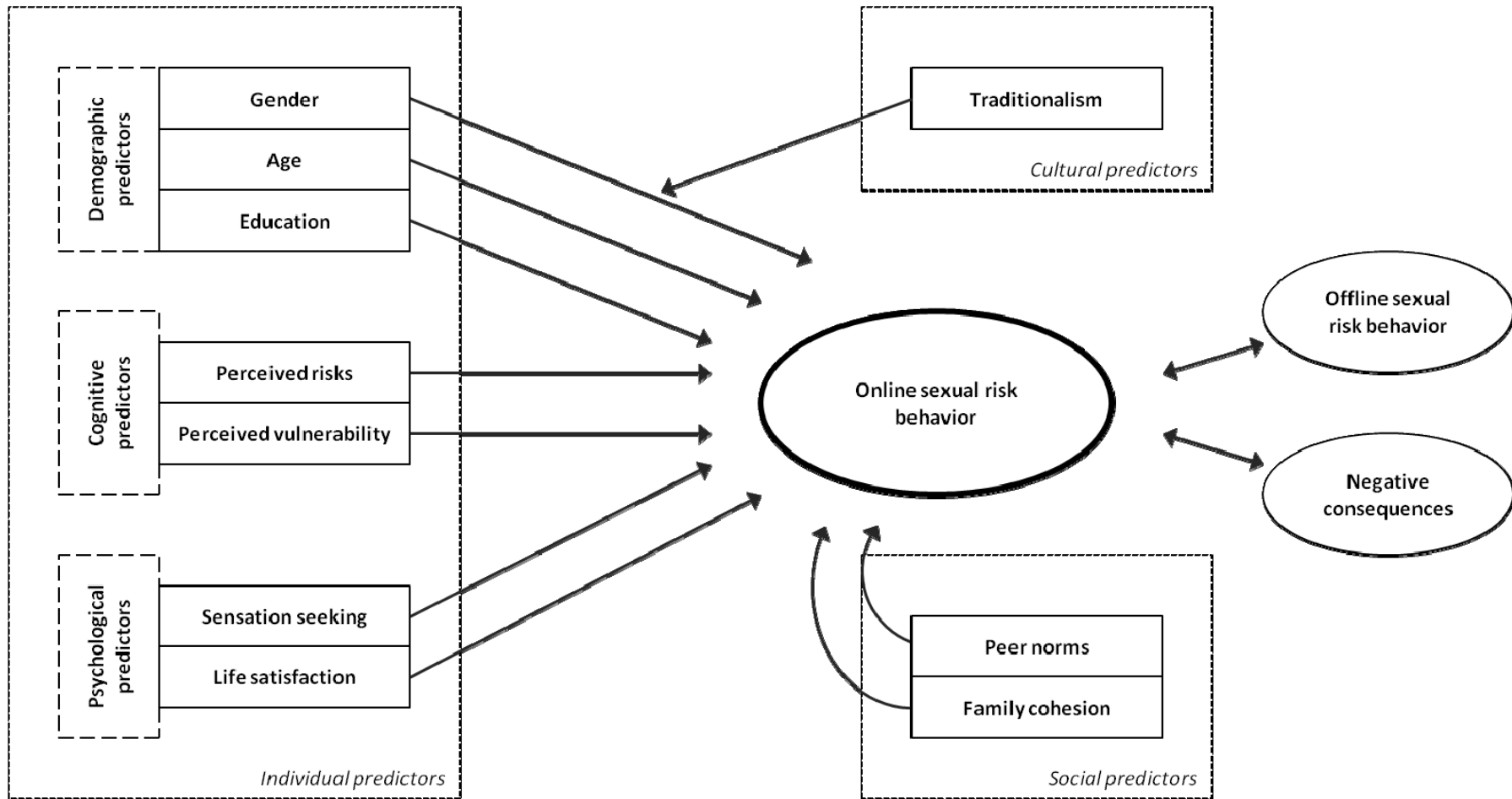
Relationship to Negative Online Experiences

The final finding of this dissertation was that adolescents who engage in online sexual risk behavior are more likely to become victims of online sexual solicitation and online harassment. It seemed that adolescents who engage in online sexual risk behavior become more vulnerable to these types of negative online experiences. These adolescents were also more likely to encounter online experiences that worried them afterwards. It may thus be assumed that engaging in online sexual risk behavior puts adolescents at risk for these negative online experiences. Another possibility, however, is that these negative online experiences are based on other online activities that these adolescents share. Future research needs to investigate the causal relationship between online sexual risk behavior and negative online experiences.

Online Sexual Risk Behavior in the Broader Context of Adolescent Sexual Development

One of the main developmental tasks of adolescence is the development of a sexual identity (e.g., Crockett, Raffaelli, & Moilanen, 2003; DeLamater & Friedrich, 2002; Lerner & Galambos, 1998). An individual's sexual identity comprises sexual self-esteem, sexual self-efficacy, and consistent beliefs about their sexual self-image (Breakwell & Millward, 1997; Buzwell & Rosenthal, 1996). Adolescents today might use the internet to construe their sexual identity and explore their sexuality (Boies, Cooper, & Osborne, 2004; Subrahmanyam & Smahel, 2011). The internet provides them with the perfect opportunity not only to receive vast amounts of sexual information and sexual content, but also to discuss intimate sexual topics with friends and strangers. Online sexual risk behavior must be placed within this broader context of adolescent sexual development. Engaging in online sexual risk behavior during adolescence may fulfill several goals. For example, searching people online to talk about sexuality may reflect affiliative needs and may fulfill adolescents' need for intimacy (Boies et al., 2004; Weiser, 2000). Similarly, by sending nude pictures of themselves to others online, adolescents may receive positive feedback that may enhance their self-esteem. In these cases, online sexual risk behavior may have an adaptive function.

Figure 8.1. Overview of Main Findings



However, engaging in online sexual risk behavior may also be dysfunctional and may interfere with healthy sexual development. This may be the case if it leads to negative consequences, such as being harassed online, losing control over personal information, or feeling shame and guilt. It may also be worrisome if this behavior led to actual (unsafe) sexual encounters offline. The findings of this dissertation suggest that online sexual risk behavior is related to these negative consequences most strongly when adolescents engage in it frequently and consistently. Engaging in online sexual risk behavior once or twice during adolescence may be developmentally appropriate and may not lead to negative consequences. However, adolescents who engaged in higher levels of online sexual risk behavior were more likely to engage in offline sexual risk behavior (Chapter 5) and become victims of online harassment and solicitation (Chapter 6). Consistent engagement in risk may also be problematic because it may replace offline interactions with peers and may lead to social isolation (Weiser, 2000).

Overall, this dissertation has shown that for many young people, engaging in online sexual risk behavior is not a part of typical sexual development during adolescence. For those who engage in online sexual risk behavior, it may fulfill developmental needs. However, engaging in this behavior frequently and consistently may also be related to negative consequences and dysfunctional development.

Limitations and Future Research

The present dissertation gave a comprehensive account of various predictors of online sexual risk behavior. However, those predictors explained only a part of the variance in online sexual risk behavior. This indicates that other factors, which have not been studied in this dissertation, may also influence this behavior. Most importantly, this dissertation focused on individual and social characteristics. The survey-based methods employed in this dissertation could capture these more stable factors very well. However, situational, incidental and more short-term predictors have not been studied. Recent theories on adolescent risk behavior posit that the engagement in risk behavior is based on heuristics and affect (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008; Rivers, Reyna, & Mills, 2008) rather than on reason and systematic processing. In a specific situation, the decision to engage in risk behavior may depend on situational factors, such as peer behavior (Baker & Maner, 2009; Gardner & Steinberg, 2005). Moreover, strong emotional or arousing situations may increase the likelihood of engagement in risk behavior (e.g., Pham, 2007). Studying these situational factors may further deepen our understanding of specific situations in which online sexual risk behavior occurs.

This dissertation focused mainly on sexual online communication with strangers. However, we did not investigate who these strangers were and how adolescents have met

them. In many cases, these strangers may have been same-aged peers (Livingstone, Haddon, Görzig, & Olafsson, 2011). To better understand the consequences of this behavior, it becomes important to know more about the type of online contacts. We limited online sexual risk behavior to communication with strangers because previous research has suggested that such communication is more dangerous than is communication with friends (Mitchell, Finkelhor, & Wolak, 2001; Wolak, Finkelhor, & Mitchell, 2008). However, to fully understand online sexual activities, it may be desirable for future research to also examine sexual online communication with friends.

The finding that only a minority of adolescents engages in online sexual risk behavior posed challenges to data analyses. The low prevalence rate led to highly skewed data that was not normally distributed. Many conventional statistical methods are not able to handle skewed data. In this dissertation we, therefore, used a variety of methods – such as bootstrapping, semi-parametric tests, and zero-inflated Poisson models – that were able to do deal with this issue. For future studies it may be useful to employ other approaches to study this behavior. For example, it may be helpful to collect data within specific risk groups (e.g. lower educated adolescents) and to compare these with comparable samples of adolescents who do not engage in this behavior (e.g. case-control studies, King & Zeng, 2001).

Practical Implications

The findings of this dissertation may be of interest to parents, teachers, practitioners, and policy makers. The predictors of online sexual risk behavior identified in this dissertation may be informative for the prevention of this behavior. One of the most important predictors of this behavior was peer norms (Chapter 4). Because peer norms are a strong indicator of all types of risk behaviors, it may be beneficial to help adolescents find strategies to resist peer influence. Interventions may also directly target the *perceptions* of peer behavior. It has been shown that the perceptions of peer behavior are often inflated (Berkowitz, 2005, Martens et al., 2006). To prevent online sexual risk behavior, it may thus be helpful to raise the awareness of potential overestimations of peer behavior. If adolescents were informed that most of their peers do not engage in online sexual risk behavior and that their perceptions of their friends' behavior are likely to be inflated, the influence of these peer norms can diminish (Berkowitz, 2005; Schroeder & Prentice, 1998). Moreover, it has been shown that parental monitoring may moderate the influence of detrimental peer influence on the engagement in online sexual risk behavior (Rai et al., 2003). Therefore, parents may be advised to mediate and monitor the internet use of their children.

This dissertation also indicated that adolescents who engage in high levels of online sexual risk behavior seem to be troubled. These adolescents were less satisfied with their lives and were more likely to come from less cohesive families. Therefore, parents, teachers, and practitioners should pay particular attention to these teens in order to prevent potentially adverse online sexual risk behavior. Providing social support to adolescents who are dissatisfied with their lives or lack social support from their family may be a potential preventive factor for the engagement in online sexual risk behavior.

Moreover, the findings suggest that public campaigns may center particularly on adolescent sensation seekers and choose formats and techniques that these adolescents value (Morgan, Palmgreen, Stephenson, Hole, & Lorch, 2003; Palmgreen, Donohew, Lorch, Hoyle, & Stephenson, 2001). In addition, the findings suggest that prevention programs should target low-educated adolescents in particular. This can be done by implementing preventions in lower education schools and using techniques that adolescents with lower education prefer, such as simple language, illustrated materials, and digital technologies (Pignone, DeWalt, Sheridan, Berkman, & Lohr, 2005). Finally, this dissertation has shown that online sexual risk behavior peaks in mid-adolescence (Chapter 5). Thus, the preventions of online sexual risk behavior may be most effective in early adolescence before this behavior peaks. Parents and teachers of early adolescents may be well advised to discuss the risks associated with online risk behavior.

Concluding Remarks

Recurrently, there have been concerns about the influence of new media on children and adolescents (Wartella & Jennings, 2001). Some of these concerns have been refuted while others have been supported by scientific scrutiny. To overcome an uninformed public discussion, this dissertation provided a detailed account of online sexual risk behavior among adolescents. On the one hand, this dissertation identified a small group of adolescents who engage in online sexual risk behavior. Although the percentage of adolescents engaging in this behavior seems rather low, it still comprises a considerable number of adolescents in absolute terms. These adolescents constitute a risk group that deserves special attention, not only because of their engagement in online sexual risk behavior, but also because this behavior has been linked to offline sexual risk behavior, online victimization experiences, and low life satisfaction. Thus, these adolescents may be particularly vulnerable. On the other hand, the findings of this dissertation suggest that the vast majority of adolescents do not engage in online sexual risk behavior. This finding may be reassuring for many parents who worry about their child's online sexual risk behavior. Although the internet may have become an important part of adolescent sexual development, most adolescents behave responsibly and safely on the internet.

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