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### Adolescent sexual risk behavior on the internet

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## **Adolescents' Online Sexual Risk Behavior and its Relationship to Negative Online Experiences**

### **Abstract**

The aim of this study was to investigate whether adolescents who follow heightened pathways of online sexual risk behavior during adolescence are more likely to encounter negative online experiences, such as online sexual solicitation, online harassment, and online rumination. Repeated-measures ANOVA showed that adolescents assigned to three online sexual risk groups identified in the previous chapter, differed significantly in their negative online experiences. The 6% of adolescents who followed the high online risk trajectory experienced the highest levels of online sexual solicitation, online harassment, and online rumination. Adolescents who did not engage in online sexual risk behavior were also less likely to be sexually solicited or harassed online, and to ruminate about experiences they made online. Engaging in online sexual risk behavior, therefore, was related to these negative online experiences.

## **Adolescents' Online Sexual Risk Behavior and its Relationship to Negative Online Experiences**

The findings presented in the previous chapter indicated that adolescents differ in their developmental pathways of online sexual risk behavior during the course of adolescence. Whereas many adolescents did not engage in these risk behaviors at all, others showed heightened developmental pathways of online sexual risk behavior. The results presented in Chapter 5 also indicated that adolescents who showed heightened pathways of online sexual risk behavior differed from adolescents who did not engage in online sexual risk behavior in specific personality characteristics, in their family situation, and education.

Engaging in online sexual risk behavior may have all kinds of negative as well as positive consequences for adolescents. As with most risk behaviors, occasional engagement in risk behavior may not be problematic and may even be adaptive for adolescent development (Jessor, 1992). Showing stable patterns of risk behavior may be more problematic and may increase the likelihood of negative outcomes (Compas, Hinden, & Gerhardt, 1995). For example, Ybarra, Mitchell, Finkelhor, and Wolak (2007) showed that engagement in various types of online risks is more influential in explaining online harassment and online sexual solicitation than is engagement in one specific risky online behavior. However, this study investigated patterns of online risks cross-sectionally without considering the stability of this behavior over time. Therefore, it is still unknown how different developmental pathways of risk behavior are related to negative online experiences. Previous research suggests at least three potentially negative outcomes of online risk behavior that deserve attention: online harassment, online sexual solicitation, and online rumination (Livingstone, Haddon, Görzig, & Olafsson, 2010; Ybarra et al., 2007).

The aim of the present chapter is to examine how the developmental pathways of online sexual risk behavior are related to these three types of negative online experiences.

### **Negative Online Experiences**

Online sexual solicitation and online harassment can be subsumed under the term online victimization (Ybarra et al., 2007). Online sexual solicitations are unwanted requests to talk about sex online or to act sexually on the internet. Previous research has shown that a small but consistent number of adolescents experiences incidences of sexual solicitation on the internet (Baumgartner, Valkenburg, & Peter, 2010; Mitchell, Finkelhor, & Wolak, 2001). Most studies have suggested that girls are more often sexually solicited online than boys. Mitchell et al. (2001), for instance, showed that 27% of female

adolescents have been sexually solicited. In contrast, only 12% of male adolescents indicated that they were victims of unwanted online sexual solicitation. Similarly, Baumgartner et al. (2010) showed that 19% of female adolescents but only 6% of male adolescents have been sexually solicited online in the past half year. Research has shown that in nearly half of the incidences perpetrators of sexual solicitations were other youths, or young adults aged between 18 and 25 years (Wolak, Mitchell, & Finkelhor, 2006). In most incidences, youths had met the perpetrators of online sexual solicitations online (86%). Thus, youth receive online sexual solicitations mainly from strangers with whom they communicate on the internet (Wolak et al., 2006).

Communicating with strangers on the internet, therefore, increases the chance of receiving unwanted online sexual solicitations. Mitchell, Finkelhor, and Wolak (2007) also indicated that in particular, talking to strangers about sex online increases the chance of receiving unwanted online sexual requests. Therefore, it may be assumed that engaging in online sexual risk behavior is related to online sexual solicitation. Adolescents who talk about sex online or who search for sexual partners online are more likely to encounter persons online who send them sexual requests that adolescents do not appreciate. We hypothesize:

*H1:* Adolescents who follow pathways of heightened online sexual risk behavior experience incidences of online sexual solicitation more often than do adolescents who follow pathways of less online sexual risk behavior or who do not engage in online sexual risk behavior.

A second type of online victimization is online harassment. Online harassment occurs when someone acts aggressively against another person on the internet. These aggressive acts include bullying or harassing someone online and the spreading of the victims' personal information to others (Tokunaga, 2010). Similar to online sexual solicitation, also specific online behaviors can predict online harassment. For example, Ybarra et al.'s (2006) study indicated that the use of chat rooms, blogs, and instant messaging predict online harassment. Moreover, frequency of internet use and posting personal information online have been related to online harassment (Walrave & Heirman, 2009). Accordingly, we expect that adolescents who engage in higher levels of online sexual risk behavior are more likely to being harassed online. Adolescents who send sexual pictures to others may risk that this material is forwarded to others without their consent. Moreover, disclosing sexual information to strangers online may make them vulnerable to data misuse. We, therefore, hypothesize:

*H2*: Adolescents who follow pathways of heightened online sexual risk behavior experience incidences of online harassment more often than do adolescents who follow pathways of less online sexual risk behavior or who do not engage in online sexual risk behavior.

Online rumination refers to recurring thoughts about negative online experiences. Online rumination occurs when adolescents experience something on the internet that distresses them. These distressing experiences may result in prolonged worries. In a European study it has been shown that 3% to 26% of the adolescents, depending on the country of the study, had encountered something on the internet that had bothered them afterwards (Livingstone et al., 2010). In the Netherlands, where the present study was conducted, 21% of the adolescents had been bothered by internet experiences (Livingstone et al., 2010). Online rumination is worrisome because it may lead to psychological problems. Adolescents who frequently worry about their online experiences may be less satisfied with their lives and may develop internalizing problems.

We expect that adolescents who frequently engage in online sexual risk behavior may also encounter various incidences online that may bother them afterwards. We, therefore, hypothesize:

*H3*: Adolescents who follow pathways of heightened online sexual risk behavior report more online rumination than adolescents who follow pathways of less online sexual risk behavior or who do not engage in online sexual risk behavior.

Although it has been previously assumed that online sexual risk behavior is related to negative online experiences, research supporting this claim is still missing. Based on the online risk groups identified in the previous chapter, the current chapter examines the relationship between online sexual risk behavior and negative online experiences. Previous research reported two important factors that predict negative online experiences, gender and online communication (Baumgartner et al., 2010; Mitchell et al., 2001; Walrave & Heirman, 2009). In general, girls are more likely to be victimized online and to ruminate about negative online experiences than boys (Livingstone et al., 2010). Moreover, the frequency of online communication is also related to being victimized, with adolescents who communicate online more frequently being more likely to experience negative incidences. Therefore, we included these two variables as control variables in our analyses.

## Method

### Sample and Data Analytical Approach

The data used in this study were drawn from the four-wave panel study among 1,765 Dutch adolescents. We took the three groups of adolescents who followed specific developmental pathways in the previous chapter as a starting point (see Figure 5.1). To investigate whether these three risk groups differ in negative online experiences at all four time points, repeated-measures ANOVA were conducted. Instead of looking at the average level of negative online experiences across the four waves, the repeated-measures ANOVAs allow for investigating group differences for each time point thereby indicating whether the effects are consistent over time. The trajectory groups were taken as independent variables and the three types of negative online experiences as dependent variables. Because repeated-measures ANOVA cannot handle missing data, only those adolescents who participated in all four waves were included in the analyses ( $N = 1,016$ ).

### Measures

**Negative online experiences.** Three types of negative online experiences were included in the study: unwanted online sexual solicitation, online harassment, and online rumination.

**Unwanted online sexual solicitation.** Online sexual solicitation was measured using two items. Participants were asked two questions: 1) ‘How often in the past six months did anyone ask you online to talk about sex when you did not want to?’ 2) ‘How often in the past six months did anyone ask you online to do something sexual when you did not want to?’ Response categories were 0 (*never*), 1 (*once*), 2 (*twice*), 3 (*three to five times*) and 4 (*six times or more*). An index was calculated by taking the mean score of the two variables. Correlations of the two items for the four time points were .75, .73, .73, and .64, respectively. Mean scores of the scale were ( $M = 0.16$ ,  $SD = 0.56$  for Time 1;  $M = 0.10$ ,  $SD = 0.42$  for Time 2;  $M = 0.10$ ,  $SD = 0.45$  for Time 3;  $M = 0.09$ ,  $SD = 0.41$  for Time 4).

**Online harassment.** We assessed online harassment by asking participants to rate how often in the past six months ‘have you been harassed on the internet’, ‘have you been bullied on the internet’, and ‘did someone send personal information from you to someone else when you did not want that?’ Frequency of online harassment was rated on a five point scale, ranging from 0 (*never*) to 4 (*six times or more*). An index was calculated by taking the mean score of the three variables. Cronbach’s alpha ranged from .70 to .77 at the four time points. Mean scores of the scale were ( $M = 0.25$ ,  $SD = 0.57$  for Time 1;  $M = 0.19$ ,  $SD = 0.48$  for Time 2;  $M = 0.17$ ,  $SD = 0.44$  for Time 3;  $M = 0.13$ ,  $SD = 0.42$  for Time 4).

**Online rumination.** Online rumination was measured with the following two questions: 1) How often in the past six months did you ruminate about something that had happened on the internet? 2) How often in the past six months did you keep thinking about something that had happened to you on the internet? Response categories ranged from 0 (*never*) to 4 (*very often*). The two items correlated strongly at all four waves, with correlation coefficients ranging from .81 to .89. Mean scores (standard deviations in parentheses) for this scale were 0.54 (0.85), 0.43 (0.74), 0.40 (0.76), and 0.32 (0.65), respectively.

**Control variables.** Frequency of online communication and gender were included as control variables in the analyses. Frequency of online communication was assessed with three items. Participants were asked to indicate how frequently they use instant messaging, internet chats, and social networking sites. Response categories ranged from 0 (*never*) to 10 (*every day*). The mean score of the three items was taken as an indication of the frequency of online communication at each time point. For the analyses, an average score for online communication at all four time points was calculated. The mean score of this index was 4.76 ( $SD = 1.80$ ).

## Results

At the four time points of data collection, 12.3%, 8.6%, 7.5%, and 7.3% of the adolescents reported being sexually solicited at least once in the past six months. Likewise, 28.1%, 22.5%, 20.9%, and 16.4% reported being harassed online at least once in the past six months. For online rumination, 37.9%, 32.3%, 28.3, and 24.8% of the adolescents reported having at least once in the past six months ruminated online in the four waves. Online sexual solicitation and online harassment correlated moderately between .52 and .60 at the four time points. Correlations between online sexual solicitation and online rumination ranged from .25 to .34 and correlations between online rumination and online harassment ranged from .35 to .40.

To investigate whether adolescents in the three online sexual risk groups differ in their experience of negative online incidences, three repeated-measures ANOVAs were conducted with the three groups as independent variable and the three negative online experiences as dependent variables. Gender and frequency of online communication were included as control variables in all ANOVAs. Figure 6.1 displays the results of these ANOVAs. Table 6.1 displays all means and standard deviations for the three online risk groups.

Hypothesis 1 stated that adolescents following heightened developmental pathways of online sexual risk behavior experience incidences of online sexual solicitation more often compared to adolescents who follow pathways of less online sexual risk behavior. In line with Hypothesis 1, the repeated-measures ANOVA with online sexual solicitation as

dependent variable yielded a significant main effect of group membership,  $F(2, 1011) = 82.90, p < .001, \text{partial } \eta^2 = .14$  (see Figure 6.1 and Table 6.1). This main effect indicates that adolescents assigned to three different risk groups differed in their experience of online sexual solicitation. More specifically, adolescents assigned to the high online risk group experienced significantly more online sexual solicitation than adolescents in the other two groups. Games-Howell post-hoc tests indicated that all three groups differed significantly from each other in their level of online sexual solicitation (all  $p < .001$ ). These findings support Hypothesis 1. In addition, the analysis yielded a small but significant main effect of the frequency of online communication,  $F(1, 1011) = 10.49, p < .01, \text{partial } \eta^2 = .01$ , and for gender,  $F(1, 1011) = 27.43, p < .001, \text{partial } \eta^2 = .03$ , and a significant interaction effect of group membership by time,  $F(6, 3033) = 5.51, p < .001, \text{partial } \eta^2 = .01$ . This interaction effect of group membership by time is most likely due to the slight decrease in online sexual solicitation at Time 2. The main effects of gender and frequency of online communication suggest that more females than males experienced online sexual solicitations and that adolescents who communicated more often online were more likely to experience online sexual solicitations.

Hypothesis 2 stated that adolescents who follow heightened pathways of online sexual risk behavior experience incidences of online harassment more frequently compared to adolescents who follow pathways of less online sexual risk behavior. As expected, the repeated-measures ANOVA yielded a significant main effect of group membership on online harassment,  $F(2, 1011) = 89.45, p < .001, \text{partial } \eta^2 = .15$ . Post-hoc analyses revealed that all three online risk groups differed significantly in their experience of online harassment, with the high risk group experiencing the highest levels of harassment and the no risk group the lowest levels (all  $p < .001$ ). Hypothesis 2 was therefore supported (see Figure 6.1 and Table 6.1). In addition, a significant main effect of frequency of online communication,  $F(1, 1011) = 23.80, p < .001, \text{partial } \eta^2 = .02$ , and a significant main effect of gender,  $F(1, 1011) = 16.65, p < .001, \text{partial } \eta^2 = .02$  were found. No main effect of time and no interaction effect were found. The main effects of gender and frequency of online communication suggests that females experienced higher levels of online harassment than males and that adolescents who communicated online more frequently were more likely to experience online harassment.

Hypothesis 3 stated that adolescents who follow pathways of heightened online sexual risk behavior report more online rumination compared to adolescents who follow pathways of less online sexual risk behavior. In line with Hypothesis 3, the repeated-measures ANOVA yielded a significant main effect of group membership,  $F(2, 1011) = 85.34, p < .001, \text{partial } \eta^2 = .14$ . Subsequent post-hoc tests showed that all three online risk groups differed significantly in their experience of online rumination with the high risk



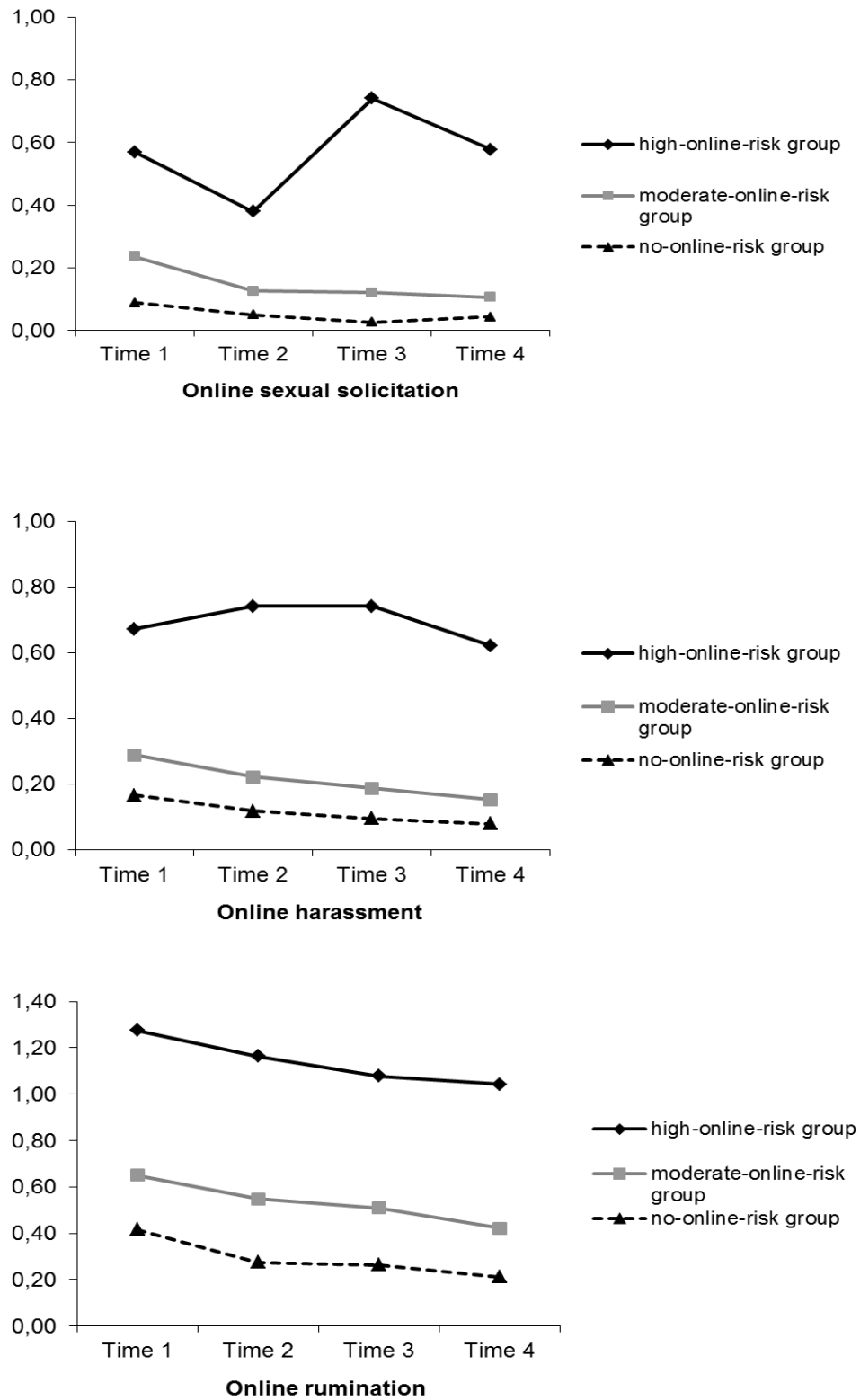
group experiencing the highest levels and the no risk group the lowest levels of online rumination (all  $p < .001$ ). Hypothesis 3 was therefore also supported (see Figure 6.1 and Table 6.1). Moreover, the ANOVA yielded a significant main effect of frequency of online communication,  $F(1, 1011) = 7.58, p < .01, partial \eta^2 = .01$  on online rumination. No main effect of gender and time were found. There were also no significant interaction effects. The main effect for the frequency of online communication suggests that adolescents who spend more time communicating online are also more likely to ruminate about negative online experiences.

Because all three dependent variables were skewed, we conducted additionally Kruskal-Wallis tests to account for the skewness of the data. These tests are non-parametric and can therefore be used for non-normally distributed data. The findings from the Kruskal-Wallis tests supported the findings from the repeated-measures ANOVAs. The three online risk groups differed significantly from each other in their experiences of online sexual solicitation ( $H_{t1}(2) = 100.18, H_{t2}(2) = 83.81, H_{t3}(2) = 146.96, H_{t4}(2) = 75.75$ , all  $p < .001$ ), online harassment ( $H_{t1}(2) = 85.29, H_{t2}(2) = 82.94, H_{t3}(2) = 75.84, H_{t4}(2) = 73.92$ , all  $p < .001$ ), and online rumination ( $H_{t1}(2) = 96.92, H_{t2}(2) = 89.59, H_{t3}(2) = 57.52, H_{t4}(2) = 78.91$ , all  $p < .001$ ).

**Table 6.1.** Means and Standard Deviations for the Negative Online Experiences

	No-online-risk group M (SD)	Moderate-online- risk group M (SD)	High-online-risk group M (SD)
Online sexual solicitation			
Time 1	0.09 (0.40)	0.24 (0.68)	0.57 (1.00)
Time 2	0.05 (0.30)	0.13 (0.42)	0.38 (0.81)
Time 3	0.02 (0.24)	0.12 (0.44)	0.74 (1.10)
Time 4	0.04 (0.26)	0.11 (0.41)	0.58 (1.07)
Online harassment			
Time 1	0.17 (0.47)	0.29 (0.55)	0.67 (0.85)
Time 2	0.12 (0.35)	0.22 (0.51)	0.74 (0.93)
Time 3	0.09 (0.30)	0.19 (0.43)	0.74 (0.87)
Time 4	0.08 (0.27)	0.15 (0.42)	0.62 (1.04)
Online rumination			
Time 1	0.42 (0.75)	0.65 (0.91)	1.28 (1.12)
Time 2	0.28 (0.57)	0.55 (0.77)	1.16 (1.20)
Time 3	0.26 (0.60)	0.51 (0.83)	1.08 (1.22)
Time 4	0.21 (0.51)	0.42 (0.72)	1.04 (1.06)

**Figure 6.1.** Group Differences in Online Sexual Solicitation, Online Harassment, and Online Rumination for the Three Online Sexual Risk Groups



## Discussion

The aim of the present study was to investigate whether following specific pathways of online sexual risk behavior is related to negative online experiences. In line with our expectations, all three risk groups differed clearly in their experience of online victimization. More specifically, adolescents who followed the high online risk trajectory experienced higher levels of online sexual solicitation and online harassment compared to adolescents who followed pathways of low or no risk engagement. Even adolescents who engaged in low levels of online sexual risk behavior were more at risk of experiencing these online victimizations compared to those who did not engage in online sexual risk behavior. However, most pronounced was the difference between the high risk group and the other two.

This finding can be related to previous studies showing that engagement in multiple types of online risk behavior is more likely to lead to online victimization than engagement in only one specific type of online risk behavior (Ybarra et al., 2007). Our study extends these findings by showing that recurrent and consistent risk engagement is most strongly related to online victimization in contrast to more incidental risk engagement. This indicates that preventions should target particularly adolescents in the high-online-risk group.

It is important to note that the majority of adolescents did not engage in online sexual risk behavior; thus these adolescents were not likely to be solicited or harassed online. This indicates that one important risk factor for online victimization is the active engagement in online sexual risk behavior. Previous studies have shown that adolescents who harassed others on the internet were more likely to be harassed online themselves (Kowalski & Limber, 2007). Our study shows that not only harassing others online but also online sexual risk behavior is related to online victimization experiences. Together, these findings suggest that adolescents may be able to actively influence their risk of being victimized online by changing their online behaviors.

As expected, the three developmental pathways of online sexual risk behavior were also related to online rumination. This indicates that adolescents following pathways of heightened risk engagement are more likely to have online experiences that worry them afterwards. This study did not assess the cause of these worries. It could be that these worries are due to online victimization experiences (Ybarra, Mitchell, Wolak, & Finkelhor, 2006). Ybarra et al. (2006) and Livingstone et al. (2010) showed that not all adolescents are upset by victimization experiences. Many adolescents are not worried by these incidences. However, some aggressive victimization experiences may be worrisome and upsetting for adolescents. The findings of our study suggest that adolescents who engage in online sexual risk behavior may indeed experience more aggressive online incidences that

trouble them afterwards. It could also be that adolescents who engage in online sexual risk behavior have other negative online experiences that bother them afterwards which were not assessed in this study. The finding is of concern because worrying a lot about negative online experiences may be a predictor of future psychological problems, such as low psychological well-being and depression.

Interestingly, the results show that although the frequency of general online communication had a significant effect on online victimization, this effect was much smaller compared to the effect of online sexual risk behavior. This indicates that not the frequency of online communication per se but sexual communication with strangers online may be related to negative online experiences. To prevent this behavior, adolescents' online communication should not be restricted per se; instead, parents and teachers should make adolescents aware of the fact that sexual online communication with strangers may lead to online victimization experiences.

The finding that online sexual risk behavior is related to negative online experiences extends the results from the previous chapter. In Chapter 5, we showed that adolescents belonging to the high-online-risk group differ in sensation seeking, life satisfaction, family cohesion, and education from adolescents in the moderate- and no-online-risk group. The findings from the previous chapter, however, suggested that adolescents following moderate and high levels of online sexual risk behavior did not differ in sensation seeking, life satisfaction, family cohesion, and education. Adolescents following these two developmental pathways were therefore similar on these dimensions. The findings of the present study, however, show that it is still essential to distinguish the two groups that followed two different pathways of risk engagement because they differed highly in their negative online experiences. Although these adolescents were similar on personality and social characteristics, they differed in their negative online experiences.

Although the findings clearly show a strong relationship between risk behavior and negative online experiences, it cannot be conclusively argued that engaging in these behaviors *caused* these negative online experiences. It may also be that the relationship is due to other online experiences that these adolescents have in common. The six-month time intervals of our studies did not allow making more detailed predictions about the causality of the relationship. Future research is needed to investigate short-term and immediate consequences of online sexual risk behavior.

In sum, the present study is the first to provide a detailed picture of the relationship between following specific developmental pathways of online sexual risk behavior and negative online experiences. The findings suggest that in particular youth who engage in risky sexual online behavior experience negative online incidences. This is problematic because being a victim of online harassment may lead to serious psychosocial problems

## Negative Online Experiences

(Tokunaga, 2010). Therefore, to prevent these negative online experiences, it may be advisable to make youth aware of the potential negative consequences of online sexual risk engagement.

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