

# Interpersonal Factors in the Risk for Sexual Victimization and its Recurrence during Adolescence

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**Abstract** Being a victim of sexual aggression from a peer is a common experience among adolescents and poses a significant risk for various forms of psychopathology. Unfortunately, little is known concerning specific interpersonal factors that increase an adolescent's risk for experiencing sexual aggression. The current study assessed the contribution made by several interpersonal factors both for the first and repeated experience of becoming a victim of sexual aggression from a peer. Data were collected annually from a longitudinal sample of 200 adolescents over a period of 4 years and were analyzed using multiple-spell, discrete-time survival analysis. Approximately 46% of the adolescents reported experiencing some form of sexual aggression by the end of wave 4. Further, 65% of victims reported experiencing a repeat incident of aggression. Females were at higher risk both for initial and repeated victimization, as were adolescents with more sexual experience and higher levels of rejection sensitivity. Results are discussed in terms of implications for future prevention efforts.

**Keywords** Adolescence · Sexual victimization · Revictimization · Rejection sensitivity · Survival analysis

## Introduction

Sexual aggression from a peer may take the form of verbal coercion, use of drugs or alcohol, or the threat or use of

physical force in order to obtain unwanted sexual contact (Koss and Gidycz 1985). Experiencing such sexual aggression is alarmingly common among adolescents, with estimates for girls ranging from 14 to 43% (Hickman et al. 2004). Adolescents who experience sexual aggression are at higher risk for both externalizing and internalizing symptomatology (Ackard and Neumark-Sztainer 2002; Callahan et al. 2003; Howard and Wang 2005). Girls who are victims of sexual aggression are nearly six times more likely to report suicidal thoughts or attempts than nonvictims (Ackard and Neumark-Sztainer 2002). One of the most troubling issues surrounding adolescent sexual aggression is the frequent pattern of chronic victimization (Levy 1990). The rates of sexual victimization in college have been estimated to be two to four times higher for women who had previously been victims of sexual aggression as an adolescent (Gidycz et al. 1993; Humphrey and White 2000).

Given the high incidence and negative outcomes associated with experiencing sexual aggression from a peer during this age period, adolescence represents a critical window for intervention (Foshee et al. 2005). Particularly important is the identification of risk factors that can be targeted in prevention programs. The responsibility for sexual aggression clearly rests with the perpetrator, and it is important to identify and understand the factors that lead to sexual aggression. Given that dating is a dyadic process, it is also important to provide adolescents with the tools and ability to protect themselves from sexual aggression. Thus, the identification of characteristics of victims of sexual aggression is essential to understand the factors that incur risk for victimization. Consideration of these characteristics will be crucial to identify factors that may help to prevent sexual aggression in the future (Few and Rosen 2005).

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Research has begun to identify factors that are associated with experiencing sexual aggression. Several of these factors originate within the family and social environment, including a history of child maltreatment or domestic violence (Hall-Smith et al. 2003; Wolfe et al. 2005), having divorced parents or living in a single-parent household (Coker et al. 2000), and general socioeconomic disadvantage (Wolfe and Feiring 2000). Several cognitive factors also are associated with sexual dating victimization, including deficits in social competence and conflict resolution (Avery-Leaf and Cascardi 2002). Attitudes justifying aggression and stereotypes concerning gender roles also have been implicated and are targets of most prevention programs (Hickman et al. 2004). Although most studies examining risk for and recurrence of sexual victimization during adolescence have been cross-sectional in nature (Vezina and Hebert 2007), the existing longitudinal studies have identified similar risk factors (e.g., Buzy et al. 2004; Foshee et al. 2004; Humphrey and White 2000; Walsh and Foshee 1998).

Thus, a growing body of literature has highlighted the prevalence of sexual aggression and its negative impact upon adolescents. Several cognitive and socioeconomic factors have been implicated as potential risk factors. However, prevention programs that have targeted these risk factors have had limited success in demonstrating behavior change and the actual prevention of victimization (Irwin and Rickert 2005). In contrast, very little attention has been focused upon interpersonal factors that may also incur risk. Specifically, few studies have examined adolescents' understanding of and expectations for relationships, their self-perceptions within relationships, and specific qualities of their relationships. Such interpersonal factors may be particularly valuable to identify, as it may be possible to target them in prevention programs, and thus enhance potential victims' ability to protect themselves. Further, few studies have examined potential risk factors prospectively (Vezina and Hebert 2007). The focus of the current study was to assess interpersonal risk factors for experiencing peer sexual aggression and its recurrence in a longitudinal study of adolescents. We selected five such factors on the basis of their theoretical conceptualization and empirical research suggesting that they could be potentially linked to victimization.

## Interpersonal Risk Factors

### *Insecure Romantic Relational Styles*

One such interpersonal risk factor may be an insecure romantic relational style. Attachment theorists have conceptualized such styles as representations of oneself, the

partner and the relationship (Bowlby 1980; Furman and Wehner 1994; Main et al. 1985); accordingly, such styles not only influence one's behavior, but also one's expectations regarding the other's behavior. Originally, romantic styles were categorized into three types: secure, dismissing (avoidant), or preoccupied (anxious-ambivalent) (Hazan and Shaver 1987). More recently, differences in attachment styles have been examined in terms of either underlying dimensions or the degree to which individuals resemble these attachment prototypes (Griffin and Bartholomew 1994; Fraley and Waller 1998).

Very few studies have examined the links between relational styles and victimization. However, of those that have, several found that victims tend to hold more insecure views of relationships (e.g., preoccupied or dismissing views; Alexander 1992; Flanagan and Furman 2000; Stovall-McClough and Cloitre 2006). Those who are more prototypically dismissing minimize the affective importance of relationships, emphasizing their own strength and independence (Cassidy and Kobak 1988). As a result of minimizing affect and intimacy in relationships, dismissing individuals tend to view sex as an opportunity for exploration and self-gratification (Furman and Wehner 1994) and are prone to engage in uncommitted sexual relations (Simpson and Gangestad 1991). Those who are more dismissing are likely to find themselves in potentially compromising situations, thereby increasing their risk for experiencing sexual aggression. In fact, dismissing attachment style predicts being a victim of sexual aggression over and above the contribution made by earlier child maltreatment (Wolfe et al. 1998).

Those who are more prototypically preoccupied see themselves as unworthy of care and support, tend to be overly concerned with the acceptance of others, and often fear abandonment (see Mikulincer and Shaver 2007). This high level of anxiety surrounding romantic relationships is likely to increase vulnerability to sexual aggression. Preoccupied individuals show a propensity for eager involvement in romantic relationships, tend to fall in love quickly, and experience frequent break-ups and reunions. Such a pattern is likely to increase an individual's number of relationship partners, a factor associated with experiencing sexual aggression (Flanagan and Furman 2000). Further, individuals high on preoccupation tend to view sexual behavior as a means to increase intimacy and closeness within a relationship and as a means to achieve self-validation (Davis et al. 2004). Thus, preoccupied individuals may become more vulnerable to sexual pressure and coercion and may enter situations in which sexual aggression is more likely to occur. Consistent with this conceptualization, college-aged female victims who have more preoccupied styles report higher rates of victimization (Flanagan and Furman 2000).

### *Rejection Sensitivity*

In addition to relational styles, sensitivity to interpersonal rejection may also incur risk for becoming a victim of sexual aggression. Individuals high on rejection sensitivity fear rejection and abandonment and are motivated to avoid it whenever possible (Downey and Feldman 1996). In fact, individuals high on rejection sensitivity are willing to engage in behaviors that may put them at risk for victimization if they believe that such behaviors will prevent rejection. For example, adolescent girls high on rejection sensitivity are more willing than low rejection sensitive girls to engage in behaviors they know are wrong in order to keep their partners in their relationships (Purdie and Downey 2000). Thus, adolescents high on rejection sensitivity may be more prone to tolerate unwanted sexual advances or less likely to resist coercive sexual behavior from their partners.

### *Romantic Competence*

Adolescents' perceived romantic competence represents another potential interpersonal risk factor for experiencing sexual aggression. Perceived romantic competence refers to an individual's self-perceived ability to effectively negotiate romantic relationships as well as his or her perception that he or she is adequate and worthy within this domain of functioning (Harter et al. 1998). Adolescents with low perceived competence exhibit low levels of social self-confidence and tend to lack assertiveness and control within relationships (Harter 1999), characteristics that may leave them vulnerable to becoming a victim of sexual aggression. The inability to counter feelings of relational inadequacy may lead an adolescent who has low perceived competence to continue in a relationship, despite potential victimization (Johnson et al. 2005).

### *Sexual Experience*

Finally, the amount of sexual experience an adolescent has had may be a risk factor. Engaging in sexual activity inherently places one in the situational context within which sexual aggression occurs and thus may increase risk for becoming a victim (Howard and Wang 2005). Further, those who engage in more sexual activity may find themselves in riskier situations than those who engage in less sexual activity, thereby increasing their risk for sexual victimization.

### *Sexual Revictimization*

These interpersonal factors are expected not only to increase adolescents' risk for an initial experience of sexual

aggression but also their risk for experiencing subsequent incidents of sexually aggressive behavior. Sexual aggression from a peer is likely to exert effects upon the very interpersonal factors that increased risk for victimization in the first place, thereby compounding the risk for victimization. For example, being a victim of sexual aggression is likely to decrease an adolescent's confidence in his or her ability to manage romantic interactions, thereby further eroding his or her self-perceived romantic competence and incurring risk for further victimization.

The risk for adolescent sexual aggression associated with gender also was of interest. Typically, the reported rate of sexual victimization among boys is lower than that for girls (Poitras and Lavoie 1995). Thus, it was expected that risk for experiencing sexual aggression would be higher for females than for males. Nevertheless, some estimates of sexual dating victimization among boys range as high as 36%, underscoring the importance of examining the role of gender (Hickman et al. 2004; Vezina and Hebert 2007).

### *The Current Study*

In summary, the current study sought to assess the contribution made by several interpersonal variables to the risk for experiencing sexual aggression by a peer in adolescence. Specifically, it was hypothesized that adolescents whose romantic views were more dismissing and/or preoccupied, who were higher on rejection sensitivity, and who reported more sexual experience would be at higher risk for later sexual victimization by a peer than adolescents who were lower on these measures. Adolescents who reported lower self-perceived romantic competence also were hypothesized to be at increased risk for later sexual victimization. Further, girls were expected to be at higher risk than boys. In addition to these interpersonal variables, several covariates were assessed, including 10th grade self-reported GPA, ethnicity, family structure (e.g., single/two parent home status), socioeconomic status, and IQ. These covariates were examined in order to determine the influence of the interpersonal variables on the risk for victimization over and above any demographic effects that may exist.

The use of a longitudinal sample of adolescents allowed us to examine prospective risk associated with each interpersonal factor. Further, the current study employed multiple-spell, discrete-time survival analysis to assess the risk associated with an initial experience as well as the possible recurrence of sexual aggression (Willett and Singer 1995). Typically, investigators have simply examined whether individuals have been victims of sexual aggression or not. Multiple-spell, discrete-time survival

analysis, however, has several appealing features. First, it provides descriptive information about the proportion of individuals experiencing sexual aggression at different time points. It does not assume that the risk is consistent over time (i.e. proportional hazards); thus, one is able to assess if there are times of particularly high risk (Willet and Singer 1991). Moreover, it allows for the inclusion of time varying predictors, rather than a single time predictor gathered at the beginning of the study. In this way, the assessment of risk can be sensitive to fluctuations in the levels of the interpersonal predictor variables over time. This analytic strategy also provides a particularly sensitive assessment of risk factors because it uses standard logistic regression models yielding traditional odds ratios. Finally, an advantage of multiple spell, discrete time survival analysis over other time-series methods is that it allows for the description and prediction of event recurrence, taking into account whether and when someone has previously experienced the event.

## Methods

### Participants and Procedure

Data for the current study were collected as part of an ongoing longitudinal investigation of the role that parents, peers, and romantic partners play in adolescent psychosocial functioning. Two hundred tenth grade adolescents (100 male, 100 female) were recruited in a large Western metropolitan area by distributing brochures and sending letters to families residing in various zip codes and to students enrolled in various schools in ethnically diverse neighborhoods. We were unable to determine the ascertainment rate because we used brochures and because the letters were sent to many families who did not have a 10th grader. To insure maximal response, we paid families \$25 to hear a description of the project in their home. Of the families that heard the description, 85.5% expressed interest and carried through with the Wave 1 assessment.

Designed to be ethnically representative of the United States' population, the sample was comprised of 11.5% African American, 12.5% Hispanic, 1.5% Native American, 1% Asian American, 4% Biracial and 69.5% White, non-Hispanics. With regard to family structure, 57.5% were residing with 2 biological or adoptive parents, 11.5% were residing with a biological or adoptive parent and a step parent or partner, and the remaining 31% were residing with a single parent or relative. At wave 1, participants ranged in age from 14 to 16 years ( $M = 15.3$  years;  $SD = .54$  years). The sample was of average intelligence (WISC-III vocabulary score  $M = 9.8$ ,  $SD = 2.44$ ); 55.4% of their mothers had a college degree,

as would be expected from an ethnically representative sample from this particular Metropolitan area.

Approximately 85% of the participants had begun dating by the tenth grade and 75.5% had a romantic relationship of at least 1 month duration. At the first wave of data collection 94% said they were heterosexual/straight, whereas the remaining 6% said they were bisexual, gay, lesbian, or questioning their sexual orientation. The sample also closely approximated national norms on a series of measures of psycho-social adjustment and substance use (see Furman et al. 2007).

Analyses in the current study included data collected from the first four waves (grades 10, 11, 12, and 1 year subsequent to the 12th grade); all 200 adolescents participated in the first two waves of data collection, 199 participated in the third wave and 194 participated in the fourth wave of data collection.

## Measures

### *Sexual Victimization*

The Sexual Experiences Survey (SES; Koss and Gidycz 1985) was administered at each wave of data collection. The SES consists of eight questions and asks participants whether they have experienced various types of unwanted sexual activity and how often they have had such experiences during a given time period. For example, one item asks, "Have you had sexual intercourse when you didn't want to because a person threatened or used some degree of physical force (twisting your arm, holding you down, etc.) to make you?" Based upon Koss and Gidycz's definition (1985), sexual aggression was considered to be any behavior involving verbal coercion, use of drugs or alcohol, or the threat or use of physical force in order to obtain an unwanted sexual contact with any part of the body. The items on the SES were asked specifically in regard to experiences with peers; participants were instructed not to include sexual aggression from family members or other adults.

At each of the four waves of data collection, participants indicated how many times they had experienced any of the eight forms of sexual aggression from a peer during the prior 12 months. Those who reported an instance of the eight were considered to have experienced sexual aggression during that wave. At the first wave of data collection, participants were also asked how often they had *ever* experienced sexual aggression. This information was used to left-censor participants who had already been previously victimized from the analyses of initial victimization (see statistical analyses). Since these eight items were not used to create a scale but rather to establish a dichotomous

status variable (victimization occurred/did not occur), internal consistency was not calculated.

### *Romantic Styles*

Adolescents' romantic styles were assessed using the romantic partner version of the Behavioral Systems Questionnaire (BSQ; Furman, W., & Wehner, E. (1999). The behavioral systems questionnaire. Unpublished measure, University of Denver, Denver, CO.). Romantic styles reflect adolescents' self-perceptions of their approach to affiliation, caretaking, and attachment within their romantic relationships. The BSQ is a 27-item self-report questionnaire divided into three 9-item Likert scales, which assess secure, dismissing, or preoccupied styles respectively. Each item presented a statement related to affiliation, caretaking or attachment behavior within romantic relationships (e.g., "I consistently turn to my boy/girlfriends when upset or worried"), and the participant rated on a scale of 1–5 the degree to which the statement described him or her. For the purposes of the current study, the secure scores were not used as they were highly negatively related to the dismissing style scores ( $M r = -.74$ ). Average internal consistency of the four data waves for dismissing styles was  $\alpha = .88$  and for preoccupied styles was  $\alpha = .83$ .

### *Romantic Competence*

Adolescents' perceived competence in romantic relationships was measured with the romantic competence subscale of the *Self-Perception Profile for Adolescents* (SPPA; Harter, S. (1988). The self-perception profile for adolescents. Unpublished manual, University of Denver, Denver, CO.). The SPPA consists of 32 items (range = 1–4) designed to reflect self-perceived competence and worth in various domains that are important to adolescents. The romantic competence subscale assesses the adolescent's perceptions that he or she is romantically attractive, is dating the people he or she would like to date, and feels that he or she is fun and interesting when on a date. Each item is presented in a "structured alternative format" to reduce the tendency to respond in a socially desirable manner (Harter 1982). The romantic competence subscale contained four items, and the average internal consistency for the four waves of data was  $\alpha = .77$ .

### *Rejection Sensitivity*

Adolescents' rejection sensitivity was measured with a 5-item abbreviated version of the Rejection Sensitivity

Questionnaire (Downey and Feldman 1996). Each item presents a hypothetical interpersonal situation specific to romantic relationships (e.g., "You ask someone you don't know well out on a date.") and asks participants to make two ratings. The first rating consists of the degree to which he or she would be anxious or concerned about the outcome of the situation on a 6-point scale (1 = "very unconcerned" to 6 = "very concerned"). Secondly, participants are asked to rate the extent to which they would expect the other person to respond in an accepting manner (1 = very unlikely to 6 = very likely). The scores from these two ratings for each item are multiplied to obtain a single, weighted item-score. Weighted scores are then summed across items. The average internal consistency for the four waves of data for this scale was  $\alpha = .73$ .

### *Sexual Experience*

The extent of each adolescent's sexual experience was calculated as a mean of nine 5-point Likert items that assessed the frequency that the adolescent engaged in various sexual activities within the past 12 months. The sexual activities ranged from cuddling and kissing to intercourse and oral sex. The average internal consistency for the four waves of data for this scale was  $\alpha = .92$ .

### *Procedure*

Parental consent and adolescent assent for the four waves of data collection were obtained at the time of the initial family visit. The IQ measure was administered at a research laboratory at the university. Questionnaires on sexual behavior were administered by computer assisted self-interviewing techniques at the laboratory to increase the candor of responses. The other questionnaires were completed at the participant's convenience. The confidentiality of the participants' data was protected by a Certificate of Confidentiality issued by the U. S. Department of Health and Human Services. Participants were compensated financially for completing the questionnaires.

### *Statistical Analyses*

#### *Survival Analysis*

In general, survival analysis provides a means to determine whether and when individuals in a sample experience a target event—in this case, being a victim of sexual aggression. The rate of experiencing sexual aggression is described in terms of the likelihood of experiencing an



incident of sexual aggression over the course of the study. The current study utilized multiple-spell, discrete-time survival analysis (MDSA) (Willett and Singer 1995). MDSA describes each participant's history of experiencing sexual aggression in terms of spells and periods-within-spells. A participant is considered to be within a particular spell until the occurrence of a target event (an incident of being the victim of sexual aggression), whereupon the next spell begins. Time within a particular spell may span several waves of data collection, each of which is represented as a single period within that spell. For example, an adolescent who reported experiencing sexual aggression for the first time at wave 3 of data collection would be considered to be in Period 3 of Spell 1 at the time of the third wave (having already progressed through Period 1 and Period 2 of Spell 1 during the first two waves). However, because she reported experiencing an incident of sexual aggression at this assessment, she would then enter Period 1 of Spell 2 at the next wave of data collection (wave 4). In contrast, an adolescent who never reported an incident of sexual aggression during the course of the study would progress from Period 1 of Spell 1 through Period 4 of Spell 1 over the 4 waves and would not enter Spell 2. Each adolescent's presence within a particular period of a particular spell was represented by a series of dummy variables.

Based upon this parameterization, MDSA proceeds as a series of hierarchical logistic regression models with victimization as the outcome variable. The spell and period variables are combined to form a baseline hazard model, which describes the risk for victimization over time without regard to predictor variables. From this baseline model, all predictor variables are added in a second model, and the improvement of fit over the baseline model is assessed. The contribution to risk made by each predictor variable is described in terms of odds ratios.

### *Missing Data and Censoring*

Across all four waves, the rate of missing data due to attrition or omission was low, ranging from 0 to 10.6% on each variable ( $M = 4.5\%$ ). For some participants, time to victimization could not be computed, and censoring techniques were employed for their data. For example, some participants did not report experiencing sexual aggression during the course of the study, and it is thus unknown whether they were ever victimized and (if so) what their time-to-victimization was. These participants were right-censored, such that their data up to the end of their participation were included in the analyses. Additionally, some participants reported experiencing peer sexual aggression prior to the 12-month period assessed at wave 1,

making their time to initial victimization unknown. However, it was still possible to assess their time to next victimization, and these participants were left-censored such that their available data were included in the spell 2 analyses of revictimization. Finally, for cases in which data were intermittently missing (e.g., complete data at wave 1, wave 2 and wave 4 but missing data at wave 3), multiple imputation (MI) procedures were implemented (see Bacik et al. 1998; Keiley and Martin 2005).

MI is a maximum likelihood-based method for replacing missing values (Schafer and Graham 2002). In MI, maximum likelihood procedures are employed to create a series of complete data sets. Each data set is made complete by drawing values for the missing data from a predictive distribution of scores based upon information from all variables in the data set. Primary analyses are then conducted on each completed data set and combined into a single statistical estimate (Rubin 1987; Schafer 1997). Ten imputed datasets were derived, which resulted in an estimated 99.0% efficiency (Rubin 1987; Schafer and Olsen 1998).

### *Statistical Software*

Multiply imputed datasets were generated in AMOS v. 7.0 (Arbuckle 2006). Preliminary analyses of the data were conducted in SPSS v. 11.5. Lifetables and graphs of the survival function also were generated in SPSS. Finally, the primary multiple-spell model-fitting analyses were conducted in Mplus v. 4.0 (Muthen and Muthen 2006). The Mplus statistical package provided the benefit of conducting the analyses across the imputed data sets and automatically calculating combined estimates (Mplus Users' Guide 2006). Results across each of the 10 imputed data sets were combined according to Schafer's (1997) equations.

## **Results**

### *Preliminary Analyses*

#### *Data Cleaning*

Prior to the multiple imputation process, variables in the dataset were assessed for normality of distribution and the presence of outliers. No violations of normality were noted. Outliers were identified and corrected by equating extreme values to scores of  $\pm 1.5$  times the interquartile range from the mean. Other assumptions of logistic regression, including linearity of the logit, also were assessed according to procedures outlined by Tabachnick and Fidell (2001), and the data were found to conform adequately.

*Covariates*

Prior to the primary analyses, a number of variables were considered for inclusion as covariates in the logistic regression models. These variables included 10th grade self-reported GPA, ethnicity, family structure (e.g., single/two parent home status), socioeconomic status (based upon maternal education) and IQ (WISC-III Vocabulary). None were significantly related to experiencing sexual victimization and thus, were not included in the primary analyses.

*Correlations*

Table 1 presents the correlations among the interpersonal variables and gender at wave1. The pattern of correlations was similar across all four waves.

*Primary Analyses*

*Rate of Victimization*

The primary dependent variables were the participants' reports of whether they were or were not victims of sexual aggression in each of the 12 months prior to the four waves of data collection. The rate of sexual victimization is expressed as the proportion of incidents averaged across the 10 imputed data sets. Approximately 46.4% of the participants reported experiencing either a first incident of sexual aggression or a repeated incident by the end of the fourth wave of data collection. The average proportion of adolescents that reported experiencing either first-time or repeated sexual aggression was fairly consistent across waves (Wave 1 = 16.2%; Wave 2 = 20.1%; Wave 3 = 16.6%; Wave 4 = 18.3%).

In the first wave of data collection, the participants were also asked if they had ever been victims of sexual aggression from a peer. Comparisons of the reports of ever being victims and being victims in the last 12 months revealed that 17.7% reported that they had experienced an incident of sexual aggression even earlier than the

12 month period assessed at the first wave of data collection, whereas an additional 34.8% of the adolescents reported that an initial incident of sexual aggression had been experienced during the four year period examined in the present study. Thus, 46.4% of the participants had been victims at some point. Those participants who reported prior incidents were left-censored; that is, they were not included in the analyses of initial victimization, but they were included in the spell 2 analyses of revictimization.

To assess whether potentially meaningful differences existed between these participants and those who experienced sexual aggression for the first time during the course of the study, group differences were examined on the potential covariates (e.g., IQ, GPA, ethnicity, family structure, & SES), gender, and the interpersonal variables. Significant group differences existed only on the sexual experience composite ( $\beta = 1.09$ ;  $SE = .35$ ;  $p < .01$ ). Adolescents whose first experience of peer sexual aggression occurred prior to the start of the study reported higher levels of sexual experience ( $M = 2.81$ ;  $SD = .77$ ) than adolescents whose first experience occurred later during the course of the study ( $M = 2.15$ ;  $SD = .83$ ).

The survival functions for spell 1 and for spell 2 are displayed in Fig. 1. An average of 34.8% experienced an initial incident of sexual aggression during the 4-year period of the study. The mean survival time in spell 1 was 2.79 years ( $SE = .12$ ;  $95\% CI = 2.57-3.02$ ). Of those who did report an incident of sexual aggression, the mean survival time to the next incident (i.e., time in spell 2) was 1.33 years ( $SE = .17$ ;  $95\% CI = 1.02-1.63$  years). Only 35.2% of adolescents who experienced an initial incident of sexual aggression survived through the end of wave 4 without a second incident.

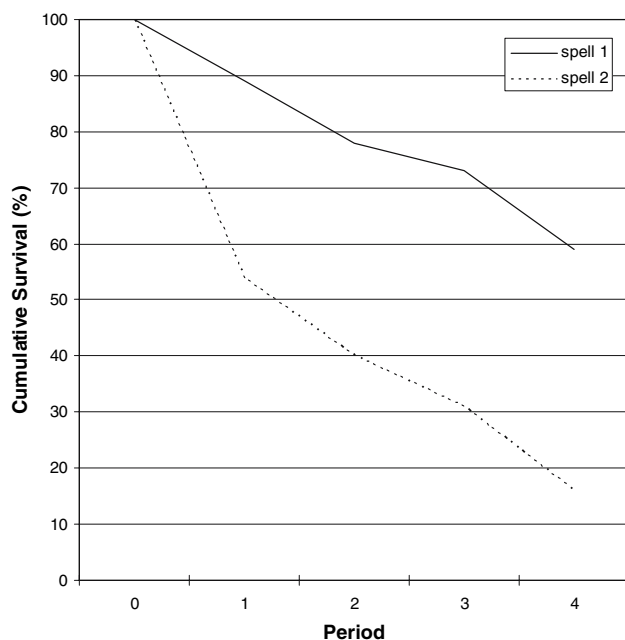
*Baseline Hazard Model*

The multiple-spell, discrete time survival analysis was conducted as two hierarchical logistic regression models. The first was a baseline hazard model, in which the risk for experiencing sexual aggression was described without the

**Table 1** Correlations among interpersonal variables and gender by wave

	Gender	SexExp	RejSens	RomComp	DismStyle	Mean	SD	Range
SexExp	-.03					2.20	0.90	1.00–4.56
RejSens	-.14	-.30**				11.44	4.43	1.00–22.08
RomComp	-.01	-.46**	-.44**			2.66	0.66	1.00–4.01
DismStyle	-.20**	-.11	-.09	-.23**		2.29	0.63	1.00–4.24
PreocStyle	-.00	-.06	-.17**	-.21**	-.10	2.38	0.58	1.00–3.98

\*\* Correlation is significant at  $p < .01$  level. \* Correlation is significant at  $p < .05$  level. SexExp = Sexual Experience composite; RejSens = Rejection Sensitivity; RomComp = Romantic Competence; DismStyle = Dismissing Romantic Style; PreocStyle = Preoccupied Romantic Style



**Fig. 1** Survival functions for initial victimization (spell 1) and for revictimization (spell 2)

influence of any predictor variables. The spell and period each participant was in was represented with a series of dummy variables: one for each period, one for spell, and one for the interaction between spell and period. Victimization status was then regressed upon these dummy variables, establishing the baseline hazard function for sexual aggression. The equation for the baseline hazard model was:

$$\text{Logit}(\text{hazard}) = \text{period1} + \text{period2} + \text{period3} \\ + \text{period4} + \text{spell2} + \text{period} * \text{spell2}$$

In order to avoid linear dependence that may be created by including four period dummy variables, the intercept was not included in the model.

The average baseline goodness-of-fit was  $(-2)\log\text{likelihood} = 541.11$ . The estimate for Spell 2 was both significant and positive ( $\beta = 2.03$ ;  $SE = .55$ ;  $p < .05$ ), indicating that the risk for experiencing revictimization was greater than the risk for initial victimization. In fact, the average odds ratio for spell 2 was 7.65; once an adolescent initially experienced sexual aggression, he or she was more than seven times more likely to experience subsequent incidents. The estimates and standard errors for each term in the model are presented in Table 2.

#### *The Influence of Gender and Interpersonal Variables upon Risk for Victimization*

The next model assessed whether the prediction of experiencing sexual aggression could be improved with the

**Table 2** Parameter estimates (and standard errors) for multiple-spell survival models

Predictor	Baseline	Model 2
Period 1	0–2.01 (0.24)	0–6.20 (1.95)
Period 2	0–2.22 (0.26)	0–6.40 (1.91)
Period 3	0–2.59 (0.33)	0–6.86 (1.90)
Period 4	0–1.95 (0.30)	0–6.25 (1.93)
Spell2	0–2.03 (0.55)**	0–6.72 (3.10)**
Period*Spell2	0–0.32 (0.29)	0–0.26 (0.30)
Gender		0–0.71 (0.33)*
Gender*Spell2		0–1.01 (0.63)
SexExp		0–0.51 (0.21)*
SexExp*Spell2		0–0.29 (0.41)
RejSens		0–0.08 (0.04)*
RejSens*Spell2		0–0.03 (0.06)
RomComp		0–0.15 (0.33)
RomComp*Spell2		0–0.16 (0.53)
PreocStyle		0–0.16 (0.30)
PreocStyle*Spell2		0–0.53 (0.46)
DismStyle		0–0.09 (0.28)
DismStyle*Spell2		0–0.29 (0.48)
Deviance (–2)LL:	541.11	517.16
	6 parameters	18 parameters

Note: \*\*  $p < .01$ ; \*  $p < .05$

SexExp = Sexual Experience composite; RejSens = Rejection Sensitivity; RomComp = Romantic Competence; DismStyle = Dismissing Romantic Style; PreocStyle = Preoccupied Romantic Style

inclusion of the hypothesized risk variables. No a priori reasons were identified for entering the predictor variables into the model in any particular order; thus, all were entered simultaneously in a single block, including the respective interactions with spell (Model 2). The interpersonal variables were time-varying and were entered as prospective predictors into the equation such that sexual victimization at any particular wave was predicted by the interpersonal variables as measured at the preceding assessment (e.g., victimization at wave 3 was predicted by level of rejection sensitivity at wave 2). Sexual victimization at wave 1 was predicted by the interpersonal scores at wave 1, as no prior measure of the interpersonal variables was available. (Supplementary analyses revealed no difference in the magnitude of corresponding concurrent and prospective relations (e.g., Wave 1 rejection sensitivity's correlation with Wave 1 and Wave 2 sexual victimization)).

The average goodness-of-fit for Model 2 was  $(-2)\log\text{likelihood} = 517.14$ , yielding a significant improvement over the baseline model ( $\Delta X^2 (12df) = 23.97$ ,  $p < .05$ ). The estimates and odds ratios for each predictor variable are discussed subsequently and are presented in Table 2.



The estimate for gender was significant ( $\beta = .71$ ;  $SE = .33$ ;  $p < .05$ ) and yielded a corresponding odds ratio of 2.05 (95% CI = 1.20–3.73). Thus, adolescent girls' risk for experiencing sexual aggression was more than two times the risk for boys, a statistically significant difference. Accordingly, separate risk profiles for boys and girls were examined. The mean survival time for girls in spell 1 was 2.26 periods ( $SE = .13$ ; 95% CI = 2.01–2.51); at the end of period 4, approximately 49% of adolescent girls had experienced sexual aggression. In contrast, the mean survival time for boys in spell 1 was somewhat longer ( $M = 2.53$  periods;  $SE = .11$ ; 95% CI = 2.32–2.74), and only 33% reported experiencing sexual aggression. The mean survival time for girls in spell 2 (e.g., after the first incident) was 1.39 years ( $SE = .21$ ; 95% CI = 0.98–1.80), whereas the mean survival time for boys was 1.24 years ( $SE = .23$ ; 95% CI = 0.77–1.69). The interaction term between gender and spell was not significant, indicating that the risk associated with gender did not statistically differ from the initial incident of sexual aggression to the next incident.

The estimate for sexual experience was significant ( $\beta = .51$ ;  $SE = .21$ ;  $p < .05$ ), yielding an average odds-ratio of 1.67 (95% CI = 1.18–2.37) and indicating higher risk associated with more sexual experience. Given that the magnitude of effects for continuous variables such as sexual experience is difficult to interpret, we recalculated the odds ratio based upon a dichotomized median-split. Based upon this dichotomization, the odds ratio for sexual experience was 3.14, indicating that an individual with a sexual experience score above the median was 3.14 times more likely to experience sexual aggression than an individual below the median. Finally, a nonsignificant interaction term between sexual experience and spell indicated that the risk associated with sexual experience in spell 2 was not different from the risk in spell 1.

Rejection sensitivity also yielded a significant estimate ( $\beta = .08$ ;  $SE = .04$ ;  $p < .05$ ), indicating that higher levels of rejection sensitivity were associated with increased risk for experiencing sexual aggression. The average odds ratio was 1.09. Like sexual experience, rejection sensitivity was measured continuously, making it difficult to interpret the odds ratio. When dichotomized at the median, this variable yielded an odds ratio of 1.31, indicating that an adolescent scoring above the median on rejection sensitivity was 31% more likely to experience sexual aggression than an adolescent below the median. The interaction between rejection sensitivity and spell was not significant, suggesting uniform risk across initial and repeat incidents. None of the remaining interpersonal variables (e.g., romantic competence, preoccupied or dismissing style of romantic views) contributed significantly to the prediction of experiencing sexual aggression.

## Discussion

Sexual aggression at the hands of a peer can negatively impact an individual, particularly during the formative adolescent years. Unfortunately, little is understood concerning the factors that serve to increase an adolescent's risk for experiencing an initial or repeated incident of peer sexual aggression. The current study was one of the first to prospectively examine the developmental pattern of sexual aggression among adolescents and to assess the impact of interpersonal risk factors.

Multiple-spell, discrete-time survival analysis was employed among a sample of 200 adolescents. By the end of the fourth year (one year post-high school), nearly one-half of the adolescents reported having experienced some form of sexual aggression. This rate of sexual victimization is similar to that reported by other studies that used a similar definition (e.g., Humphrey and White 2000), thereby giving confidence in the measure of sexual victimization and sampling procedures used in the current study.

Alarming, approximately 65% of adolescents who reported an initial incident of aggression also reported a repeat incident at a later wave. Repeated incidents tended to follow closely upon the heels of first-victimization, with an average time to revictimization of 1.33 years. Just as child sexual victimization places an individual at risk for subsequent revictimization, so too does victimization from a peer. Further, this rate of revictimization is higher than that of undergraduate women reported by Humphrey and White (2000). Thus, it appears that middle to late adolescence is a particularly risky time for experiencing sexual aggression—both initially and in recurrence—and represents a critical window for intervention. Individuals who have previously experienced sexual aggression may be appropriate for more narrowly focused, targeted interventions.

Several risk factors played an important role in this pattern of experiencing sexual aggression. Consistent with previous research, higher levels of sexual activity prospectively predicted becoming a victim of sexual aggression (Howard and Wang 2005). Adolescents who engage in these activities may run a higher risk for experiencing sexual aggression simply because they are more often in situations where sexual aggression is likely to occur. However, more may be involved than just opportunity. Date rape often occurs in situations that began as consensual sexual activity (Kanin 1984). Thus, progressively more intimate sexual activity may make it more likely that the line is crossed into unwanted or coercive sexual contact. Inexperienced in romantic relationships, adolescents may have more difficulty setting and enforcing clear boundaries for sexual activity. Unfortunately, it was

not possible to assess the risk associated with specific sexual behaviors.

Adolescents with higher levels of rejection sensitivity also were at increased risk for being a victim of sexual aggression. These adolescents may have difficulty setting and enforcing clear boundaries for sexual activity. Adolescents high on rejection sensitivity may be more reluctant or less effective in resisting advances for fear of upsetting their partner or of being replaced by someone more willing to acquiesce. Congruent with this idea, women who experience sexual aggression from an intimate partner are lower on measures of assertiveness when refusing sexual activity (Testa et al. 2007).

The current results are consistent with the idea of “token resistance” as an important mechanism in sexual aggression. Incomplete resistance—giving in to sexual advances after an initial attempt to stop—may serve as an intermittent reinforcer for sexual aggression (Marx and Gross 1995). Perpetrators learn that their reluctant partner is likely to give in to their advances if they continue to pressure, coerce or otherwise force the issue. The clear and decided meaning of “No” becomes eroded for the perpetrator when the result is not to consistently curb sexual activity. Importantly, this behavior should not be considered as sending “mixed signals” or as an underlying consent on the part of the victim; on the contrary, the sexual behavior is clearly unwanted and unwarranted. However, higher levels of rejection sensitivity may make incomplete resistance more likely to occur. These adolescents may fear that refusal to comply with a partner’s sexual advances may be met with anger or disinterest in continuing the relationship. Thus, they may feel less comfortable or be less effective when communicating and asserting firm boundaries for sexual activity. Alternatively, rejection sensitive individuals may be more likely to have relationships or encounters with partners who are prone to sexual aggression. These ideas regarding incomplete resistance or involvement with partners who are prone to sexual aggression are speculative, however, and need empirical evaluation through future research.

Conceptually, rejection sensitivity and preoccupied style of romantic attachment are related constructs; both derive from an individual’s expectations regarding the relationship and the partner’s behavior. Indeed, the measures of these constructs were moderately correlated in the current sample. Given this conceptual overlap, it is interesting that rejection sensitivity was predictive of experiencing sexual aggression, but a preoccupied romantic style was not. An examination of items contained within each of these measures suggests that the rejection sensitivity questionnaire more heavily emphasizes an adolescent’s expectations for acceptance from a romantic partner,

whereas items related to preoccupied styles on the BSQ place more emphasis upon emotional dependence upon a romantic partner. Such concerns over acceptance may be more centrally related as they may make it more difficult for an adolescent to set and effectively communicate clear sexual boundaries.

An association between preoccupied or dismissing styles and victimization was not found in the current analyses; however, future study should examine potential links between peer sexual victimization and an unresolved/disorganized state of mind in regard to a loss or traumatic experience (e.g., childhood sexual abuse). Indeed, unresolved childhood trauma has been found to co-occur with symptoms of post-traumatic stress and dissociation, which may hold implications for revictimization during adolescence (Stovall-McClough and Cloitre 2006).

Adolescent girls were at higher risk for experiencing sexual aggression than boys in the current sample; further, initial victimization occurred somewhat sooner for girls. These results provide further empirical support for gender differences in the experience of sexual aggression. Nevertheless, even though boys were at lower risk for experiencing sexual aggression, it is clear that a relatively high proportion of adolescent boys did experience some form of sexual aggression. Much of the literature has focused upon victimization among girls, and much less is known concerning the characteristics and outcomes among boys who report being the target of sexual aggression. It is possible that boys’ experience of sexual aggression—and the related outcomes—may be qualitatively different than that of girls and should be explored in future research.

It is interesting that the influence of the predictors did not differ from the initial incident of aggression to later, repeated incidents, suggesting that the risk associated with these predictors was uniform over incidents. Thus, some adolescents appear to carry with them a set of risk factors that consistently increases their vulnerability to acts of sexual aggression, a finding similar to that of Foshee and colleagues (2004). The current study did not examine whether the experience of victimization has an impact on these risk factors. For example, experiencing sexual aggression might change an adolescent’s level of sexual activity or rejection sensitivity. Future investigation should explore the possibility of a dynamic relationship between risk factors and sexual victimization.

The present study also contributes to the literature by providing an illustration of multiple-spell, discrete-time survival analysis, a relatively unused statistical approach. MDSA provides a means of delineating the course of survival over time. The technique is particularly appropriate for examining multiple incidents and determining if the risk varies as a function of the number of incidents (spells). Moreover, this strategy allowed us to use

time-varying predictors, which may be more sensitive indices of the degree of risk at any particular time point.

The high rates of experiencing sexual aggression observed in the current study speak to the continued need for the development and dissemination of primary prevention strategies. Efforts must be made to reduce the perpetration of sexual aggression, but attention should also be focused upon identifying individuals at-risk for sexual victimization and providing them with the skills to resist and protect themselves. Given the precipitous increase in risk for repeat victimization following an initial incident, the current results also suggest that adolescents who experience sexual aggression should be targeted for secondary prevention efforts.

Several prevention programs targeting sexual aggression have been developed, but specific strategies for prevention are in need of further development and refinement (Hickman et al. 2004; Irwin and Rickert 2005). Results from the current study highlight topics that should be considered for inclusion among prevention programs. Specifically, it appears as though adolescents should be encouraged to develop clear boundaries related to the sexual activity with which they feel comfortable and in which they feel ready to engage. The role of rejection sensitivity and its potential to erode these boundaries also should be addressed. Cognitions and emotions related to fears of rejection and abandonment within romantic relationships should be identified and addressed among adolescents who have experienced sexual aggression. Specific cognitive strategies aimed at helping adolescents manage these thoughts and feelings, as well as assertiveness training around establishing and communicating effective boundaries, may be beneficial in reducing the repeat incidence of victimization.

Although the present study provides valuable information about risk factors for being a victim of sexual aggression, several limitations exist. First, the sample was not sufficiently large enough for us to examine different types of sexual aggression or the risk factors associated with them. Additionally, it is possible that multiple incidents of sexual aggression occurred within the same period. The current method of multiple-spell, discrete-time survival analysis does not differentiate between single and multiple incidents within a particular discrete time interval (e.g., multiple incidents that occurred within a single wave). Thus, although it is clear that each incident reported in the current analyses was uniquely distinct from any other incident, revictimization may have actually occurred more quickly and at a higher rate than reported here. In this regard, the current estimates are conservative. Also unexplored in the current study was the possibility that interactions between the interpersonal variables themselves may differentially influence risk for sexual victimization; it

remains for future investigation to determine how these interpersonal variables may influence each other and what effect that may have upon the risk for victimization. Finally, the current study did not examine the role of early versus late pubertal maturation. Previous studies have documented the role that early maturation may play in early-onset delinquency and risky sexual behavior (Lynne et al. 2007), suggesting a potential link to sexual victimization as well.

The need to reduce the incidence and impact of sexual victimization in adolescence has been clearly identified, and results from the current study serve to underscore the importance of this effort. Particularly highlighted is the extent to which an initial incident of experiencing sexual aggression is followed by another incident of aggression. The current study explored sources of risk for sexual victimization within the understudied domain of interpersonal variables. Specifically, it was found that adolescents high on rejection sensitivity and who engage in higher levels of sexual activity are particularly vulnerable to sexual aggression. Further, the risk associated with these variables remained steady across multiple incidents of victimization, suggesting that the effects of these variables on risk are likely to endure without intervention. Focused, empirically-informed secondary prevention programs are needed to disrupt the development of patterns of victimization among adolescents who have experienced sexual aggression.

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