Sexual Violence Perpetration by Adolescents in Dating versus Same-Sex Peer Relationships: Differences in Associated Risk and Protective Factors

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Introduction: Little is known about the risk and protective factors for youth sexual violence (SV) perpetration across different types of relationships. This study examined factors associated with perpetrating SV against a dating partner and a same-sex peer.

Methods: Analyses were based on data from a survey conducted in 2004 with public school boys and girls in grades 7, 9, 11, and 12 (N=4,131) in a high-risk, urban school district in the United States. SV perpetration was defined broadly to include forcing someone, about the same age and of the same or opposite sex as the respondent, to have sex or to do something sexual that they did not want to do. Analyses examined the associations between risk and protective factors and SV perpetration, adjusting for SV victimization and demographic characteristics.

Results: Findings revealed that 2.1% of respondents reported perpetration against a same-sex peer and 3.2% reported perpetration against a date during the past 12 months. Victims of SV for each relationship type were more likely than non-victims to perpetrate SV. A combination of factors across the individual, relationship, and community level were significantly associated with SV perpetration and there were both shared and unique factors across the relationship types.

Conclusion: Data suggest that programs to prevent SV perpetration for both relationship types should start when students are young, with particular focus on middle school boys. Prevention efforts should have slightly different foci to address these 2 types of SV perpetration. [West J Emerg Med. 2013;14(4):329–340.]

INTRODUCTION AND SIGNIFICANCE OF PROBLEM

Sexual violence (SV) of adolescents is a major public health problem in the United States (U.S.). Evidence from decades of research has shown that both boys and girls are vulnerable to SV victimization, girls are significantly more vulnerable than boys, and males are the large majority of perpetrators of penetrative SV.[1,2] For the purposes of this paper, SV encompasses a range of unwanted or non-consensual sexual experiences. SV can include any attempted or completed vaginal, oral, or anal penetration, as well as unwanted sexual contact (i.e., unwanted touching).[3]

The national rates of penetrative SV victimization (eg, rape) are alarming and indicate that youth are overwhelmingly the victims. Among a national sample of adolescents in 9th to 12th grades, 11% of girls and 5% of boys had experienced unwanted physically forced sexual intercourse during their lifetime.[4] In the most comprehensive national survey of adults on the topic to date, 1 in 5 women (18.3%) and 1 in 71 men

(1.4%) reported an attempted or completed rape (defined as forced penetration without consent or when the victim was drunk, high, drugged, or passed out and unable to consent) during their lifetime.[3] Most female victims of completed rape (79.6%) experienced their first rape before age 25 and almost half of female victims (42.2%) experienced their first rape before age 18. More than a quarter of male victims of completed rape (27.8%) were first raped when they were 10 years old or younger. In addition, 4.8% of men have been made to penetrate someone else, either by force or when the victim was not able to consent.[3] For both males and females, the majority of victims of penetrative SV know their perpetrators, and the perpetrator is commonly a current or former intimate partner or an acquaintance.[2,3]

While we know victimization rates among U.S. adolescents are high, national prevalence rates of SV perpetration are limited because that information is typically not collected in nationally representative surveys. Estimates of the prevalence of SV perpetration, broadly defined, from smaller studies range from 4.3% to 34% for males and 1.3% to 28% for females.[5–10] For example, Banyard et al[5] found that of a sample of 980 adolescents in grades 7–12, 10% of males and 2.5% of females reported perpetrating sexual coercion (eg unwanted kissing, touching or intercourse). In a study of approximately 131,000 public school children in grades 6, 9, and 12 in Minnesota, the authors found that 4.8% of males and 1.3% of females reported that they had forced sexual acts on someone.[6]

SV Perpetration in Different Relationships

SV can occur in numerous types of relationships. In 80% of SV cases, perpetrators know their victims.[2,11] Such violence may be perpetrated, for example, by a dating partner, a friend, or an acquaintance. Research has identified many important factors that are associated with SV perpetration within dating relationships, primarily among college students, such as impulsivity, having negative peer influences, and having hostile attitudes toward women.[12,13] Whether these factors are also applicable to the younger populations who date, such as those in middle or high school, is less known. SV perpetration of same-sex peers is also less studied. While there is extensive literature about physical violence involving peers (eg, fighting, physical bullying, gang involvement), information on SV victimization of or perpetration by non-dating peers is limited, and few SV studies to date have specifically examined non-dating same-sex peers. To our knowledge, moreover, no studies have examined differences in SV perpetration across dating and same-sex peer relationships.

Dating Relationships. Dating violence encompasses physical, sexual, or psychological harm against a dating partner. The SV component of dating violence is less studied than the physical and emotional aspects of it, particularly among youth, with a few exceptions. In the identified studies, rates of SV perpetrated in dating relationships vary given different samples and measures, and range from 4.5% to 17% for boys and from 1.2% to 5% for girls.[14–16]

Same-Sex Peer Non-Dating Relationships. There is scarce literature on SV experiences involving physical contact of or by a same-sex peer, but what is available suggests that it is not as common as opposite sex perpetration. Bennett and Fineran[17] found that most SV (rape, attempted or pressuring to do something sexual) perpetrated in their sample of high school students was perpetrated by the opposite sex with little same-sex violence; 66% of the 74 cases of SV perpetration reported in their sample were boy on girl, with 27% girl on boy, 5% girl on girl, and only 1 case of boy on boy. However, studies that examine more *non-contact* sexual harassment behaviors tend to find more same-sex perpetration. For example, a study of sexual harassment in middle and high schools found that the majority of male harassers (72%) had perpetrated against other males, and 41% of female harassers perpetrated against females.[18] Beyond these studies, little is known about the prevalence of SV in same-sex peer non-dating relationships.

Correlates of SV Perpetration across Different Levels of the Social Ecology

Most of the work examining factors associated with SV has focused on opposite sex victims and perpetrators, such as heterosexual dating partners or acquaintances. Few studies were identified that explicitly focused on the prevalence and correlates of SV by a same-sex peer.

Individual Level Factors. Borowsky et al[6] found that SV perpetration was associated with frequent use of illegal drugs, anabolic steroid use, and daily alcohol use. For male adolescents, being emotionally healthy was found to decrease the likelihood of perpetration (suggesting that depression may be related to increased likelihood of perpetration).[6] Delinquency has been repeatedly associated with perpetrating SV.[19–20] Previous SV victimization experience has also been found to be associated with SV perpetration.[16] While little is known about self-efficacy to avoid conflict and its relationship to SV perpetration, previous work has found a link between low self-efficacy to avoid conflict and physical dating violence perpetration.[21] While not connected specifically to SV perpetration, higher commission of property crimes has been connected to higher bullying perpetration in a longitudinal study of adolescents.[22] Further research is needed to examine if these individual correlates of dating violence and bullying are also associated with SV perpetration by youth.

A large portion of the violence research has examined attitudinal variables related to SV, particularly with regard to perpetration. For example, some have shown that sexist and violent attitudes toward women, attitudes that support and accept dating violence, traditional sex roles, and friendships

with peers who endorse dating violence are linked to perpetrating sexual dating violence.[12,16,23–26]

Family and Peer Level Factors. At the family level, childhood experiences with violence and witnessing IPV are important correlates. For example, Borowsky et al[6] found that SV perpetration was associated with experiencing intrafamilial or extrafamilial sexual abuse, as well as witnessing family violence. Wolf and Foshee[27]examined 8th and 9th graders and found that boys who experienced child physical abuse were more likely to perpetrate physical and/or sexual dating violence than those boys who did not experience it. In addition, girls who witnessed parental violence were more likely to perpetrate physical and/or sexual dating violence than girls who did not witness it.

While less is known about protective factors for SV at the family or peer level, positive influences in the home, such as parental monitoring and parental support, have been found in some studies to be important correlates of SV perpetration. For example, the lack of parental supervision discriminated former male child victims of sexual abuse who abuse later in life from former male child victims who did not abuse later in life.[28] Another study found that Uganda adolescent perpetrators of sexual coercion were less likely than non-perpetrating youth to have social support from their family.[29]

Peer influences have also emerged as important correlates of SV perpetration. For example, 1 study found that males who engaged in peer violence were more likely to perpetrate sexual aggression.[10] Borowsky et al[6] found that adolescent perpetration of SV was associated with excessive time spent "hanging out" and gang membership for both girls and boys.

Factors as Proxies for Community Level. While not truly community level factors because they were measured at the individual level, some studies have tried to understand the influence of connections and experiences in a person's community on SV perpetration. For male adolescents, connectedness with friends and adults in the community has been found to decrease the likelihood of sexually aggressive behavior.[6] Exposure to community violence has been associated among females with being the recipient of dating violence (including forced sexual activity).[30]

Present Study Objectives and Hypothesis

The present study contributes to the existing body of knowledge in several ways. First, we identify the risk and protective correlates that are associated with being an adolescent perpetrator of SV in 2 different relationship types – dating and non-dating same-sex peer. Few studies have focused on correlates of adolescent SV perpetration across different relationships. We examine correlates that have been linked to SV (or another similar type of aggressive behavior) either empirically or theoretically to better determine factors associated with SV perpetration across dating and same-sex peer relationships. Further, we examine factors that, although measured at the individual level, are proxies for the family/relationship level and community level of the social ecology.

While these 2 types of relationships are different and thus they may have some different risk and protective factors, theoretically, SV perpetrated in either of these relationships could be explained by a combination of individual level traits and family and peer life experiences. For example, Malamuth et al's[31] confluence model found that a mix of adverse childhood experiences (i.e., maltreatment), individual characteristics (eg, impulsivity), attitudes (i.e., hostile attitudes toward women) and antisocial behavior (i.e., delinquency) work in combination to make SV perpetration more likely. While the current study is not longitudinal and did not capture all the variables included in previous models explaining SV perpetration, the current study includes many variables found in the literature to be associated with SV or other similar types of perpetration (dating physical violence or bullying). Based on previous work, we expect most of the correlates measured in this study to be associated with SV perpetration for both dating and same-sex non-dating relationships.

METHODS

Analyses are based on data from the Youth Violence Survey: Linkages among Different Forms of Violence study, a cross-sectional survey of all public school students enrolled in grades 7, 9, 11, and 12 in a school district in a high-risk community (i.e., based on indicators such as high levels of poverty, unemployment, and serious crimes). Because of their low enrollment, students in grades 11 and 12 were grouped together to produce a sufficient number of participants in the oldest of the 3 age groups. Active, signed, written parental permission and student assent were obtained from all students younger than 18 years of age, and students 18 years of age or older provided written consent before participating. The study received institutional review board approval from the Centers for Disease Control and Prevention (CDC) and ORC Macro International. The participation rate for the study was 80% (see Swahn et al[32] and Swahn et al[33] for additional details about participant recruitment procedures and methodology).

Data were collected in April 2004 from 4,131 students who voluntarily completed an anonymous, self-administered 174-item questionnaire during a 40-minute class period. Students received a gift card for participation. While the peer SV perpetration models in the current analysis are based on the full sample, the dating SV perpetration models in the current analyses are limited to those participants who reported having been on a date (broadly defined as "hanging out with someone, eating out, playing a game, watching a movie, or doing other things with someone you like") within the last 12 months (n = 3,012). See Table 1 for statistics on the relationship between the risk/protective factors and SV perpetration across dating and same-sex peer relationships.

Table 1. Logistic regression analyses of the associations between risk and protective factors and perpetration of sexual violence (SV) across dating and same-sex peer relationships among high risk youth in grades, 7, 9, 11, and 12.

	SV perpetration					
	Dating relationship[a]			Same-sex peer relationship[b]		
	n	%	OR_{adj} (95% CI)[c]	*n*	%	OR_{adj} (95% CI)[c]
Individual level						
SV victimization						
No	2809	1.9	referent	3986	1.2	referent
Yes	203	21.7	15.64 (9.75–25.08)	145	29.0	30.86 (18.67–51.00)
Delinquency						
Low	1,405	1.5	referent	2,218	0.7	referent
High	1,607	4.7	2.55 (1.58–4.11)	1,913	3.9	5.91 (3.31–10.55)
Gang interest/Involvement						
No	2,609	2.3	referent	3,656	1.4	referent
Yes	403	9.4	3.44 (2.20–5.37)	475	8.0	4.83 (3.07–7.60)
High episodic drinking (HED)						
No drink	917	1.6	referent	1,645	0.8	referent
Drink, no HED	1,214	2.4	1.62 (0.86–3.05)	1,097	1.7	2.01 (1.04–3.91)
Drink, yes HED	881	6.0	5.23 (2.89–9.45)	1,388	5.1	8.59 (4.59–16.07)
Illicit drug use						
No	2,118	2.2	referent	3,119	1.4	referent
Yes	894	5.6	2.87 (1.86–4.43)	1,012	4.4	3.87 (2.47–6.06)
Impulsivity						
Low	1,460	2.1	referent	2,124	1.9	referent
High	1,552	4.2	2.07 (1.30–3.29)	2,007	2.4	1.54 (0.98–2.42)
Efficacy to avoid fights						
Low	1,634	4.3	referent	2,116	2.9	referent
High	1,378	2.0	0.57 (0.26–0.92)	2,015	1.4	0.53 (0.33–0.85)
Depressive symptoms						
Low	1,407	2.7	referent	2,060	1.6	referent
High	1,605	3.7	1.84 (1.19–2.86)	2,071	2.8	2.67 (1.66–4.31)
Attitudes about peer violence						
Low	1,402	2.1	referent	2,079	1.5	referent
High	1,610	4.2	1.75 (1.12–2.74)	2,052	2.8	1.55 (0.97–2.48)
Attitudes about date violence						
Low	1,659	2.0	referent	2,272	1.3	referent
High	1,353	4.7	2.21 (1.42–3.42)	1,859	3.2	2.65 (1.65–4.25)
Family/Peer level						
Parental monitoring						
Low	1,700	4.6	referent	2,229	3.2	referent
High	1,312	1.4	0.39 (0.22–0.66	1,902	1.0	0.38 (0.22–0.65)
Parental positive affect						
Low	1,705	3.9	referent	2,288	2.6	referent
High	1,307	2.4	0.55 (0.35–0.88)	1,843	1.6	0.57 (0.35–0.91)
Peer delinquency						
Low	1,500	1.5	referent	2,327	1.0	referent
High	1,512	4.9	3.30 (2.03–5.37)	1,804	3.8	4.69 (2.78–7.92)

Table 1. Continued.

	SV perpetration					
	Dating relationship[a]			Same-sex peer relationship[b]		
	n	%	OR_{adj} (95% CI)[c]	*n*	%	OR_{adj} (95% CI)[c]
Social support						
Low	1,689	4.0	referent	2,324	3.0	referent
High	1,323	2.2	0.56 (0.35–0.90)	1,807	1.1	0.38 (0.22–0.66)
Childhood physical abuse						
No	2,258	2.8	referent	3,214	1.8	referent
Yes	754	4.4	1.52 (0.97–2.32)	917	3.5	1.92 (1.22–3.03)
Childhood sexual abuse						
No	2,697	2.6	referent	3,766	1.5	referent
Yes	315	8.9	4.54 (2.78–7.69)	365	9.3	8.33 (5.56–14.28)
Witness domestic violence						
No	1,950	2.8	referent	2,831	1.6	referent
Yes	1,062	4.0	1.52 (0.96–2.38)	1,300	3.4	2.32 (1.52–3.70)
Community level						
School connectedness						
Low	1,900	3.6	referent	2,606	2.1	referent
High	1,112	2.5	0.67 (0.43–1.06)	1,525	2.3	1.04 (0.67–1.61)
Community violence						
Low	1,437	1.3	referent	2,208	0.7	referent
High	1,575	5.0	3.37 (1.97–5.77)	1,923	3.8	4.65 (2.59–8.36)

CI, confidence interval
[a] Only assessed for respondents who indicated having been on a date during the 12 months prior to completing the survey (*n*=3,012).
[b] Assessed for entire sample (*n*=4,131).
[c] Odds ratios (OR) adjusted only for sex, grade, race/ethnicity, and family status.

Outcome Variables

SV perpetration was assessed within both dating and same-sex peer relationships. These 2 types of relationship categories were mutually exclusive for the purpose of this study because the respondents were asked about people they dated first, and then, when asked about same sex peers, respondents were directed to exclude dates, siblings or other family members. In both cases, respondents were asked if they had *forced (a dating partner/ same-sex peer) to have sex or to do something sexual that they did not want to do* in the past 12 months.[14] Response options for both questions were never, 1–3 times, 4–9 times, and 10 or more times; however, because of skewed data, these items were dichotomized (never versus ever). Analyses were conducted separately for each relationship type.

Explanatory Variables

Eighteen self-report variables, representing the individual, family/peer, and community levels of the social ecological model, were assessed. Unless otherwise specified, scale scores were computed for all explanatory variables and then dichotomized using a median-split.

Individual Level Factors

SV Victimization. As with SV perpetration, victimization was assessed both within a dating and same-sex peer relationship with the item: *Has (a dating partner/ same-sex peer) forced you to have sex or to do something sexual that you did not want to do* in the past 12 months.[14] Response options included never, 1–3 times, 4–9 times, and 10 or more times; once again, because of skewed data, these items were dichotomized (never versus ever).

Delinquency. Delinquency was assessed using an 8-item measure based on the Delinquency Scale used in the National Longitudinal Study of Adolescent Health (eg, Resnick et al[34]). Sample items include "*How often did you deliberately damage property that didn't belong to you?*" and "*How often did you steal things?*" Response alternatives included: Never, 1 or 2 times, 3 or 4 times, and 5 or more times. In the current study, the scale had high internal consistency (α=0.80).

Gang Interest or Involvement. Gang involvement was assessed using the single item, "*Which answer best describes how you feel about joining a gang?*" Response options included, "I

don't want to join a gang;" "I would like to join a gang;" "I am in a gang now;" "I am in a gang, but would like to get out of it;" and "I was in a gang, but I got out of it." Respondents who selected the first response were categorized as having no gang interest or involvement. All other respondents were categorized as having at least some gang interest or involvement.

Heavy Episodic Drinking (HED). HED was assessed with the question "*During the past 12 months, on how many days did you drink 5 or more drinks in a row?*" Respondents were considered to have engaged in HED if they reported ever having had 5 or more drinks in a row (National Institute on Alcohol Abuse and Alcoholism[35]). Because not all respondents reported having consumed alcohol, this variable was trichotomized into the following categories: non-drinker; drinker but no HED; and drinker with HED.

Drug Use. Drug use was assessed with the question "*During the past 12 months, on how many days did you use inhalants (glue or solvents) or illegal drugs such as marijuana, cocaine, or heroin?*" Because the majority of respondents indicated little or no drug use, this variable was dichotomized (no drug use versus some drug use).

Impulsivity. Impulsivity was assessed by a 4-item measure adapted from Bosworth and Espelage.[36] Sample items included "*I have a hard time sitting still*" and "*I do things without thinking*." Response alternatives include never; rarely; sometimes; often; and always. In the current study, the scale had good internal consistency (α=0.79).

Self-Efficacy to Avoid Fights. Self-efficacy was assessed by a 7-item measure adapted from Bosworth and Espelage.[36] Respondents were asked their level of confidence with being able to make a series of behavioral choices. Sample items include "*Stay out of fights by choosing other solutions*" and "*Avoid a fight by walking away.*" Response options included not at all confident; not very confident; unsure; somewhat confident; and very confident. In the current study, the scale had high internal consistency (α=0.88).

Depressive Symptoms. Symptoms of depression were assessed using a 6-item measure developed by Orpinas.[37] Sample items include "*In the past 30 days, how often were you very sad?*" and "*In the past 30 days, how often did you sleep a lot more or a lot less than usual?*" Response options included never, rarely, sometimes, often, and always. In the current study, the scale had high internal consistency (α=0.85).

Attitudes Toward Dating and Same-Sex Peer Violence. Two scales were used to assess attitudes toward violence within dating (10-item scale) and same-sex peer relationships (8-item scale), both of which were adapted from Foshee et al.[38] Half of the questions on each scale focusing on boys' use of violence and the other half focusing on girls' use of violence. Sample items from the dating violence scale include "*It is okay for a boy to hit his girlfriend if she did something to make him mad*" and "*It is okay for a girl to hit her boyfriend if he insulted her in front of friends*." Sample items from the same-sex peer violence scale include "*Boys sometimes deserve to be hit by other boys*" and "*It is okay for a girl to hit another girl if that girl hit her first*." A 4-point Likert scale, anchored by strongly disagree and strongly agree, was used for response alternatives. In the current study, both scales had high internal consistency (α=0.82 and α=0.92 for the attitudes toward dating violence and the attitudes toward same-sex peer violence, respectively).

Family/Peer Level Factors

Parental Monitoring. The extent to which respondents felt that their parents monitored their behavior was assessed with a 7-item measure adapted from work by Loeber et al.[39] Sample items include "*If your parents/guardians were not at home, how often did you leave a note or call to let them know where you were going*" and "*When you were out, did your parents/guardians know what time you would be home?*" Response alternatives included almost never, sometimes, and almost always. In the current study, this scale had good internal consistency (α=0.76).

Parental Positive Reinforcement. Respondents indicated the extent to which their parents used positive rewards and encouragement for appropriate behavior with a 5-item measure adapted from work by Loeber et al.[39] Sample items include "*In the past 30 days, when you did something that your parents/guardians liked or approved of, how often did one of them give you a hug, pat on the back or kiss for it?"* and "*In the past 30 days, when you did something that your parents/guardians liked or approved of, how often did one of them give you a special privilege such as staying up late, watching TV, or doing some special activity?*" Response alternatives included almost never, sometimes, and almost always. In the current study, this scale had good internal consistency (α=0.79).

Peer Delinquency. Respondents indicated the extent to which their friends had engaged in eight delinquent behaviors. Sample items included "*In the past 12 months, how many of your friends have stolen things*" and "*In the past 12 months, how many of your friends have used a weapon to threaten or injure someone?*" Response alternatives included none of them, very few of them, some of them, most of them, and all of them. In the current study, this scale had high internal consistency (α=0.85).

Social Support. Respondents indicated the extent to which they had adults (at school), family, and friends to whom they could talk to if needed using a 9-item measure developed by Vaux.[40] Sample items include "*At school, there are adults I can talk to, who care about my feelings and what happens to me*" and "*I have friends I can talk to, who give good suggestions and*

advice about my problems." Response alternatives include not at all, some, and a lot. In the current study, this scale had high internal consistency (α=0.88).

Violence in Childhood. Respondents indicated their experience with 3 forms of child maltreatment using a dichotomous (yes/no) response alternative. Experience with witnessing domestic violence was assessed using the question: "*Before you were 10 years old did you ever see or hear one of your parents/guardians being hit, slapped, punched, shoved, kicked, or otherwise physically hurt by their spouse or partner?*" Experience with childhood physical abuse was assessed using the question: "*Before you were 10 years old did you ever have injuries, such as bruises, cuts, or broken bones, as a result of being spanked, struck, or shoved by your parents or guardians or their partners?*" Experience with childhood sexual abuse was assessed using the question: "*Before you were 10 years old did someone ever force you to have sex or to do something sexual that you did not want to?*" Responses to each item were treated individually in analyses.

Variables as Proxies for the Community Level

School Connectedness. Respondents indicated the extent to which they felt connected to their school using a 3-item measure adapted from the National Longitudinal Study of Adolescent Health (eg, Resnick et al[34]). Sample items include "*You feel close to people at your school*" and "*You feel like you are part of your school*." A 5-point Likert scale, anchored by strongly disagree (1) and strongly agree (5), was used for response options. In the current study, this scale had good internal consistency (α=0.72).

Witnessing Community Violence. Respondents indicated the extent to which they were exposed to six types of violence in their home, school, or neighborhood using a measure based on the work of Richters and Martinez.[41] Sample items included "*I have heard guns being shot*" and "*I have seen somebody being beaten up*." Response options included never, once or twice, a few times, and many times. In the current study, this scale had high internal consistency (α=0.88).

Statistical Analyses

There were some missing data, which was most prevalent for the 7th graders who had difficulty completing some of the measures at the end of the questionnaire. Missing data were imputed under the Missing at Random (MAR) assumption using all available auxiliary variables to inform the missing data process. To do so, we used factor analysis to generate aggregate factor scores to represent the information from all of the variables in the dataset. These factors were then included during the imputation process. SAS PROC MI was used to generate 20 imputations of missing data using the MCMC algorithm. Study analyses were conducted using these imputed data and results from statistical procedures were appropriately combined using PROC MIANALYZE (see www.SAS.com).

Analyses for both relationship types (i.e., dating versus same-sex peer) followed the same analytic process. First, logistic regression analyses were conducted separately for each potential explanatory variable to identify the risk and protective factors that were significantly associated with SV perpetration. Odds ratios (ORs) and 95% confidence intervals (CIs) from these analyses were adjusted for participants' grade (eg, 7th, 9th, or 11 th /12 th); sex; race/ethnicity (Hispanic, white non-Hispanic, black non-Hispanic, other non-Hispanic); and family status (living with both biological mother and father versus other living arrangement). Second, all explanatory variables that were significantly associated with the outcome variables at the $p<0.01$ level were then included in a multivariable logistic regression analysis using a manual, backwards elimination to identify the most parsimonious model that fit the data.

Fit statistics for the final model were calculated using the mean of the fitted values from the 20 imputed data sets (eg, Faris et al[42], Kärnä et al[43]). Fit of the final model was assessed in multiple ways. First, a likelihood ratio test was computed to assess the ratio of the maximized value of the likelihood function for the full model compared to the maximized value of the likelihood function for an intercept only model. A receiver-operating-characteristic (ROC) curve analysis was conducted to demonstrate the predictability of the final model. Finally, the youth sample was partitioned into ten groups according to their predicted probabilities for engaging in SV. The Hosmer-Lemeshow goodness-of-fit chi-statistic was used to show whether the observed number of outcome events significantly differed from the predicted number of outcome events for these ten groups (low chi-square values with high p-values provide evidence for a good model fit with the data).

Composition of the Sample

Almost 52% of the entire sample (n=4,131) were female. Forty five percent of the sample self-identified as Hispanic or Latino, 23% identified as Non-Hispanic African-Americans, 22% identified as Non-Hispanic Whites, and about 10% identified as Non-Hispanic other (this category included Asian, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander/multi-racial). Regarding family status, about half (54%) of the respondents indicated living with both their biological mother and father. The remaining respondents reported some other living arrangement (eg, living with a single parent or other relative). Some of the analyses reported here involve only those respondents who indicated having been on a date within the last 12 months (n=3,017). The distribution of demographic variables in the dating sample was virtually identical to the full sample and no statistical differences were identified.

RESULTS

Just over 3% of the sample reported SV perpetration against a date and just over 2% reported SV perpetration against a same-sex peer. The rate of reported SV victimization was 6.7% by a date and 3.5% by a same-sex peer. Comparisons between girls and boys indicated that girls were significantly more likely to have been the victim of dating SV (OR=1.62, 95% CI: 1.21-2.20), while boys were significantly more likely than girls to have perpetrated SV in both dating (OR=2.41, 95% CI: 1.56-3.73) and same-sex peer (OR=2.51, 95% CI: 1.59-3.96) relationships. There were no significant sex differences regarding being the victim of peer SV (OR=1.11, 95% CI: 0.79-1.54).

Preliminary Results

Dating Relationships. In order to establish a foundation for subsequent analyses, an initial model containing only demographic variables (eg, sex, grade in school, and family status) was computed. Grade in school and sex of the respondent were the only demographic variables that were significantly associated with the perpetration of SV against a date. Boys were almost 3 times more likely than girls to report perpetrating SV against a dating partner (OR=2.74; 95% CI = 1.73-4.35). Compared to 7th graders, 11th and 12th grade students were significantly *less* likely to report perpetrating SV against a dating partner (OR=0.46; 95% CI = 0.28-0.75). Race/ethnicity and family status were unassociated with SV perpetration in a dating relationship. All subsequent models assessing associations with SV perpetration against a dating partner or a same sex peer were adjusted for demographic variables.

As indicated in Table 1, all of the individual level variables were significantly positively associated with SV perpetration against a dating partner, and previous dating sexual victimization was a strong predictor. Respondents' belief that they have the ability to avoid fights was protective against SV perpetration of a dating partner. Most family level variables were significantly associated with SV perpetration against a dating partner. Parental monitoring, parental positive affection, and social support were protective against SV perpetration of a dating partner. Of the 2 variables assessing community level influences, only exposure to violence in the respondent's community was significantly positively associated with reported SV perpetration of a date.

Same-Sex Peer Relationships. Respondent sex was the only demographic variable that was significantly associated with the perpetration of SV against a same-sex peer. Boys were 2.5 times more likely than girls to report perpetrating SV against a same-sex peer. Respondent race/ethnicity, grade in school, and family status were not statistically associated with reports of SV perpetration against a same-sex peer. See Table 1 (second column) for results, which are similar to the results for the dating relationships model.

Table 2. Multivariable logistic regression analyses of the associations between risk and protective factors and sexual violence (SV) perpetration across dating and same-sex peer relationships among high risk youth in grades, 7, 9, 11, and 12.

	SV perpetration	
	Dating relationships[a] OR_{adj}[c] (95% CI)	Same-sex peer pelationships[b] OR_{adj}[c] (95% CI)
SV victimization		
No	referent	referent
Yes	9.93 (6.02–16.39)	16.55 (19.50–28.83)
Delinquency		
Low		referent
High		2.24 (1.15–4.37)
Heavy episodic drinking (HED)		
None	referent	referent
Drink, but no HED	1.22 (0.62–2.39)	1.16 (0.56–2.42)
HED 1+ times	2.18 (1.13–4.19)	3.11 (1.54–6.32)
Attitudes about date violence		
Low	referent	
High	1.82 (1.14–2.92)	
Childhood sexual abuse		
No	referent	referent
Yes	2.22 (1.26–4.17)	2.86 (1.61–5.00)
Peer delinquency		
Low	referent	
High	1.85 (1.07–3.18)	
Social support		
Low		referent
High		0.51 (0.27–0.96)
Community violence		
Low	referent	referent
High	1.88 (1.07–3.32)	2.25 (1.18–4.30)

CI, confidence interval

[a] Only assessed for respondents who indicated having been on a date during the 12 months prior to completing the survey (n=3,012).

[b] Assessed for entire sample (n=4,131).

[c] Within a column, odds ratio (OR) adjusted for all variables in the model, including demographics and SV victimization history, not listed.

Multivariable Results

Dating Relationships. A multivariable model including the demographic variables, as well as those explanatory variables that were significantly associated with SV perpetration against a dating partner in the initial analyses were included in a single multivariable model. Table 2 (first column) includes those variables that were retained in the parsimonious model predicting SV perpetration against a dating partner. The sex of the respondent and grade in school were significantly

associated with SV perpetration against a dating partner in the model (data not shown). Specifically boys were more likely to perpetrate SV against a dating partner than girls (OR=3.44; 95% CI=2.05-5.57) and 11th/12th graders were less likely to perpetrate SV against a dating partner than 7th graders (OR=0.43; 95% CI=0.24-0.77).

Of the 17 potential risk and protective correlates that were associated with SV perpetration against a dating partner in the preliminary analysis, only 6 variables were retained in the final model (Table 2). SV victimization by a dating partner remained the strongest correlate, with those who reported SV victimization being 10 times more likely to also report perpetrating SV against a dating partner. Of the remaining explanatory variables in the model, engaging in heavy episodic drinking, holding attitudes that endorse dating violence, being the victim of childhood sexual abuse, having delinquent peers, and being exposed to community violence were all associated with approximately a 2 fold increase in the odds of reporting SV perpetration against a dating partner.

Analysis of fit statistics indicated that the model fit the data well. The log likelihood ratio test (LRT) results provided for the multivariable model indicated that the explanatory variables included in the final model improved the fit of the regression model to the data compared to a model without the explanatory variables ($LRT(14)=209.02$, $p<0.001$). The ROC analysis also indicated that the final model adequately discriminated between respondents who reported perpetrating SV against a dating partner and those who did not (Area under the ROC curve = 0.85). The Hosmer-Lemeshow goodness-of-fit chi-statistic for the full model indicated a good model fit as well (chi-square test (8)=6.18; p=0.63).

Same Sex Peer Relationships. As with SV perpetration against a dating partner, a multivariable model including the demographic variables and the explanatory variables that were significantly associated with SV perpetration against a same-sex peer in bivariate analyses, were included in a single multivariable model. Of the demographic variables, only sex of the respondent remained significant in the final multivariable model (data not shown). Specifically, boys were more than 2 times more likely to perpetrate SV against a same-sex peer than girls (OR=2.26; 95% CI=1.31-3.91).

Table 2 (second column) includes the 6 explanatory variables that were retained in the final model. Again, SV victimization by a same-sex peer in the 12 months prior to the survey was the strongest predictor of SV perpetration against a same-sex peer (OR=16.55). Engaging in other delinquent behaviors and being exposed to violence in the community were both associated with approximately a 2-fold increase in the odds of reporting SV perpetration against a same-sex peer. Similarly, engaging in heavy episodic drinking and being the victim of childhood sexual abuse were associated with more than a 3-fold increase in the odds of reporting same-sex peer SV perpetration. One protective factor was retained: respondents who were high on social support (from school, family, or friends) were half as likely to engage in SV perpetration against a same-sex peer as those who were low in social support.

As with the final dating relationship model, analysis of fit statistics indicated that the model predicting SV perpetration against a same-sex peer fit the data well. The log LRT results indicated that the explanatory variables retained in the final model improved the fit of the regression model to the data compared to a model without the explanatory variables ($LRT(14)=273.53$, $p<0.001$). The ROC analysis also indicated that the final model adequately discriminated between respondents who reported perpetrating SV against a same-sex peer and those who did not (Area under the ROC curve=0.89). The Hosmer-Lemeshow goodness-of-fit chi-statistic for the full model indicated a good model fit, as well (chi-square (8)=4.13; p=0.84).

DISCUSSION

Findings from this study suggest that adolescents perpetrate SV in both dating and same-sex peer relationships and that several risk correlates and one protective correlate are associated with perpetration. Controlling for all other variables in the model, boys were significantly more likely than girls to be perpetrators of SV in both dating and same-sex peer relationships. Consistent with previous research,[5,17] the strongest correlate of perpetration in both contexts was by far, the experience of prior victimization in the same type of relationship. For example, Banyard et al[5] found that youth who were victims of sexual abuse in their life time were 21 times more likely to report perpetrating sexual abuse as an adolescent. However, even when controlling for victimization experiences, 3 other variables were found to be strong correlates - heavy episodic drinking, a history of child sexual abuse, and exposure of community violence. All 3 were significantly associated with SV perpetration against both dating and same-sex peers.

Our hypothesis that findings would be similar across relationship types was partially supported because there were shared risk factors, but the type of relationship (i.e., relationship between perpetrator and victim) still matters because the significant risk and protective factors are not exactly the same for each type of relationship. Attitudes toward violence are only significantly associated with dating SV perpetration, most likely because the attitudinal questions were different for each relationship type. The delinquency factors are such that peer delinquency is associated with perpetration in dating relationships while the respondent's own delinquent behaviors are what matters in same-sex peer relationships. These findings are consistent with previous research of male perpetration, connecting negative attitudes toward women and negative peer norms to perpetration of sexual and other violence against a female dating partner.[12,13,25] The findings are also consistent with previous youth violence research that

connects one's own delinquency with peer violence more generally.[44]

The only positive correlate (or protective factor) to remain in either of the final models was social support. Reporting a strong support system was associated with decreased likelihood of same-sex peer SV perpetration. One reason why social support may be more relevant in the same-sex peer context in this sample might be that same-sex peers are likely to be close in age so social support, at least from peer networks, may be stronger than social support in dating relationships; dating may be more common with older or younger partners who are not part of the peer social support network. Also, same-sex peer perpetration, at least among boys, may be highly associated with homophobic bantering, in which school-age male peers attempt to express hyper-masculinity.[45] Therefore, having a strong social network could prevent the likelihood of perpetration of a homophobic nature which may be highly associated with same-sex peer SV perpetration. Kendrick et al[22] found an association between social support and decreased likelihood of bullying perpetration, which may be similar to certain kinds of SV perpetration. Also, some have shown evidence of a link between homophobic teasing and SV perpetration.[8] However, further research is needed to shed light on why social support and other factors are relevant in one relationship (same-sex peer) but not both. Future research should examine these and other risk and protective factors for both types of relationships to confirm which factors are shared across the 2 relationships. Another avenue for future research is to examine whether some of the protective factors examined in this study may work to buffer the effects of the risk factors instead of having direct associations with perpetration. This information can inform how best to target prevention efforts.

Our findings suggest that individual factors assessing multiple levels of the social ecology were significant correlates in the final model. It appears that a combination of individual, peer and family level factors as well as individual's perceptions of community factors play a role in the likelihood to perpetrate SV, regardless of the type of relationship between victim and perpetrator. For example, beyond past 12 month victimization histories, individual histories of child sexual abuse cut across both types of perpetration, as did the propensity to drink heavily. At the peer level, having peers that were delinquent was an important factor for dating SV perpetration, while social support was important for same-sex peer perpetration. An individual's exposure to community violence appeared to have an influence regardless of victim-perpetrator relationship. Our study confirms the importance of including variables that tap different levels of the social ecology, as the best statistical model seems to be a combined model.

This study has a number of strengths. Unlike most other studies that examine SV perpetration, the current study examines a wide array of both risk and protective factors that seek to assess different levels of the social ecology. Measuring numerous potential risk and protective factors in the same study allowed us to determine the impact of each factor while controlling for the others. In addition, the study sample was large and we measured and compared 2 types of SV perpetration. More work like this, particularly within the same-sex relationship, is needed to further understand the differences across the 2 relationships and inform prevention efforts.

LIMITATIONS

This study is subject to some limitations. The data were from a high risk urban community so the findings may not be representative of other communities. In particular, 45% of the sample was Hispanic or Latino, which further suggests that this high risk community may not be generalizable to all high risk communities. Also, the sensitive nature of the questions and the fact that the data were self-reported may have resulted in some reporting bias (lack of disclosure). In addition, this study defined SV perpetration very broadly so we were not able to determine the severity of the SV perpetration. The question measured forced sex as well as forcing someone to "do something sexual." Also, similar to many studies on this topic, only one item was used to measure SV in each relationship. Ideally, SV should be measured with numerous behaviorally specific items to increase disclosure rates.[46] The combination of these factors could explain the low prevalence rates we found in this study (3% in dating relationships and 2% in same-sex peer relationships). Additionally, these are cross-sectional data so we are not able to determine anything beyond associations between the risk factors and the violence outcomes. Also, the exposure to community violence item also includes violence in the home so it is not a pure measure of experiences occurring in the community, and other important community level factors that may relate to SV perpetration (eg, neighborhood disorganization, collective efficacy) were not assessed. Further, this study only captured SV by a date or same-sex peer and did not include SV perpetrated by an opposite-sex peer so did not assess the full range of SV. However, this study allowed a comparison of dating SV perpetration to a much less studied relationship type (same-sex peer) and suggests that there are differences in risk and protective factors associated with these 2 types of SV perpetration.

CONCLUSION

These findings have implications for prevention of SV. First, data from this study suggest that prevention programs should start when students are young, with particular focus on middle school boys (particularly in the case of same-sex perpetration). Findings suggest that, prevention efforts may need slightly different foci to address different types of SV perpetration. It appears that any prevention efforts should focus on prior peer/dating SV victimization, heavy alcohol use, youth delinquency and involvement with delinquent peers, and the

larger issue of violence in the community, as this seemed to be an important predictor of SV perpetrator in the sample in both relationships. Past childhood experiences with sexual abuse, while not modifiable, should also be addressed in prevention efforts with youth. Comprehensive prevention efforts that address different types of peer-perpetrated violence in schools, like bullying, homophobic teasing, and SV, may be most beneficial and have been suggested by others.[8] Perhaps the most promising finding in terms of health promotion was that having social support (from other peers, but also teachers and parents) appears to decrease the likelihood of perpetration against same-sex peers. This finding is a promising avenue on which prevention strategies might focus. In the meantime, more research is needed to replicate this and other findings in this study in more representative samples and explore further the importance of social support and the other shared and unique risk and protective factors identified here in dating and same-sex relationships across the full range of SV.

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DEDICATION

This work is dedicated to the memory of our co-author Merle E. Hamburger, PhD, who passed away before the paper was completed. Merle conducted the final analysis used in this paper and drafted the methods and findings sections. He was a strong quantitative methodologist dedicated to his research on youth and sexual violence prevention. With humor and compassion, Merle positively affected the lives of those who knew him. His scholarly contributions will have a lasting impact on improving the lives of youth.

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