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Dating Violence and Substance Use as Longitudinal Predictors of Adolescents' Risky Sexual Behavior

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Abstract

Objective—To examine dating violence perpetration and victimization (physical, psychological, and sexual) and lifetime substance use (alcohol, marijuana, and hard drugs) as longitudinal predictors of adolescents' risky sexual behavior across one year, and to determine whether predictors varied across adolescents' gender and ethnicity.

Methods—A sample of Caucasian, African American, and Hispanic male and female adolescents from 7 public high schools in Texas ($N = 882$) participated. Adolescents completed self-report measures of dating violence, lifetime substance use, and risky sexual behavior at baseline and, 1-year later, completed a second assessment of their risky sexual behavior.

Results—Path analysis demonstrated that greater physical dating violence victimization, lifetime alcohol use, lifetime marijuana use, and age (being older) were all significant predictors of risky sexual behavior at the 1-year follow-up. These results did not vary across gender or the three ethnic groups (Caucasian, African American, and Hispanic).

Conclusions—Overall, substance use was a longitudinal predictor of risky sexual behavior across the three ethnic groups, with physical dating violence victimization being the only type of dating violence longitudinally predicting risky sexual behavior. Prevention efforts should consider the roles of physical dating violence and substance use in preventing risky sexual behavior.

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Keywords

Risky sexual behavior; dating violence; substance use

Risky sexual behavior is prevalent among adolescents (Fergus, Zimmerman, Caldwell, 2007), and may include having sex at a young age (e.g., 15 or younger) (Beadnell, et al., 2005; Hallfors, Iritani, Miller, & Bauer, 2007), having multiple sexual partners (Pflieger, Cook, Niccolai, & Connell, 2013), having sex without a condom (Levy, Sherritt, Gabrielli, Shrier, & Knight, 2009), and using substances (e.g., alcohol, drugs) prior to or during sexual intercourse (Alleyne, Coleman-Cowger, Crown, Gibbons, & Vines, 2011; Seth, Sales, DiClemente, Wingood, Rose, & Patel, 2011). Adolescent risky sexual behavior is associated with an increased risk for the development of sexually transmitted infections (STIs; Niccolai, Ethier, Kershaw, Lewis, Meade, & Ickovics, 2004) and unplanned pregnancies (Bryan, Schmiede, & Magnan, 2012). The seriousness of this public health problem makes it imperative for research to identify factors that contribute to the engagement in potentially harmful sexual behaviors, as these could become targets of interventions designed to decrease risky sexual practices. Expanding upon previous research, the current study examined dating violence victimization and perpetration along with lifetime substance use as longitudinal predictors of risky sexual behavior in an ethnically diverse sample of high school male and female adolescents.

Dating Violence and Risky Sexual Behavior

Similar to risky sexual behavior, dating violence in adolescent relationships is a serious and prevalent problem. Research indicates that, each year, approximately 20% of adolescents are victimized by or perpetrate physical dating violence, 70% psychological aggression (e.g., insulting partner; ridiculing partner), and 20% sexual violence (Shorey, Cornelius, & Bell, 2008; Temple & Freeman, 2011; Wolfe, Scott, Reitzel-Jaffe, Wekerle, Grasley, & Straatman, 2001). To date, a dearth of research exists on the relation between risky sexual behavior and dating violence, although the limited existing literature does suggest an association.

For instance, Alleyne, Coleman-Cowger, Crown, Gibbons, and Vines (2011) demonstrated that physical dating violence victimization was associated with increased odds of using substances the last time they had intercourse among Hispanic male and female adolescents, with condom use decreasing for Caucasian males who experienced physical dating violence. Among primarily Caucasian high school students, Eaton, Davis, Barrios, Brener, and Noonan (2007) demonstrated a positive association between physical dating violence victimization and number of sexual partners. Silverman, Raj, Mucci, and Hathaway (2001) found that, among a sample of adolescent females, physical dating violence victimization was associated with having sexual intercourse before the age of 15, not using a condom during intercourse, and increased odds of pregnancy. This study did not examine potential ethnic differences in the relation between dating violence and risky sexual behaviors. Other studies have also demonstrated a link between dating violence victimization and risky sexual behaviors (e.g., multiple sexual partners, substance use before/during intercourse) among adolescents (Ramisetty-Mikler, Goebert, Nishimura, & Caetano, 2006; Silverman, Raj, &

Clements, 2004; Wingood, Diclemente, McCree, Harrington, & Davies, 2001). Risky lifestyle theories (Grover, 2004) help explain the relation between dating violence victimization and risky sexual behavior, such that the co-occurrence of many negative outcomes (e.g., victimization and risky sexual behavior) may be due to risky daily activities (e.g., staying out late; substance use) that place individuals in contexts where motivated offenders are present.

Regarding dating violence perpetration and risky sexual behavior, one study found that dating violence perpetration was associated with having multiple sexual partners among urban male adolescents (Reed, Miller, Raj, Decker, & Silverman, 2014). Similarly, Hipwell and colleagues (2013) found physical violence perpetration increased the odds of risky sexual behavior among an ethnically diverse sample of female adolescents. Among a sample of African American and Hispanic adolescent females, Alleyne-Green, Coleman-Cowger, and Henry (2012) found that being both a perpetrator and a victim of violence was associated with a larger number of oral sex partners, using alcohol more often during sexual encounters, and being younger at the age of first intercourse. These findings did not vary across the two ethnic groups. Few theoretical models have attempted to explain the relation between dating violence perpetration and risky sexual behaviors, although there is some speculation that social learning theory may provide a useful framework for understanding this problematic association. Specifically, Alleyne-Green and colleagues (2011) offered that adolescents may attempt to emulate high-risk behaviors they observe in their peer groups (e.g., risky sexual behavior and violence).

Unfortunately, all of the above studies on the relationship between dating violence and risky sexual behavior are cross-sectional in nature, limiting our ability to determine whether dating violence is predictive of engagement in risky sexual behavior. Moreover, the majority of studies focused exclusively on physical dating violence, despite dating violence also including psychologically and sexually aggressive behaviors. Thus, there is a clear need to determine whether different types of dating violence longitudinally predict risky sexual behavior and whether this relation varies depending on the ethnicity and gender of adolescents.

Substance Use and Risky Sexual Behavior

Another serious and prevalent problem among adolescents, and one linked with risky sexual behavior, is substance use. Research indicates that the lifetime prevalence of alcohol use among adolescents varies from 26% to 70%, marijuana from 17% to 46%, and illicit drug use (i.e., drugs other than marijuana) from 8% to 23%, with higher lifetime prevalence among older adolescents (i.e., adolescents in 11th or 12th grade) (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2014). The relationship between risky sexual behavior and adolescent substance use receives greater research attention than the relationship between dating violence and risky sexual behavior. For instance, previous research demonstrated marijuana use to be longitudinally and cross-sectionally associated with risky sexual behavior among adolescents (Bryan et al., 2012; Bellis, et al., 2008), and it is hypothesized that marijuana use may increase risky sexual behavior due to increased disinhibition and decreased risk perception (Bryan et al., 2012; Skosnik, Spatz-Glenn, &

Park, 2001). Similarly, illicit hard drug use (e.g., cocaine, sedatives) prospectively predicts risky sexual behavior (Brook, Brook, Pahl, & Montoya, 2002). Moreover, there is a robust literature documenting alcohol use as a known risk factor for adolescent risky sexual behavior (Bailey, Pollock, Martin, & Lynch, 1999; Guo, Chung, Hill, Hawkins, Catalano, & Abbott, 2002). Similar to marijuana use, the relationship between alcohol and illicit drug use to risky sexual behavior may be due to decreased risk perception and disinhibition of behavior.

Although research clearly indicates a relationship between substance use and adolescents' risky sexual behavior, a notable limitation of the existing literature is a failure to longitudinally examine lifetime use of multiple substances (e.g., alcohol, marijuana, and hard drugs) as predictors of risky sexual behavior. The simultaneous analysis of multiple substances may highlight which substances are most predictive of risky sexual behavior. Another notable limitation of previous research is the failure to examine whether the longitudinal relationship between substance use and risky sexual behavior varies across ethnic groups. Past research demonstrated differences in the rate and timing of onset of substance use among ethnic groups, with some research suggesting Caucasian adolescents initiate substance use at younger ages than African American and Hispanic adolescents (Substance Abuse and Mental Health Service [SAMSHA], 2010; Wu, Temple, Shokar, Nguyen-Oghalai, & Grady, 2010). These culturally-specific findings regarding substance abuse suggests the possibility that the relation between substance use and risky sexual behavior may vary across different adolescent populations. Gaining a more nuanced, culturally-specific understanding for the development of risky behaviors across adolescents may lead to more targeted interventions and improved services for ethnic minority adolescents (Alegria, Carson, Goncalves, & Keefe, 2011).

Current Study

Due to limited longitudinal research on dating violence as a predictor of risky sexual behavior, and no known longitudinal research on both dating violence and lifetime substance use as predictors of risky sexual behavior, the current study examined whether dating violence victimization and perpetration (physical, psychological, and sexual) and lifetime substance use (alcohol, marijuana, and hard drugs) predicted risky sexual behavior across 1 year among an ethnically diverse sample of male and female adolescents. Because dating violence and substance use often co-occur and adolescents who are involved in violent dating relationships are also more likely to use substances relative to individuals in non-violent relationships (Temple & Freeman, 2011; Shorey, Stuart, & Cornelius, 2011), it is important to study these predictors simultaneously.

Based on previous research, we hypothesized that physical dating violence victimization and perpetration, lifetime alcohol use, marijuana, and hard drug use would longitudinally predict risky sexual behavior. Due to a lack of research on psychological and sexual dating violence victimization/perpetration and risky sexual behavior, no definitive hypotheses about these types of dating violence were provided. We also examined whether predictors of risky sexual behavior varied across gender and Caucasian, African American, and Hispanic adolescents. Due to a lack of research on longitudinal differences in predictors of risky

sexual behavior across gender and ethnic groups, no hypotheses were made about the role of gender or ethnicity.

Method

Procedures and Participants

Adolescent data from an ongoing longitudinal study on teen dating violence and risky behaviors, termed *Dating it Safe* (Temple, Shorey, Fite, Stuart, & Le, 2013; Temple, Shorey, Tortolero, Wolfe, & Stuart, 2013), was used in the current study. Adolescents were recruited from seven public high schools throughout southeast Texas during the Spring semester of 2010, with a 1-year follow-up assessment occurring during the Spring of 2011. Adolescents from participating high schools were diverse with respect to geography and enrollment size, ranging from small and suburban/rural to large and urban. School enrollment was generally diverse with respect to race/ethnicity (Mean = 67.1% of students identifying as non-white) and socioeconomic status (Mean = 46.2% of students Classified as economically disadvantaged). Study recruitment occurred during school hours in classes with mandated attendance. All adolescents who were present in the selected classes were eligible for study participation. Parental permission forms, in both English and Spanish, were sent home with adolescents for their parents or legal guardians to review, sign, and return for a \$5 gift card regardless of whether or not they were granted permission to participate. Of the 1,702 male and female adolescent students present on recruitment days, 1,215 returned parental/guardian permission forms (71%), 1,119 obtained parental/guardian permission to participate (66% of those recruited; 92% of those who returned permission forms), and 1,046 completed the survey (62% of those recruited; 94% of those who received parental/guardian permission). Adolescents also provided informed assent for their participation. Four surveys were discarded due to overt random responding, resulting in 1,042 completed surveys. Portions of this sample have been reported on elsewhere (Temple et al., 2013; Shorey et al., 2013). All procedures were approved by the Institutional Review Board of the last author.

Adolescents who were no longer at their original school at the 1-year follow-up completed their follow-up assessment at an alternate location scheduled by research staff. For all other adolescents, baseline and follow-up assessments occurred during normal school hours. Adolescents received a \$5 and \$10 gift card for completing the baseline and 1-year follow-up assessment, respectively. For the current study, baseline and 1-year follow-up data were analyzed and limited to Caucasian, African American, and Hispanic adolescents due to the small sample size of other racial groups (e.g., Asian American), as well as adolescents who were in the 9th or 10th grade at the baseline assessment, due to the small number of adolescents who were in the 11th grade at baseline. This resulted in a sample of 882 adolescents at Baseline and 813 at the 1-year follow-up, representing a 92% retention rate. Table 1 displays demographic and descriptive information for the study sample.

Measures

Risky Sexual Behavior—At the baseline assessment, we utilized two questions to assess for risky sexual behavior, including (1) “During your life, how many people have you had

sex (intercourse) with?” and (2) “The last time you had sex (intercourse), what methods did you or your partner use to prevent pregnancy?” For the first question, scores were dichotomized, such that adolescents who had 2 or more sexual partners were coded with a “1” and individuals with 1 (or none) sexual partners were coded with a “0,” consistent with previous research (Marchand & Smolkowski, 2013). The second question was also dichotomized, such that any contraception use (e.g., condom, birth control) was coded a “0” and no contraception a “1,” again consistent with previous research (Caruthers, Van Ryzin, & Dishion, 2014). Dichotomizing scores on risky sexual behavior items is consistent with a broad literature, as we were concerned with the presence of risky sexual behaviors, rather than the frequency of risky sexual behaviors. Scores on the 2 items were then summed to create a total risky sexual behavior score which could range from 0 to 2, with higher scores corresponding to more risky sexual behavior.

At the 1-year follow-up, the same two questions were used to examine risky sexual behavior in the past year: (1) “In the past year (since the last survey), about how many people have you had sex (intercourse) with?” and (2) “In the past year (since the last survey), what methods did you or your partner use to prevent pregnancy and/or sexually transmitted infections?” Consistent with the baseline assessment, both items were dichotomized and summed to create a total score, which could range from 0 to 2.

Dating Violence—Victimization and perpetration in dating relationships was assessed using the Conflict in Adolescent Dating Relationships Inventory (CADRI) (Wolfe, et al., 2001). Specifically, we utilized the physical (e.g., “my partner threw something at me”), psychological (e.g., “my partner ridiculed or made fun of me in front of others”), and sexual (e.g., “my partner forced me to have sex when I didn’t want to”) subscales. Adolescents were asked to indicate whether they had been victimized by, and perpetrated, any of the behaviors with their current or most recent dating partner using a Yes/No format. All items were summed for each subscale, with higher scores corresponding to higher levels of violence. The CADRI has demonstrated good reliability and validity (Wolfe, et al., 2001).

Lifetime Substance Use—At baseline, adolescents were asked to indicate (Yes/No) whether or not they had, in their lifetime, ever used alcohol, marijuana, cocaine, inhalants, ecstasy, or amphetamines. Adolescents were provided with examples of inhalants (e.g., sniffed glue) and informed that alcohol use referred to “more than just a few sips”. Due to low lifetime prevalence rates for cocaine, inhalants, ecstasy, and amphetamines, these substances were combined to form a lifetime “hard drugs” variable.

Data Analytic Strategy

The prediction of risky sexual behavior over time was examined using path models in Mplus Version 7.0. As recommended by the literature, path models were estimated using full information maximum likelihood (FIML) estimation, which uses all available data to estimate parameters and does not exclude missing data (Kline, 2010). FIML has demonstrated more efficiency and less bias with missing data relative to other methods (e.g., pairwise and listwise deletion; Arbuckle, 1996). A fully saturated model (i.e., zero degrees

of freedom) was used to examine structural paths. Fully saturated models always produce a perfect fit to the data; therefore, model fit indices are not reported.

A path model in which T2 risky sexual behavior was regressed on T1 risky sexual behavior, victimization and perpetration (physical, psychological, and sexual), lifetime substance use (alcohol, marijuana, and hard drugs), and age was first estimated to examine the impact of T1 variables on T2 risky sexual behavior. To determine whether any of the structural paths varied by gender and ethnicity (Caucasian, Hispanic, or African American) we utilized the multiple group model (MGM) approach (Muthén, & Muthén, 2012). The MGM approach includes two steps. First, an unrestricted model where all structural paths were free to vary across gender [ethnicity] was estimated. Second, a model where the structural paths among variables were constrained to be equal across gender [ethnicity] was estimated. A chi-square difference test (χ^2) was then produced to determine whether constraining paths across gender [ethnicity] resulted in a decrement in the model chi-square. If results demonstrate that constraining paths to be equal results in a significant decrement to the model chi-square, it suggests that relations among variables varied across gender [ethnicity] (Byrne, 2009).

Results

Descriptive Statistics

Table 1 displays demographic information and descriptive statistics among study variables for the entire sample. Chi-square, *t* tests, and ANOVA tests were employed to examine whether each variable differed across gender and ethnicities. Tukey's HSD was used to determine which ethnic groups differed when ANOVAs were significant. Females reported higher levels of all types of dating violence perpetration and victimization, with the exception of sexual perpetration, than males, consistent with prior research (Shorey et al., 2008; Swahn, Simon, Arias, & Bossarte, 2008; Wolfe et al., 2001). At the baseline assessment (T1), African American adolescents had a higher mean risky sexual behavior score than Caucasian adolescents, and females had a higher score than males. In addition, 42.7% of the sample reported that they had sexual intercourse at some point during their lifetime. At the 1-year follow-up assessment (T2), African American adolescents reported a higher mean risky sexual behavior score than Caucasian and Hispanic adolescents, and males had a higher score than females. Additionally, 53.1% of the sample reported engaging in sexual intercourse.

Table 2 displays bivariate correlations among risky sexual behavior at T2 and all predictors assessed at T1. Risky sexual behavior at T2 was positively associated with all predictor variables assessed at T1 except sexual victimization. Risky sexual behavior at T1 was positively associated with all predictor variables assessed at T1 except for sexual victimization and perpetration, lifetime alcohol use, and age.

Longitudinal Predictors of Risky Sexual Behavior

Using a path model, we first examined the relations between T1 risky sexual behavior, dating violence, lifetime substance use, and age and T2 risky sexual behavior (Figure 1). The standardized path coefficients (Table 3) demonstrated that T1 risky sexual behavior,

physical victimization, lifetime alcohol use, lifetime marijuana use, and age all significantly predicted T2 risky sexual behavior. That is, more frequent physical victimization, and lifetime alcohol or marijuana use, and being older at T1 were significantly associated with more risky sexual behavior at T2. Having engaged in risky sexual behavior at T1 was positively associated with engaging in risky sexual behavior at T2.

Using the MGM approach, we next examined whether any of the structural paths varied as a function of gender. We first allowed paths to freely vary across gender. Paths were then constrained to be equal across gender, and constraining paths did not result in a significant decrement in the model chi-square, $\chi^2(11) = 12.26, p > .05$. Thus, the path model results did not vary as a function of adolescents' gender. Similarly, the MGM approach demonstrated that the paths did not vary as a function of adolescents' ethnicity, $\chi^2(22) = 28.65, p > .05$.

Discussion

Given the association with a number of negative health outcomes, including increased risk for STIs and unplanned pregnancies, adolescent risky sexual behavior is a significant public health concern. Thus, we examined longitudinal predictors of risky sexual behavior among ethnically diverse male and female adolescents. Expanding upon previous research, findings demonstrated that lifetime alcohol and marijuana use, as well as physical dating violence victimization and age, were predictors of risky sexual behavior across 1 year. Notably, our results also demonstrated that these predictors were consistent across males and females and the three ethnic groups (Caucasian, Hispanic, and African American).

Importantly, this is the first known study to longitudinally examine different forms of dating violence perpetration and victimization and patterns of substance use simultaneously as predictors of risky sexual behavior, a notable limitation in the existing literature. For instance, as demonstrated by the bivariate correlations (Table 2), all predictors, other than sexual victimization, were significantly associated with risky sexual behavior. Thus, a failure to consider other predictors concurrently in the model could prevent us from understanding the most important, strongest predictors of risky sexual behavior. Our path model results, which simultaneously evaluated multiple predictors, indicated that several constructs were no longer associated with risky sexual behavior once taking into account the variance associated with the other predictors. Moreover, these predictors were the same for males and females and the three ethnic groups, suggesting that similar pathways to risky sexual behavior exist across ethnically diverse adolescents.

The current findings significantly advance our understanding of longitudinal predictors of adolescents' risky sexual behavior, although there is a need for continued research in this area. For instance, although our results demonstrated physical dating violence victimization to be associated with prospective, risky sexual behavior, the mechanisms behind this association remain unknown. It is possible that victims of physical dating violence become fearful of their partners and, thus, are more likely to engage in high-risk behaviors at their partners' insistence (e.g., having sex without a condom). In addition, mental health symptoms secondary to abuse, such as anxiety and depression, may reduce risk perception

(Rhatigan, Shorey, & Nathanson, 2011), making risky sexual behaviors more likely. This may be further compounded by the presence of substances (e.g., marijuana) that disinhibit behavior. This remains speculative, however, until examined in future research.

Our results indicate that efforts aimed at preventing risky sexual behavior may benefit from targeting alcohol, marijuana, and physical dating violence among adolescents. As discussed in detail elsewhere (see Jackson, Geddes, Haw, & Frank, 2012), the majority of interventions for adolescent high-risk behaviors have focused on a single risky behavior (e.g., substance use; risky sexual behavior), despite growing evidence that a number of risky behaviors co-occur, such as substance use and risky sexual behavior, which are further compounded by the presence of aggression. There is limited research to suggest that multiple forms of risky behavior among adolescents, specifically substance use and risky sexual behavior, can be reduced when interventions target both classes of behavior (Jackson et al., 2012; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999), although there is a need for more research in this area. Moreover, interventions have begun targeting violence, high-risk sexual behavior, and substance use simultaneously (Wolfe et al., 2009). Our findings lend support to this approach, and further suggest that reducing substance use and dating violence may be a viable method to reducing risky sexual behavior. Interventions for adolescents at the individual, family, peer, school, and community levels are needed, as broad-based approaches to reducing dating violence, substance use, and risky sexual behavior are likely to be the most effective (Jackson et al., 2012). Although additional research is needed, our initial findings suggest that interventions could target similar risk factors for risky sexual behavior across gender and ethnicity.

Limitations

The current study had a number of limitations. Future research should employ more in-depth measures of risky sexual behavior, including an assessment of STIs. Additionally, our assessment of protection methods during intercourse (e.g., condoms) were worded, albeit slightly, differently at T1 and T2. That is, the item at T2 included the statement “to prevent pregnancy and/or sexually transmitted infections”, whereas at T1 it only stated “to prevent pregnancy.” It is possible that this difference impacted results and future research should employ the exact same items at each assessment. Our use of single items to assess various classes of substance use did not allow us to determine if more frequent substance use, relative to lifetime use, was a better predictor of risky sexual behavior. Although the focus of this study was to determine whether dating violence and substance use were predictors of risky sexual behavior, previous research demonstrated other important predictors of risky sexual behavior, such as parental influences (Schuster, Mermelstein, & Wakschlag, 2012) and mental health symptoms (Elkington, Bauermeister, & Zimmerman, 2010), and future research should examine these predictors in conjunction with victimization and substance use. Also, given the fact that Texas has one of the highest teen pregnancy rates in the United States (Kost & Henshaw, 2013), the participants in this study might engage in greater risk sexual behavior compared with adolescents in other states. Although approximately 300 adolescents were represented in each ethnic group, future research should strive to obtain even larger samples in order to have enough power to detect all ethnic differences. We did not assess for the country of origin for the Hispanic group; although we can assume a vast

majority are Mexican American given regional census data. It is also possible that our self-report measures may have been impacted by cross-cultural differences, and future research should examine this further.

Conclusions

In summary, the current study expands upon previous research by demonstrating that dating violence, lifetime alcohol/marijuana use, and age longitudinally predict risky sexual behavior among a large and ethnically diverse (i.e., Caucasian, African American, and Hispanic) sample of male and female adolescents. The examination of multiple forms of dating violence and substance use enhances our knowledge as to the potential risk factors for risky sexual behavior that have had only minimal prior research attention, specifically as longitudinal risk factors. As our results demonstrate, intervention programs have the difficult task of targeting multiple, high-risk behaviors, each with their own public health importance, and continued research is needed that simultaneously examines these high-risk behaviors.

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Figure 1. Risky Sexual Behavior Path Model

Covariances among predictor variables were included in the model but are not presented for clarity. Bolded paths were significant at $p < .05$

Table 1

Demographic and descriptive information for study sample.

	Male (<i>n</i> = 390)	Female (<i>n</i> = 492)	Caucasian (<i>n</i> = 293)	African American (<i>n</i> = 278)	Hispanic (<i>n</i> = 311)	
Age, <i>M</i> (<i>SD</i>)	15.02 (.72)	15.01 (.69)	14.96 (.67)	15.15 (.70)	14.99 (.69)	<i>F</i> = 2.84
Grade						$\chi^2 = 30.63^{***}$
9 th , % (<i>n</i>)	77.9% (304)	76.6% (377)	83.9% (246)	65.8% (183)	81% (252)	
10 th , % (<i>n</i>)	22.1% (86)	23.4% (115)	16.1% (47)	34.2% (95)	19% (59)	
Lifetime Alcohol Use, % (<i>n</i>)	65.4% (254)	66.0% (325)	69.9% (205)	61.5% (171)	65.2% (203)	$\chi^2 = 4.59$
Lifetime Marijuana Use, % (<i>n</i>)	39.0% (150)	26.5% (128)	35.8% (105)	27.3% (76)	31.1% (97)	$\chi^2 = 4.78$
Lifetime Hard Drug Use, % (<i>n</i>)	11.6% (42)	11.0% (49)	13.6% (40)	7.1% (20)	9.9% (31)	$\chi^2 = 6.41^*$
Physical Victimization, <i>M</i> (<i>SD</i>)	.44 (.92)	.38 (.89)	.35 (.87)	.45 (.94)	.41 (.92)	<i>F</i> = .98
Physical Perpetration, <i>M</i> (<i>SD</i>)	.19 (.57)	.61 (1.11)	.17 (.58)	.54 (.99)	.33 (.87)	<i>F</i> = 14.26 ^{***}
Psychological Victimization, <i>M</i> (<i>SD</i>)	3.01 (2.65)	3.82 (2.72)	3.21 (2.73)	3.74 (2.69)	3.38 (2.71)	<i>F</i> = 2.94 [*]
Psychological Perpetration, <i>M</i> (<i>SD</i>)	2.65 (2.53)	4.14 (2.67)	2.82 (2.54)	3.92 (2.81)	3.08 (2.51)	<i>F</i> = 13.37 ^{***}
Sexual Victimization, <i>M</i> (<i>SD</i>)	.17 (.44)	.38 (.70)	.27 (.63)	.32 (.60)	.27 (.57)	<i>F</i> = .67
Sexual Perpetration, <i>M</i> (<i>SD</i>)	.15 (.39)	.13 (.37)	.12 (.33)	.14 (.44)	.14 (.37)	<i>F</i> = .23
Risky Sexual Behavior (T1), <i>M</i> (<i>SD</i>)	.34 (.55)	.43 (.58)	.31 (.52)	.42 (.60)	.44 (.57)	<i>F</i> = 3.72 [*]
Risky Sexual Behavior (T2), <i>M</i> (<i>SD</i>)	.78 (.86)	.58 (.76)	.64 (.78)	.82 (.87)	.57 (.77)	<i>F</i> = 5.80 ^{***}

* *p* < .05,** *p* < .01,*** *p* < .001

Note: All variables reflect scores at T1 (baseline) unless otherwise indicated.

Table 2

Bivariate correlations among study variables.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Risky Sexual Behavior (T2)	---	.18***	.21***	.13**	.22***	.19***	.05	.09*	.24***	.33***	.17***	.19***
2. Risky Sexual Behavior (T1)		---	.10**	.12**	.10**	.19**	.04	.00	.04	.07*	.11**	.05
3. Physical Victimization			---	.59***	.44***	.34***	.35***	.25***	.12***	.19***	.12***	.11**
4. Physical Perpetration				---	.37***	.46***	.33***	.23***	.13***	.12***	.06	.07*
5. Psychological Victimization					---	.79***	.30***	.21***	.17***	.15***	.16***	.12**
6. Psychological Perpetration						---	.25***	.22***	.18***	.09**	.11**	.08*
7. Sexual Victimization							---	.48***	.11**	.09**	.13***	.06
8. Sexual Perpetration								---	.10**	.09**	.10**	.06
9. Alcohol Use (lifetime)									---	.38***	.21***	.08*
10. Marijuana Use (lifetime)										---	.32***	.09**
11. Hard Drug Use (lifetime)											---	.01
12. Age												---

Note: T1 = Baseline assessment; T2 = 1-year assessment; all variables were assessed at T1 unless otherwise noted

*
 $p < .05$,**
 $p < .01$,***
 $p < .001$

Table 3

Standardized path estimates for overarching model.

	Entire Sample (<i>n</i> = 882)
Predictors (T1)	Risky Sexual Behavior (T2) <i>R</i> ² = .22
Risky Sexual Behavior	.13 (.05) ***
Physical Victimization	.10 (.04) *
Physical Perpetration	-.04 (.04)
Psychological Victimization	.06 (.02)
Psychological Perpetration	.08 (.02)
Sexual Victimization	-.07 (.06)
Sexual Perpetration	.03 (.08)
Lifetime Alcohol Use	.09 (.06) **
Lifetime Marijuana Use	.24 (.06) ***
Lifetime Hard Drug Use	.05 (.09)
Age	.14 (.04) ***

*
p < .05,**
p < .01,***
p < .001*Note:* Standard errors are in parentheses