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Sex Differences in Contraception Non-Use Among Urban Adolescents: Risk Factors for Unintended Pregnancy

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Abstract

BACKGROUND—Contraception non-use among sexually active adolescents is a major cause of unintended pregnancy (UP).

METHODS—In this cross-sectional study we sought to identify overall and sex-specific correlates of contraception non-use using the 2015 Philadelphia Youth Risk Behavior Survey (YRBS) (N = 9540). Multivariate regression models were used to examine mental health, sexual activity, substance use, and violence indicators on reported contraception non-use among sexually active youth.

RESULTS—Marijuana use among boys and girls was a statistically significant risk factor for contraception non-use. Availability of illegal drugs on school property in the past year was also significantly related to contraception non-use among boys.

CONCLUSIONS—These results may inform overall and sex-specific adolescent programs to promote consistent contraception use among urban youth within school-based communities.

Keywords

unintended pregnancy; adolescent health; contraception; substance use

Despite unintended pregnancy (UP) rates declining by more than 50% since 1990,¹ the United States continues to have the highest rate of adolescent UP among developed countries around the world.² UP is defined as a mistimed or unplanned pregnancy at the time of conception and in 2014, approximately 250,000 babies were born to adolescent parents (aged 15–17).^{3,4} Many UPs can be attributed to contraception non-use, inaccurate or

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Human Subjects Approval Statement

The US Centers for Disease Control and Prevention's institutional review board approved the protocol for the Youth Risk Behavior Survey and this secondary analysis was reviewed and approved by the institutional review board at Temple University (IRB# 21251).

inconsistent contraception use, or the use of the withdrawal method.^{5,6} UP yields a plethora of adverse social and health effects impacting negatively on both maternal and child health.^{7,8} For example, UP can limit educational and occupational opportunities, and increase the likelihood of poverty and reliance on public assistance among adolescent parents.^{9,10} Teen parents are more likely to drop out of school, live below the poverty level, and rely on public assistance.^{9,10} From a health perspective, UP has been associated with delayed prenatal care, lower rates of breastfeeding, postpartum depression, low birth weight, preterm birth, and poor child development.^{2,7,9,11} These risks are further exacerbated for adolescents and even more so for low-income adolescents.¹² Given the myriad of negative social and health effects of UP among adolescents, informing strategies to reduce UP are needed to meet the *Healthy People 2020* goal of increasing effective contraception use in adolescents from 43.5% to 54.1%.¹³

Demonstrated risk factors for UP among adolescent boys and girls include multiple sexual partners, use of tobacco, drugs, or alcohol, and experiences with different forms of violence including bullying, physical, and emotional violence.^{4,14,15} Many of these high-risk behaviors co-occur among sexually active boys and girls resulting in complex interactions between behaviors and exposure that may influence reproductive health and well-being.^{14,16,17} For example, depressive symptoms, substance use, and high-risk sexual activity have been shown to co-occur,¹⁸ and experiences with violence may co-occur with risky sexual behaviors such as substance use and contraception non-use.^{19–21} Furthermore, adolescents have particular high rates of contraception non-use²² and report variations in risk behaviors between the sexes, with boys traditionally reporting more risk-taking behaviors than girls.^{22,23} Thus, an investigation of multiple risk behaviors as well as sex differences may yield important insights into the unique factors involved with contraception non-use in the high-risk group of sexually active adolescents.

The multiple health behavior change approach suggests that understanding patterns of risk behavior co-occurrence is a necessary precursor to improved intervention development.^{24,25} Studies to date that have examined the co-occurrence of risk behaviors in adolescents have largely focused on a limited number of behavioral domains (substance use and sexual activity factors)^{18,20,26} and few have considered sex differences in these behaviors.^{27,28} The limited scope of UP risk behaviors considered in previous studies has prevented the simultaneous consideration of a full range of risk behaviors that may co-occur as well as account for confounding effects by multiple behaviors.^{18,20,26} We propose to expand the range of determinants examined for contraception non-use so that the relative contribution of a wide range of factors, and their role in contraception non-use among adolescent boys and girls can be identified.

To address these conceptual and empirical gaps, our aim was to examine the association between behavioral domains (sexual risk behavior, mental health conditions, physical and emotional violence, and substance use) thought to influence contraception non-use among adolescent boys and girls. The specific objective of this assessment was to identify the strongest correlate of contraception non-use overall, and then separately, among adolescent boys and girls using the 2015 Philadelphia, PA Youth Risk Behavior Survey (YRBS). Findings from this study offer important insights into independent risk factors for

contraception non-use among adolescents, sex-specific predictors of contraception non-use, and determine the relative contribution of each domain on UP. This knowledge can inform targeted preventive health interventions and outreach programs to promote contraception use and reduce the risk of UP among adolescents.

METHODS

The Youth Risk Behavior Survey

The YRBS is a national, self-administered survey of high school students, aged 14–18 years, that examines priority health risk behaviors on the national, state, territory, and tribal levels.²⁹ Established in 1991 by the US Centers for Disease Control and Prevention (CDC), this school-based repeated cross-sectional survey collects information on violence, sexual risk behaviors, substance use, mental health, diet, and physical activity in a representative sample of 9–12 grade students every 2 years. The 2015 Philadelphia YRBS used a 2-stage cluster sample design to ensure a representative sample of students. In the first sampling stage, schools from the Philadelphia School District were chosen based on school enrolment size. In the second sampling stage, second period classes from the chosen schools were selected at random to complete the survey.²⁹ All students in selected classes are eligible for participation. One week before survey administration, eligible students and their parents received a “Decline to Participate” form in which they could complete and return if they do not want their child to participate. Students could also decline participation verbally before the survey begins.^{29,30} The response rate for the 2015 Philadelphia YRBS was 68%.

Measures

We used data collected from the 2015 Philadelphia YRBS (weighted N = 29,755). The outcome variable, contraception non-use (yes/no) was determined using the question: “*The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy?*” Students who reported using birth control pills, condoms, IUD or implant, Depo-Provera, vaginal ring, and patch were categorized as “*contraception use*” and the report of no method, the withdrawal method, the report of some other method, or the report of “not sure” were categorized as “*contraception non-use*.”

We assessed sexual behavior, mental health indices, violence exposure, and substance use as correlates of contraception non-use. Frequent sexual activity was assessed by the question: “*During your life, how many people have you had sexual intercourse with?*” Students reporting 4 or more partners were classified as high sexual activity and 0–3 partners were classified as low sexual activity. Age of first intercourse (“*How old were you when you had sexual intercourse for the first time?*”) was dichotomized to before age 13 versus 13 years or older. Tests for multicollinearity using tolerance and VIF showed a violation of independence assumption for the sexual activity questions; thus, frequent sexual activity was used in the analysis.

The mental health variables of reported depressive symptoms, suicidal ideation, and suicide attempts were examined in the study. Depressive symptoms were measured using a single dichotomous item: “*During the past 12 months, did you ever feel so sad or hopeless almost*

every day for two weeks or more in a row that you stopped doing some usual activities?” (yes/no). Suicidal ideation (“During the past 12 months, did you ever seriously consider attempting suicide?”) and suicide attempt (“During the past 12 months, how many times did you actually attempt suicide?”) were also coded dichotomously (yes/no). Tests for multicollinearity using tolerance and VIF showed violation of independence assumption for the mental health questions; thus, suicidal ideation was retained in the multivariable model.

We identified reported dating violence with the question: “During the past 12 months, how many times did someone you were dating or going out with physically hurt you on purpose?”, coded as experiencing dating violence (yes/no).³¹ The violence-related constructs of electronic bullying also were assessed in the study. Electronic bullying was determined using the single item: “During the past 12 months, have you ever been electronically bullied?” (yes/no). Tests for multicollinearity using tolerance and VIF did not show violation of independence assumption between these 2 violence domains; thus, both questions were included in the multivariable model to assess violence exposures.

Reported substance use was assessed using single items for marijuana, alcohol, cocaine, tobacco, and prescription drugs. For example, marijuana use was assessed using the question “During your lifetime, how many times have you used marijuana?” and responses included “0 times,” “1–2 times,” “3–9 times,” “10–19 times,” “20–39 times,” “40–99 times.” This measure was reclassified and dichotomously coded as “Students who ever used marijuana one or more times during their life” with responses of “yes” for marijuana use at least once during lifetime and “no” for never used marijuana. Substance use before sex also was assessed using the question: “Did you drink alcohol or use drugs before you had sexual intercourse the last time?” (yes/no). Drug access at school was assessed using the question: “During the past 12 months, has anyone offered, sold, or given you an illegal drug on school property?” (yes/no). Tests for multicollinearity using tolerance and VIF showed violations of independence assumptions among many of these substance questions; thus, lifetime use of marijuana (yes/no) and being offered, sold or given drugs at school in the last year (yes/no) were retained in the analysis because these measures were statistically significant in the bivariate analysis and included a limited number of missing data points.

Data Analysis

Data analyses were conducted using STATA version 14.0.³² We estimated sampling errors through application of the primary sampling units and strata given in the data; calculated using Taylor Series Linearization.³³ To allow for generalizability to high school students in Philadelphia, sampling weights were applied.³³ Descriptive statistics, sample size and percentages for all categorical variables, and mean and standard deviation for continuous variables were generated. The students who reported “I have never had sexual intercourse” were excluded from this analysis (N = 11,125) as well as students who self-identified as gay or lesbian (N = 1268).³¹ To examine differences in exposure variables by contraception non-use, chi-square goodness of fit tests were used for categorical variables, and *t* tests for continuous variables. These bivariate models were then stratified by sex to determine correlates of contraception non-use among adolescent boys and girls. A multivariable regression model of contraception non-use was created to examine the adjusted associations

of sexual behaviors, mental health indices, violence exposures, and substance use factors with contraception non-use within the total sample and then stratified by sex. To create the full-sample multivariable model, as described, tests of multicollinearity using tolerance and VIF were assessed for questions within each of the domains (sexual behavior, mental health indices, violence exposures, and substance use). In instances of violations of independence, the question with the strongest association with contraception non-use on the bivariate level was entered into the multivariable model ($p < .05$).

RESULTS

Participant Characteristics

The sample was 50% female, 51% black/African-American, and 53% were 15–16 years old (ages ranged from 12- to 18-year-old). One-half of respondents reported ever having sexual intercourse (52%), and one third reported contraception non-use prior to last sex activity (33%). Thirty-seven percent of respondents reported having 4 or more lifetime sexual partners, and 19% reported having sex for the first time before age 13. Thirteen percent of respondents reported suicidal ideation in the past year, 34% reported depressive symptoms, and 11% reported making one or more suicide attempts in the past year. Seven percent of respondents reported being a victim of e-bullying, and 10% reported being a victim of physical dating violence in the past year. About 61% of respondents reported a history of marijuana use, 75% reported a history of alcohol use, 3% reported a history of cocaine use, 18% reported a history of unauthorized prescription drug use, and 44% reported a history of smoking cigarettes. Almost one third (31%) reported being offered, sold, or given illegal drugs on school property in the past year, and about 14% reported substance use before the last time they had sex (Table 1).

Factors Associated With Contraception Non-Use: Bivariate Level

Overall, a larger proportion of girls reported contraception non-use than boys (56% vs 44% respectively, $OR = 1.57$, 95%CI 1.13–2.19, $p < .05$). Contraception non-use was significantly associated with depressive symptoms (43% vs 57%; $OR = 1.78$, 95%CI 1.13–2.19), suicidal ideation (18% vs 82%; $OR = 1.93$, 95%CI 1.27–2.95), suicide attempt (19% vs 81%; $OR = 2.71$, 95%CI 1.62–4.54), history of marijuana use (75% vs 25%; $OR = 2.49$, 95%CI 1.44–4.32), history of alcohol use (85% vs 15%; $OR = 2.44$, 95%CI 1.06–5.62), substance use prior to sex (20% vs 80%; $OR = 2.27$, 95%CI 1.14–4.54), and being offered, sold, or given illegal drugs on school property in the past year (40% vs 60%; $OR = 1.95$, 95%CI 1.29–2.96) (Table 1).

In the female-specific model, 24% of girls reported 4 or more lifetime sexual partners, 19% reported suicidal ideation, 11% were victims of e-bully in the past year, 14% reported physical dating violence in the past year, and 32% reported ever being offered, sold, or given illegal drugs on school property; none of these factors were significantly associated with contraception non-use (Table 2). Almost two thirds of girls reported history of marijuana use, and marijuana use was significantly associated with contraception non-use on the bivariate level ($OR = 2.37$, 95%CI 1.21–4.62, $p < .05$) (Table 2).

In the male-specific model, almost one-half of all boys reported having 4 or more lifetime sexual partners; only 8% reported suicidal ideation, 4% reported being a victim of e-bullying, and 6% reported being a victim of physical dating violence (Table 3). Six of 10 boys (61%) reported a history of marijuana use, which was significantly associated with contraception non-use (OR = 2.74, 95%CI 1.51–4.97, $p < .05$). Additionally, 29% reported ever being offered, sold, or given illegal drugs on school property, which also was significantly associated with contraception non-use (OR = 3.07, 95%CI 1.82–5.18, $p < .01$) (Table 3).

Models of Contraception Non-Use: Multivariable Level

In the full multivariable model predicting contraception non-use, sex, lifetime history of marijuana use, and access to drugs on school property remained significantly associated with contraception non-use. Girls had a significantly greater odds of contraception non-use than boys (aOR = 1.73, 95%CI 1.04–2.88, $p < .05$) and adolescents who reported a history of marijuana use had more than a 2-fold increased odds of contraception non-use (aOR = 2.30, 95%CI 1.31–4.02, $p < .05$). In addition, adolescents who were offered, sold, or given illegal drugs on school property had almost a 60% increased odds of contraception non-use (aOR = 1.59, 95%CI 1.00–2.51, $p < .05$) (Table 4).

In the sex-specific multivariable models, a history of marijuana use was significantly related to contraception non-use for girls (aOR = 2.37, 95%CI 1.22–4.60, $p < .05$). Marijuana use was the only significant predictor of contraception non-use for girls. Among boys, a history of marijuana use, as well as ever being offered, sold, or given illegal drugs on school property were both associated with contraception non-use (aOR = 2.28, 95%CI 1.03–5.02, $p < .05$ and aOR = 2.42, 95%CI 1.20–4.90, $p < .05$; respectively) (Table 4). We examined the role of tobacco, cocaine, and prescription drug use on contraception non-use and found no significant role of any of these substances predicting contraception non-use in the full or sex-specific models.

DISCUSSION

In this study, we examined multiple risk behaviors as well as sex differences in contraception non-use in a representative sample of sexually active adolescents in Philadelphia, PA. We found a high level of marijuana use among urban adolescents. Over 60% of adolescent boys and girls reported marijuana use, and marijuana use was a strong, statistically significant, and independent predictor of contraception non-use overall and for both boys and girls. Sexually active girls were 73% more likely to report contraception non-use compared to sexually active boys, but we found only 1 sex-specific predictor of contraception non-use. Boys who reported being offered, sold, or given illegal drugs on school property in the past year were significantly more likely to report contraception non-use than their female counterparts. To our knowledge, this is one of the first studies to examine many behavioral risk domains simultaneously, as well as assess sex-specific factors related to contraception non-use among urban adolescents.

Marijuana use was the strongest predictor of contraception non-use among the range of factors considered in this study. Importantly, the strong and statistically significant

association between marijuana use and contraception non-use was found in both the main and sex-specific models. This finding is consistent with other studies that have identified marijuana use as a predictor of high sexual risk behaviors, such as multiple sexual partners, and contraception non-use.^{18,20,26} Thamotharan et al²⁰ found that in a national YRBS sample of both boys and girls, those with greater lifetime marijuana use had increased odds of engaging in sex, as well as reporting less condom use during sex.²⁰ Although they only examined substance use and high sexual risk behaviors, we continued to find marijuana use related to non-use of all types of contraception after adjusting by sex.

Marijuana use may have particular bio-physiological effects on the body that differ from that of tobacco and alcohol use. In adolescents, marijuana use can decrease perception of harm, have long-lasting emotional effects, and increase deficits in executive cognitive function.³⁴ Neuroimaging studies have identified activity alterations in brain regions that may mediate executive function among young adults with a history of adolescent marijuana use. Camchong et al³⁵ identified detrimental effects to resting brain functional connectivity, intelligence, and executive functioning in adolescent marijuana users.³⁵ Decreased cognitive function can inhibit decision making abilities, thereby placing adolescent users at greater risk for behaviors such as multiple sexual partners and contraception non-use.^{34,36} Meier et al³⁷ found that adolescent marijuana use was significantly associated with a decline in IQ, and differences in IQ remained 1 year following marijuana cessation. In addition, neuropsychological functioning was not fully restored among individuals who started to use marijuana during adolescence, indicating that marijuana may have long-term neurotoxic effects on the developing adolescent brain.³⁷

We also found that sexually active girls were more likely not to use contraception compared to sexually active boys. Our results identified only 1 sex-specific predictor. Boys with drug access on school property were almost 2–1/2 times more likely to report contraception non-use compared to boys not reporting being offered, sold, or given illegal drugs on school property. Johnson et al³⁸ also found that boys are more likely than girls to be offered or to gain access to drugs or alcohol during school. Buying, selling, or being offered drugs provides ample opportunity to initiate and take part in drug use on a regular basis which can lead to sexual risk taking and contraception non-use. Interventions and policy change to reduce drug access on school property may be beneficial, as reduction in access can reduce use and increase condom use among boys. Although we found minimal sex differences, it is important to consider the implications of such. Waller et al²² denoted that due to the significant cognitive and hormonal changes observed during puberty, boys and girls may experience differences in self-perceptions and in perception of social interactions that can alter their social context.²² These feelings of vulnerability in social contexts can lead to experimentation in substance use and risk-taking behaviors. Nahom et al³⁹ supports this construct and discussed that boys and girls experience different social pressures surrounding sex and that there may be a need for tailored education methods and different modalities of knowledge dissemination regarding sexual health education.³⁹ Future steps include continuing the investigation of sex differences in risk behaviors for adolescent UP to improve understanding of their unique risks for UP.

We initially found mental health indices, such as suicidal ideation and depressive symptoms, to be significant predictors of contraception non-use but only marijuana use remained significant in both the total sample and the sex-specific models. Shrier et al⁴⁰ found that substance use reduced the relationship between depression and condom use among sexually active adolescents,⁴⁰ and when substance use was added to the multivariable model, depressive symptoms were no longer significantly related to condom use and incidence of STI.⁴⁰ It is, however, important to note the high proportion of adolescent boys and girls reporting suicidal ideation, depressive symptoms, and violence exposures in our study population.

Limitations

In any study, it is important to address limitations. First, YRBS data are collected via a self-reported survey administered in a school setting, so there is potential for misreporting, particularly on questions surrounding illegal activity, substance use, and sexual behavior. However, the CDC takes action to ensure validity of the survey, and survey administrators discuss with the students that their results are confidential before survey completion.²⁹ Second, because this is a school-based survey, students that do not attend school are missing from the data. To minimize this limitation, sample weights were applied to the data to increase the representative nature of the sample to the adolescent population in Philadelphia. Last, YRBS data are cross-sectional in nature; therefore, we can only investigate factors contributing to contraception non-use and are not able to assess the direction of the relationship, infer consistent contraception non-use over time, or causality.

Conclusions

We found that among sexually active urban adolescents, lifetime marijuana use was positively associated with the increased likelihood of reporting contraception non-use during the last time having sex for both sexually active boys and girls. We also found that girls were more likely to report contraception non-use than boys. Although identification of sex differences was a primary aim of this study, we observed only one—boys who reported being offered, sold, or given illegal drugs on school property were more likely to report contraception non-use, and the availability of drugs was not related to contraception non-use among girls.

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IMPLICATIONS FOR SCHOOL HEALTH

Some of the main findings from this study are that contraception non-use remains common among sexually active high school students with current marijuana use and availability of illegal drugs on school property are significantly related to this outcome.

Consequently:

- High school students may benefit from more intensive efforts to promote contraception.
- School health education efforts that explain the relationships of drug use, impaired judgment, and unprotected sex are warranted.
- School policies to prevent illegal drugs being available on school property are important not just to prevent drug use, but may also have implications for other health behaviors including safe sex.

Table 1Weighted Risk-Factor Frequencies and Bivariate Regression Models for the Total Sample[†]

	Contraception Use (%)		OR 95%CI	p-Value
	No	Yes		
Sex (N = 11,780)	N = 3945	N = 7835	1.57 (1.13–2.19)	.01 *
Female (N = 5676)	55.7	44.4		
Male (N = 6104)	44.3	55.6		
Sexual behavior				
Four or more lifetime sexual partners (N = 11,591)	N = 3845	N = 7746	1.32 (0.92–1.90)	.128
Yes (N = 4308)	41.6	35.0		
No (N = 7283)	58.4	65.0		
Had sex before age 13 (N = 11,789)	N = 3934	N = 7855	1.51 (0.85–2.71)	.156
Yes (N = 2256)	23.6	16.9		
No (N = 9533)	76.4	83.1		
Mental health				
Seriously considered attempting suicide in the past year (N = 11,694)	N = 3919	N = 7775	1.93 (1.27–2.95)	.003 *
Yes (N = 1517)	18.2	10.3		
No (N = 10,177)	81.8	89.7		
Felt sad or hopeless almost every day for two or more weeks in the past year (N = 11,605)	N = 3867	N = 7738	1.78 (1.20–2.64)	.005 *
Yes (N = 3973)	43.1	29.8		
No (N = 7632)	56.9	70.2		
Attempted suicide in the past year (N = 9202)	N = 3010	N = 6192	2.71 (1.62–4.54)	.0005 *
Yes (N = 1037)	18.5	7.7		
No (N = 8165)	81.5	92.3		
Violence				
Victime-bullying in past year (N = 11,782)	N = 3950	N = 7832	1.21 (0.59–2.48)	.595
Yes (N = 848)	8.1	6.8		
No (N = 10,934)	91.9	93.2		
Victim of physical dating violence in past year (N = 10,356)	N = 3472	N = 6885	1.99 (0.98–4.02)	.056
Yes (N = 1058)	14.7	8.0		
No (N = 9299)	85.3	92.0		
Substance use				
Ever used marijuana during lifetime (N = 11,145)	N = 3650	N = 7495	2.49 (1.44–4.32)	.002 *
Yes (N = 6806)	74.8	54.4		
No (N = 4339)	25.2	45.6		
Ever drank alcohol during lifetime (N = 11,224)	N = 3623	N = 7601	2.44 (1.06–5.62)	.036 *
Yes (N = 8430)	85.3	70.3		
No (N = 2794)	14.7	29.7		
Drank alcohol or used drugs before the last time having sex (N = 8101)	N = 2770	N = 5331	2.27 (1.14–4.54)	.022 *
Yes (N = 1100)	20.3	10.1		

	Contraception Use (%)			
	No	Yes	OR 95%CI	p-Value
No (N = 7001)	79.7	89.9		
Ever used cocaine during lifetime (N = 11,615)	N = 3872	N = 7743	1.42 (0.55–3.67)	.461
Yes (N = 390)	4.1	3.0		
No (N = 11,225)	95.9	97.0		
Ever took prescription drugs without a prescription during lifetime (N = 11,565)	N = 3794	N = 7770	1.46 (0.87–2.45)	.143
Yes (N = 2025)	21.3	15.6		
No (N = 9540)	78.7	84.4		
Offered, sold, or given illegal drugs on school property during past year (N = 11,649)	N = 3910	N = 7739	1.95 (1.29–2.96)	.003 [*]
Yes (N = 3569)	40.3	25.7		
No (N = 8080)	59.7	74.3		
Ever tried cigarette smoking (N = 11,445)	N = 3809	N = 7635	1.36 (0.86–2.13)	.180
Yes (N = 4980)	48.5	41.0		
No (N = 6465)	51.5	59.0		

^{*} Denotes statistical significance, $p < .05$.

[†] Covariate sample sizes are different due to weighting procedures.

Table 2Weighted Risk-Factor Frequencies and Bivariate Regression Models Among Girls[†]

	Contraception Use (%)		OR (95% CI)	p-Value
	No	Yes		
Sexual behavior				
Four or more lifetime sexual partners (N = 5547)	N = 2118	N = 3429	1.85 (0.79–4.34)	.150
Yes (N = 1320)	30.9	19.4		
No (N = 4227)	69.1	80.6		
Mental health				
Seriously considered attempting suicide in the past year (N = 5658)	N = 2196	N = 3462	1.55 (0.76–3.16)	.218
Yes (N = 1058)	22.9	16.1		
No (N = 4650)	77.1	84.9		
Violence				
Victime-bullying in past year (N = 5676)	N = 2196	N = 3480	0.88 (0.35–2.25)	.786
Yes (N = 621)	10.2	11.4		
No (N = 5055)	89.8	88.6		
Victimof physical dating violence in past year (N = 5097)	N = 1995	N = 3102	1.39 (0.57–3.37)	.453
Yes (N = 732)	16.9	12.8		
No (N = 4365)	83.1	87.2		
Substance use				
Ever used marijuana during lifetime (N = 5417)	N = 2075	N = 3342	2.37 (1.21–4.62)	.014*
Yes (N = 3317)	73.3	53.7		
No (N = 2100)	26.7	46.3		
Offered, sold, or given illegal drugs on school property during past year (N = 5665)	N = 2184	N = 3480	1.28 (0.73–2.25)	.379
Yes (N = 1835)	35.7	30.3		
No (N = 3830)	64.3	69.7		

* Denotes statistical significance, $p < .05$.[†] Covariate sample sizes are different due to weighting procedures.

Table 3Weighted Risk-Factor Frequencies and Bivariate Regression Models Among Boys[†]

	Contraception Use (%)			
	No	Yes	OR (95% CI)	p-Value
Sexual behavior				
Four or more lifetime sexual partners (N = 6036)	N = 1727	N = 4309	1.34 (0.79–2.26)	.262
Yes (N = 2988)	54.7	47.4		
No (N = 3048)	45.3	52.6		
Mental health				
Seriously considered attempting suicide in the past year (N = 6029)	N = 1723	N = 4305	2.30 (0.86–6.10)	.092
Yes (N = 460)	12.3	5.7		
No (N = 5569)	87.7	94.3		
Violence				
Victime-bullying in past year (N = 6093)	N = 1749	N = 4344	1.69 (0.48–6.01)	.402
Yes (N = 222)	5.1	3.1		
No (N = 5871)	94.8	96.9		
Victim of physical dating violence in past year (N = 5233)	N = 1471	N = 3762	3.52 (0.88–14.03)	.073
Yes (N = 299)	11.4	3.5		
No (N = 4934)	88.6	96.5		
Substance use				
Ever used marijuana during lifetime (N = 5694)	N = 1569	N = 4152	2.74 (1.51–4.97)	.002 *
Yes (N = 3455)	76.7	54.6		
No (N = 2239)	23.3	45.4		
Offered, sold, or given illegal drugs on school property during past year (N = 5977)	N = 1726	N = 4251	3.07 (1.82–5.18)	.0001 *
Yes (N = 1727)	46.2	21.9		
No (N = 4250)	53.8	78.1		

* Denotes statistical significance, $p < .05$.[†] Covariate sample sizes are different due to weighting procedures.

Table 4

Weighted Multivariate Regression Models: Total and Sex-Specific Models

	Model 1: Total sample N = 9540			Model 2: Girls only N = 4758			Model 3: Boys only N = 4782		
	OR	95%CI	p-Value	OR	95%CI	p-Value	OR	95%CI	p-Value
Sex	1.73	1.04–2.88	.036*	-	-	-	-	-	-
Sexual behavior									
Four or more lifetime sexual partners	1.22	0.80–1.87	.344	1.56	0.64–3.83	.312	0.94	0.55–1.60	.815
Mental health									
Seriously considered attempting suicide in the past year	1.30	0.82–2.07	.260	1.12	0.52–2.43	.759	1.61	0.44–5.93	.457
Violence									
Victim of e-bullying the past year	0.85	0.38–1.93	.697	0.79	0.28–2.20	.638	1.03	0.20–5.34	.972
Victim of physical dating violence the past year	1.20	0.55–2.60	.632	1.03	0.41–2.56	.949	2.03	0.48–8.54	.323
Substance use									
Ever used marijuana	2.30	1.31–4.02	.005*	2.37	1.22–4.60	.013*	2.28	1.03–5.02	.042*
Offered, sold, or given illegal drugs on school property during the past year	1.59	1.00–2.51	.049*	1.11	0.65–1.90	.678	2.42	1.20–4.90	.016*

* Denotes statistical significance, $p < .05$.