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Health Compromising Behaviors by Gender among Florida Adolescents

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ABSTRACT

The current study examined the differences in prevalence and correlates of three health compromising behaviors (lifetime alcohol use, illicit drug use, and risky sexual behaviors) among male and female adolescents. Secondary analysis of the Florida Youth Risk Behavior Survey (YRBS) was performed. Multivariable logistic regression models that assessed the probability of each behavior were fitted separately for each gender. There were 1828 males and 2025 females (n=3,853). Prevalence of frequent use of all substances (alcohol and illicit drugs) was higher among males than females. Common correlates of all three health compromising behaviors included age group, grade level, delinquent behaviors, forced sexual intercourse, and age of first sexual intercourse. However, association between delinquent and sexual risk behaviors was significant only among males. In prevention of risk and promotion of healthy behaviors among adolescents, underlying differences between genders and other variations should be considered.

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Introduction

Compared to adults, adolescents in the United States (U.S.) are disproportionately affected by Human Immunodeficiency Virus (HIV) and other sexually transmitted infections (STIs) (Centers for Disease Control and Prevention (CDC), 2007; DiClemente, Salazar, & Crosby, 2007; Eng & Butler, 1997; Jemmott, Jemmott, Braverman, & Fong, 2005; Milhausen et al., 2003; U. S. Department of Health and Human Services, 1999). Similarly, alcohol and illegal drug use among adolescents is a serious problem with adverse health and social consequences (Saxe et al., 2001; Johnston, O'Malley, Bachman, 2002). Whereas studies reported that adolescent males drank and used more alcohol and illicit drugs than females did (Johnston et al., 2002; Turner & Gil, 2002), recent evidence indicated that substance use among adolescent females may be rising (National Institute on Drug Abuse (NIDA), 2006). The key gender-difference findings from the Monitoring the Future (MTF) survey in 2005 included that marijuana abuse was more prevalent among males than females but use of any illicit drug other than marijuana was higher among females than males (NIDA, 2006). Other risk behaviors also varied by gender among adolescents in the U.S. For example, adolescent males were shown to have a higher number of sexual partners and an earlier initiation of sex than their female counterparts (Centers for Disease Control and Prevention [CDC], 2004; Krantz, Lynch, & Russell, 2002; Zweig, Lindberg, & McGinley, 2001).

Gender variations in sexual and substance use risks have been reported in both regional (Houck et al., 2006) and national studies including the National Longitudinal Study of Adolescent Health (AddHealth) (Zweig et al., 2001) and National Survey on Drug Use and Health (NSDUH) (Wu, Schlenger, & Galvin, 2006). Further, co-occurrence of the risk behaviors during adolescence has been

documented. Because of the exposure to and involvement with alcohol, drugs, and risky sexual practices during adolescence, the risk-taking behaviors in adolescent population tend to co-exist (Zweig et al., 2001; Abram, Teplin, McClelland, & Dulcan, 2003; Ary et al., 1999; Bachanas et al., 2006; Bryan, & Stallings, 2002; Burge, Felts, Chenier, & Parrillo, 1995; Cooper, Peirce, & Huselid, 1994; Santelli, Robin, Brener, & Lowry, 2001; Shrier, Emans, Woods, & DuRant, 1997; Staton et al., 1999; Tapert, Aarons, Sedlar, & Brown, 2001). For example, unprotected sexual practice such as non-use of condom and multiple sexual partners have been shown to coexist with alcohol and drug use (Bachanas et al., 2002; Burge et al., 1995; Cooper et al., 1994; Santelli et al., 2001; Shrier et al., 1997; Staton et al., 1999). Sexual risk and drug use behaviors among adolescents have been associated with academic or school and delinquent problems as well. These studies indicated that sexual risk practice increased among adolescents who also had substance use and delinquency problems (Zweig et al., 2001; Abram et al., 2003; Ary et al., 1999; Bachanas et al., 2006; Burge et al., 1995).

The rationale of this study is two-fold. First, male-female differences in sexual, substance use and delinquent behaviors have been demonstrated among U.S. adolescents but research among Florida adolescents is scant. Recent national findings suggest that profiles of sexual, substance use and delinquent behaviors by gender should be examined in adolescent populations of different geographic areas. The risk differences in male and female adolescents of Florida may be systematically different from adolescents in the nation or in other parts of the country. Persons of Hispanic origin in Florida and the U.S. are 20.2% and 14.8%, respectively, in 2006 (U.S. Census Bureau, 2006). Ethnic diversity and high proportion of Hispanics in

Florida provided a unique setting to evaluate these risks by gender among adolescents of the state. For example, the behavioral construct of “marianisma” or reverence for purity in the female can serve as a protective factor in delayed sexual intercourse for Hispanic females, but the corresponding “machismo” for Hispanic males would not have this effect (Wood & Price, 1997). Second, studies that examined risky behaviors of Florida youth often concentrated on one risk behavior only (risky sex or illegal drug use behavior). As indicated before, many adolescents often participate in more than one risk behaviors. This interrelatedness of risks supports the Problem Behavior Theory (Jessor, 1998) among adolescents. The Problem Behavior Theory asserts that involvement in any one problem behavior (e.g. alcohol use) increases the likelihood of involvement in other problem behaviors (e.g. sexual risk and delinquent behaviors) due to their linkages in the social ecology of adolescents (Jessor, 1998). Hence, we examined the three main risks (sexual risk, alcohol and illicit drug use behaviors) and related risks such as school performance and delinquent behaviors. We hypothesized that the probability of alcohol use, illicit drug use and sexual risk behavior would vary between genders.

Methods

Procedures

This study utilized the Florida High School Youth Risk Behavior Survey (YRBS) of 2003. Biennial national surveys were conducted by the CDC and state level surveys were collected by the Florida Educational and Health Agencies using the CDC guideline and instrument. The Institutional Review Board (IRB) at Florida International University (FIU) provided exempt approval to use the de-identified YRBS data. A two-stage cluster (school and class) sampling design was used to produce representative samples of students in grades 9 through 12 in Florida public high schools. All participants completed the self-administered, anonymous survey which contained 99 multiple choice items. Detailed methodology, including the reliability of the instrument, for the YRBS appears elsewhere (Brener et al., 1995; Brener et al., 2002; Brener et al., 2004; Grunbaum et al., 2004). Briefly, the Kappa statistics for the majority (72%) of the items were in substantial agreement (61% to 80%) between two administrations of the same survey (Brener et al., 2004; Grunbaum et al., 2004). The response rate in 2003 was 66%. The response rate of 60% or greater was considered adequate for data to be weighted and generalizable to Florida public high school population (Florida Department of Health, 2003).

Sample

Among 4,080 students who participated in the Florida YRBS, 207 students who identified themselves as multiple ethnicities and missing ethnicity information were excluded. Among 3873 students, 20 students did not provide gender information (n=3,853). There were 2025 females and 1828 males.

Measures

All measures were collected via self-reports cross-sectionally. Risk behaviors examined were school performance, delinquent behaviors, alcohol use, illicit drug use, and sexual risks. Race/ethnicity was grouped as White, African American, Hispanic and others. Race/ethnic groups such as American Indians, Asians, and Native Hawaiians were combined as “others” due to small sample size in each subgroup. The justification for categorization or recoding of the original YRBS variables was based on the evidence from the past studies and/or the sample size available in each category. The measures are summarized below but the detailed rationale with references are described elsewhere (Hlaing, de la Rosa, & Niyonsenga, 2007).

Demographic Characteristics: Age (years) was dichotomized as 15 or younger versus older than 15 years (≤ 15 versus > 15 years). Other covariates included in the analyses were gender (male and female); ethnicity (White, African American, Hispanic or Latino, and Others); and grade level (9th through 12th grade).

School Performance and Delinquent Behaviors: School performance in the past year was treated as a binary variable with letter grade Cs or better versus Ds or worse grades to compare risks among those with below and above average grades. Past year delinquent behaviors included: (a) ran away from home for more than 24 hours; (b) physically hurt a family member; (c) physically harmed or threatened someone with a weapon; (d) stole a car/motorcycle; (e) stole something worth more than \$ 300; and (f) was a gang member. Delinquent behaviors were further grouped into four mutually exclusive categories: those with none of the delinquent behavior were coded as 0; those who ran away from home only were coded as 1; those who belonged to at least one of the categories from b through e (above) were coded as 2 or seriously delinquent group; and gang members were coded as 3.

Three Main Dependent Variables: The dependent variables were lifetime use of alcohol, illicit drug,

and sexual risk behaviors. For prevalence of alcohol and illicit drug use, any versus no use categories were created. In addition, alcohol use (number of days) and illicit drug use (number of times) lifetime was further coded into three categories as nonusers or abstainers, experimental or infrequent users, and frequent users as below.

Lifetime Alcohol Use: Alcohol abstinence was defined as zero day of use, experimentation was defined as from one to nine days of use, and frequent use was defined as use on ten or more days. In addition, age (years) at initiation was dichotomized as earlier initiators (< 15) versus later initiators (≥ 15) of alcohol.

Lifetime Illicit Drug Use: Nonusers were those who had not used any of these seven drugs: marijuana, cocaine, inhaled glue, aerosol spray, or paint, heroin, ecstasy, methamphetamines, and steroid pills. Infrequent users were those who used at least one of the seven drugs with a frequency of from one through nine times for any drug. Frequent users were those who used at least one of the seven drugs ten or more times. Age of initiation was available for marijuana only; the cut-off age for marijuana first use was set at 15 years of age (< 15 versus ≥ 15).

Sexual Risks: Four risks that may predispose to HIV or STIs were identified from the YRBS. They were condom use at and use of alcohol or illicit drugs prior to last sexual intercourse, lifetime injection drug use (IDU), and multiple sexual partners. No condom use and usage of alcohol/drugs before sex were coded as yes versus no. The responses “yes” and “no” corresponded to “nonusers” and “users” of condom, respectively. Because IDU was known to increase the risk of HIV, it was included as one of the risky sex behaviors. One episode of IDU lifetime was defined as users (yes) and no IDU was defined as nonusers (no). Those who had four or more lifetime sexual partners were considered high risk (yes), whereas those with fewer than four partners were low risk (no) groups. In addition, a composite dependent variable of “at least one sexual-risk behavior” was created. Those that responded “yes” to at least one of the four risks indicated were coded as high risk group (yes). Those that responded “no” to any of the four risks were coded as low or no risk group (no). Similar to initiation age of alcohol and marijuana, the cut-off age for sexual debut was set at 15 years of age (< 15 versus ≥ 15). In addition, history of forced sexual intercourse and HIV/AIDS education were also dichotomized as “yes” and “no” in this report. Analyses

The Statistical Analysis System (SAS[®]) software version 9.1 was used for data management and analyses. Because the new version of SAS[®] could handle the complex survey data by accounting for weighted data, cluster sampling and non-responses, the traditional tool of SUDAAN was not necessary for our analyses. To allow for the design and sampling effects, weighted frequencies were presented. Missing data were not imputed. Descriptive statistics were computed for all participants and gender-specific groups. Stratified analyses using Rao-Scott chi-square (χ^2) test for differences between males and females were performed. Three separate logistic regression models (alcohol use, illicit drug use, and at least one sexual risk) were evaluated for each gender. Multivariable logistic regression models were fitted to assess the correlates of lifetime frequent alcohol use, lifetime frequent illicit drug use, and at least one sexual risk behavior. In addition to the demographic covariates mentioned above, each logistic model included school performance, delinquent behaviors and initiation related variable(s). All three initiation factors (age at initiation of alcohol, marijuana, and sexual intercourse) were included in the models. For at least one sexual risk model, lifetime use of alcohol and illicit drug use covariates were included. All odds ratios and the corresponding confidence limits presented were mutually adjusted for the other correlates. Rao-Scott χ^2 statistics for significance testing of parameter estimates and confidence intervals for adjusted odds ratios were computed. For lifetime alcohol and illicit drug use, polytomous logistic regression with proportional odds model was used. Specifically, frequent users were compared with nonusers and infrequent users. For the probability of one sexual risk model, a binary outcome at least one versus no risk behavior was used. Sampling weights were included and design effects were considered in the logistic modeling process.

Results

The majority of participants were whites, in 9th grade, 15 years or older in age, and had received HIV/AIDS health education in schools. Overall, there were no significant differences in age group, ethnicity, grade level or age of initiation of alcohol between genders. Over 90% of male and female students reported that their school performance in the past year was above average (Cs or better grade). Approximately 19.4% and 31.6% of females and males, respectively, had their first sexual intercourse before 15 years of age. More males (31.2%) had used marijuana before age 15 compared with females (22.8%). Over 53% of students of each gender had used alcohol before 15

years of age. Slightly higher proportions of females (10.0%) had experienced forced sexual intercourse compared with males (6.9%). More males (10.7%) were likely to be gang members than females (4.4%), with more females (29.9%) reported of other seriously delinquent behaviors than males (26.9%) (Table 1).

As indicated in Table 2, any use of alcohol, inhaled glue, aerosol spray or paint, and ecstasy were not significantly different between males and females. Prevalence of any use of all substances was consistently higher in males than females except alcohol. Likewise, proportions of frequent users of all substances were higher in males compared with their female counterparts. Experimental or infrequent users of alcohol, marijuana, glue substances, and ecstasy tended to be females. More males than females experimentally or infrequently used cocaine, heroin, methamphetamine, and steroid pills. When all seven illicit drugs were combined, experimental or infrequent use in females (22.3%) was higher than in males (17.6%).

More females (20.3%) reported of not using condom at their last sexual intercourse than their male (17.8%) peers. However, higher proportions of the other three sexual risk behaviors were found in males than in females. Specifically, 20.3% and 10.7% of males and females, respectively, had four or more sexual partners in their lifetime. About 4.0% (males) and 1.6% (females) reported of injecting drugs. Similarly, 12.2% of males and 7.2% of females used alcohol or drugs before their last sexual intercourse. Proportions of male students with one to four sexual risk behaviors were consistently higher than that of female students (Table 3).

Results from the multivariable logistic regression models indicating adjusted odds ratios (OR) and corresponding confidence intervals can be seen in Table 4. These models identified correlates of three dependent variables namely frequent use of alcohol, frequent use of illicit drugs, and at least one sexual risk behavior. Three models for each gender were fitted. Results of six logistic models are summarized below by each correlate.

Age: The odds of frequent use of alcohol and illicit drugs and having at least one sexual risk behavior were higher in older (> 15 years) adolescents compared with their younger counterparts (≤ 15 years). Older age was a risk factor for all three dependent factors regardless of gender.

Ethnicity: Compared with reference (other ethnicity) group males, Hispanic males were less likely to use illicit drugs. Similarly, African American males were less likely to be frequent users of both alcohol and

illicit drugs. White females were more (OR = 1.8) likely to use alcohol frequently compared with reference group females. Other findings relating to ethnicity were not statistically significant.

Grade Level: In general, a positive relationship was observed between grade levels 9 through 12 and the risks for alcohol and illicit drug use (higher grade and higher risk) in both genders. However, compared with the referent 9th graders, 10th grade boys did not have increased risk of illicit drug use. Likewise, a positive relationship between grade level and sexual risk in both genders was observed although the relationship was statistically significant between the reference (9th graders) group and 11th as well as 12th graders. Boys and girls in 10th grade were not significantly more likely to possess sexual risks than their 9th grade peers.

School Performance: Interestingly, school performance was a significant correlate for alcohol and illicit drug use but not for sexual risk. Those with self-reported grades of mostly Ds and Fs were about two to three times more likely to use alcohol and illicit drugs, compared with those with Cs or better grades. The risks were higher in females (OR=2.6 and 2.7) than males (OR=1.9 and 2.5) for frequent alcohol and illicit drug use, respectively.

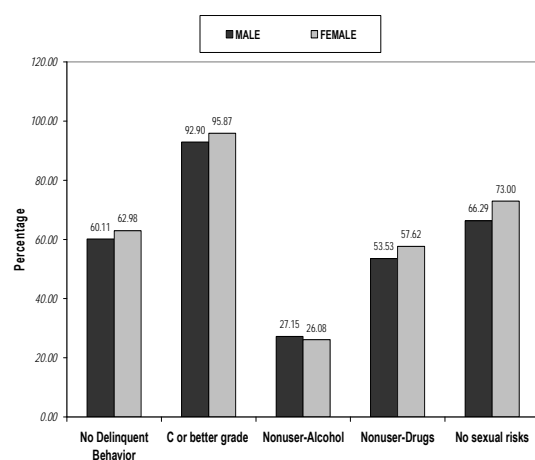
Delinquent Behavior: Overall, delinquent behavior was a significant correlate for frequent use of alcohol, and illicit drugs. For sexual risk behavior, it was a significant correlate in males only. For alcohol use, those who ran away from home were at the highest risk (OR=3.0) followed by gang members (OR=1.9), and seriously delinquent females (OR=1.6) compared with their non-delinquent peers. Among males, those who ran away from home were 3.4 times more likely to use alcohol frequently than non-delinquent counterparts. Gang-member and seriously delinquent females were 3.3 and 1.8 times, respectively, more likely than non-delinquent females to use illicit drugs frequently. Gang-member and run-away males were 1.8 and 3.0 times, respectively, more likely than non-delinquent males to use illicit drugs frequently. No significant relationship between delinquent and sexual risk behaviors among females was detected. However, both gang-member and run-away males were about 2 times more likely than their non-delinquent peers to possess at least one sexual risk behavior.

Forced Sexual Intercourse: History of forced sexual intercourse was linked to alcohol use in females. However, it was a significant correlate of drug use and sexual risk behavior in both genders.

Age of Initiation: Early initiators of alcohol had about 16 to 20 times higher risk of frequent alcohol use but only 2 times higher risk of illicit drug use, compared with late initiators of both genders. However, alcohol use before age 15 was not a correlate of sexual risk behavior ($p > .05$). Initiation of marijuana use before age 15 years was significantly correlated with frequent use of both alcohol and illicit drugs in both genders but not with sexual risk behavior. First sexual intercourse prior to age 15 years was significantly correlated with all three risk behavior in males and females.

Lifetime Alcohol and Illicit Drug Use: Sexual risk behavior was positively associated with the frequency of use of alcohol and illicit drugs in both males and females. Compared with nonusers, infrequent and frequent drug users had 1.7 and 3.6 times, respectively, more likely to possess sexual risk behavior in females. In males, infrequent and frequent drug users were 1.8 and 3.5 times, respectively, more likely than nonusers to possess sexual risk behavior. Similarly, such positive relationship between frequency of alcohol use and sexual risk was observed in females. In males, infrequent users were not significantly different from nonusers in terms of sexual risk behavior.

Figure 1: Prevalence of Positive Behaviors among Florida Adolescents



Positive Behaviors: Although the focus of our report is to differentiate the risk behaviors between males and females, it should be noted that the majority the Florida adolescents exhibited several positive health behaviors. As depicted in Figure 1, over 50% of them did *not* use any drugs, or have delinquent and sexual risk behaviors. More than 90% of students of each

gender reported to perform at average or better in academics. About a quarter of males and females reported to not drink alcohol at all.

Discussion

Several important findings among Florida adolescents deserve discussion. First, there were more male frequent users than females in all substances. However, experimental or infrequent use of any illicit drug was more common in females. This is consistent with the national findings which indicated that use of illicit drugs (except marijuana) was higher among females than males (NIDA, 2006). Such gender-difference in experimental use has significant implications in prevention of drug use among Florida adolescents. Strategies to prevent progression from experimental use to frequent or full blown use of drugs should be explored and such strategies may be different for males and females. Second, higher prevalence of all but one sexual risk behaviors was observed among males than females. More females than males reported nonuse of condom at last sexual intercourse. Condom use variation by gender among Florida adolescents is comparable to the findings from the multi-year National Surveys of Family Growth (NSFG) (Center for Disease Control and Prevention (CDC), 2006), and other national survey (Richter, Valois, McKeown, & Vincent, 1993). While the exact reason is unknown, difficulty negotiating condom use with partner, low perceived need due to having a single partner, and use of other contraceptive methods have been cited as barriers to condom use in females (Bauman & Berman, 2005; Detzer et al., 1995; Wendt & Solomon, 1995). A higher frequency of forced sexual intercourse act upon females than males may be the reason for nonuse of condom as well. Third, forced sexual intercourse was a risk factor of alcohol use among females but not in males. In a study of 12-19 years old students from 745 secondary schools, a strong relationship between sexual abuse and multiple problem patterns including substance use was found in both genders but aftermath for boys was worse than for girls (Garnefski & Diekstra, 1997). It is likely that adolescent males in Florida with a history of forced sex act resorted to substances other than alcohol. Fourth, contrary to a previous report (Bryan & Stallings, 2002), delinquency was not associated with sexual risk behavior among females. Co-occurrence of risk behaviors may appear to exist in previous studies when confounder such as gender is not adjusted in the analyses. Although other findings of this report are important in the prevention efforts of risk behaviors among Florida adolescents, significant male-female differences were not detected.

A cross-sectional survey with self-reported information was a limitation of our report. Due to the cross-sectional design, causality between the correlates and substance use/sexual risk behaviors could not be established. Although social-desirability trait and recall bias may have affected self-report data, self-administered survey may be one of the effective ways to obtain reliable information from adolescents. In addition, the YRBS instrument did not define sexual intercourse nor ask sexual orientation of adolescents. It is uncertain if the interpretation of sexual intercourse was uniform across all adolescents. Another limitation was that potential confounders such as social support, socioeconomic status, family structure and support were unavailable. Although we controlled for ethnicity, it served only as a surrogate measure of the socioeconomic and family factors. Finally, nonparticipation bias may have occurred since only a third of eligible students participated in the survey in Florida. Despite these limitations, the results of this report may be generalized to Florida adolescents because those surveyed composed a representative sample of public high school students in the state of Florida (Grunbaum et al., 2004).

Conclusion

In summary, common correlates of all *three* health compromising behaviors included age, grade level, delinquent behaviors, forced sexual intercourse, and early sexual debut. School performance, age of initiation of alcohol and marijuana were strong correlates for alcohol and drug use but not for risky sexual behavior. Underlying variation of risks between males and females should be explored further. Although several differences in risk behaviors of males and female were found, positive health behaviors were also noted among Florida adolescents. While prevention of substance use, sexual, and other risk-taking behaviors among adolescents are necessary, promoting positive behaviors (e.g. protected sex, positive school performance) are equally essential. We recommend that our colleagues working with adolescent populations consider collecting locally relevant epidemiologic, survey, and social systems data to assess gender-variations in behaviors. Also, prevention programs should be designed with reference to specific gender and other differences such as ethnicity especially for Florida adolescents.

Implications

The findings of this study have the important implications for school health educators and other health professionals who work to prevent substance use, sexual risk, and other negative behaviors among

high school students. The preventive interventions in schools should include but not limited to providing adolescents with skills and support to enhance levels of positive change in their behaviors. Further, a successful preventive approach should meet the needs of individual adolescents, assessing differences of problem behavior by gender and other characteristics such as ethnicity and other risk levels. As Florida's Hispanic adolescents differ from Hispanics in other geographic locations (U.S. Census Bureau, 2007), health education messages should be culturally sensitive and appropriate for Hispanic subgroups in the state. The burden of health risk problems in adolescents are easy to demonstrate (e.g. approximately half of 18.9 million STIs occurred among adolescents) (Malow, Kershaw, Sipsma, Rosenberg, & Dévieux, 2007) to school health educators. However, health educators should be aware of gender and other differences that exist among the same cohort of adolescents to further reduce sexual and other risks among youth. In addition, it should be noted that the common ABC (Abstain 'til Marriage, Be Faithful, and Condoms) health education program may not be sufficient when other risk levels are not considered. While the ABC intervention has decreased the HIV/AIDS transmission and increased the use of condoms, it does not address other factors that influence the spread of HIV/AIDS in females (Malow et al., 2007; MacDonald, Piquero, Valois, & Zullig, 2005; Sullivan, Farrell, Kliewer, Vulin-Reynolds, & Valois, 2007). These factors include forced sex, other related violent or risk behaviors such as sex under the influence of drugs and adolescent girls being infected by unfaithful partners (Malow et al., 2007; MacDonald, Piquero, Valois, & Zullig, 2005; Sullivan, Farrell, Kliewer, Vulin-Reynolds, & Valois, 2007). In sum, prevention/interventions should be tailored to account for the differences between groups of adolescents.

Table 1: Characteristics of Survey Participants by Gender (n = 3,853)

	Female (n=2025)		Male (n=1828)		Rao-Scott	
	n	% #	n	% #	χ^2	p
Age (years)						
< 12	20	0.67	14	0.53	19.85 a	< 0.01
13	8	0.25	9	0.37		
14	192	10.55	107	7.05		
15	521	26.96	453	28.17		
16	575	25.53	511	26.85		
17	445	21.24	449	22.22		
> 18	263	14.79	280	14.8		
Age Group (years)						
≤ 15 years	1283	61.56	1240	63.88	2.22 b	0.13
> 15 years	741	38.44	583	36.12		
Ethnicity						
White	1007	52.13	967	55.83	5.47 c	0.14
African American	427	25.3	355	22.63		
Hispanic	498	20.69	429	19.82		
Others	93	1.88	77	1.73		
Grade Level						
9th	574	32.5	534	35.71	4.99 c	0.17
10th	575	25.33	492	25.29		
11th	495	22.26	427	20.98		
12th	345	19.9	345	18.02		
School Performance						
Mostly Ds & Fs	79	4.13	119	7.1	17.93 b	< .01
Grade C or better	1921	95.87	1683	92.9		
Initiation of alcohol use before age 15						
Yes	978	53.45	872	53.77	0.03 b	0.86
No	848	46.55	747	46.23		
Initiation of marijuana use before age 15						
Yes	460	22.84	552	31.18	38.16 b	< .01
No	1542	77.16	1234	68.82		
Initiation of first sexual intercourse before age 15						
Yes	368	19.36	519	31.62	48.12 b	< .01
No	1583	80.64	1163	68.38		
Forced sexual intercourse						
Yes	204	10.04	129	6.94	7.41 b	< .01
No	1810	89.96	1690	93.06		
Delinquent Behavior						
None or No Delinquent Behavior	1242	62.98	1068	60.11	31.26 c	< .01
Run Away from Home	51	2.69	43	2.26		
Serious Delinquent Behaviors	595	29.92	474	26.95		
Gang Membership	93	4.41	183	10.68		
Health Education regarding HIV/AIDS						
Yes	1806	90.69	1529	86.38	14.62 b	< .01
No	185	9.31	239	13.62		

Notes: # weighted %; a Degree of freedom or df = 6; b df=1; c df=3

Table 2: Lifetime Prevalence of Alcohol and Illicit Drug Use by Gender (n = 3,853)

ANY USE	Female (n=2025)		Male (n=1828)		Rao-Scott	
	n	% #	n	% #	χ^2	p
Alcohol	1357	73.92	1193	72.85	0.339 a	0.56
Marijuana	761	37.65	786	43.59	14.49 a	< .01
Cocaine etc	143	6.66	172	9.1	6.08 a	< .01
Glue etc	230	11.06	217	11.94	0.398 a	0.53
Heroin	43	1.78	90	4.72	32.46 a	< .01
Methamphetamine	98	4.65	149	8.01	14.84 a	< .01
Ecstasy	195	9.16	195	10.02	0.60 a	0.44
Steroid Pills	72	3.31	120	6.49	17.05 a	< .01
USER TYPES						
Alcohol						
Nonuser	466	26.08	421	27.15	15.66 b	< .01
Infrequent User	619	34.45	440	27.58		
Frequent User	738	39.47	753	45.28		
Marijuana						
Nonuser	1242	62.35	984	56.41	45.45 b	< .01
Infrequent User	386	19.29	283	16.09		
Frequent User	375	18.36	503	27.5		
Cocaine etc						
Nonuser	1866	93.34	1622	90.9	10.32 b	< .01
Infrequent User	92	4.57	99	5.34		
Frequent User	51	2.09	73	3.76		
Glue etc						
Nonuser	1776	88.94	1555	88.06	7.84 b	< .05
Infrequent User	170	8.48	139	7.6		
Frequent User	60	2.6	78	4.34		
Heroin						
Nonuser	1966	98.22	1699	95.28	42.87 b	< .01
Infrequent User	27	1.18	42	2.17		
Frequent User	16	0.6	48	2.55		
Methamphetamine						
Nonuser	1911	95.35	1644	91.99	24.81 b	< .01
Infrequent User	69	3.45	81	4.46		
Frequent User	29	1.2	68	3.55		
Ecstasy						
Nonuser	1813	90.84	1597	89.98	7.36 b	< .05
Infrequent User	134	6.48	111	5.75		
Frequent User	61	2.69	84	4.27		
Steroid Pills						
Nonuser	1937	96.69	1677	93.51	21.07 b	< .01
Infrequent User	39	1.96	60	3.29		
Frequent User	33	1.35	60	3.2		
Any Illicit Drug						
Nonuser	1162	57.62	959	53.53	37.67 b	< .01
Infrequent User	443	22.27	318	17.57		
Frequent User	416	20.1	541	28.91		

Notes: # weighted %; a Degree of freedom or df = 1; b df=2

Table 3: Sexual Risk Behaviors by Gender (n = 3,853)

	Female (n=2025)		Male (n=1828)		Rao-Scott	
	N	% #	n	% #	χ^2	p
No condom use at last sexual intercourse						
Yes	400	20.33	296	17.76	3.71 a	$\leq .05$
No	1548	79.67	1368	82.24		
4 or more lifetime sexual partners						
Yes	207	10.69	343	20.33	47.90 a	< .01
No	1744	89.31	1335	79.67		
Lifetime Injection drug use						
Yes	38	1.63	77	4.05	24.49 a	< .01
No	1973	98.37	1721	95.95		
Sex under the influence of alcohol the last sexual intercourse						
Yes	145	7.21	210	12.21	26.38 a	< .01
No	1809	92.79	1471	87.79		
At least One Sexual Risk Behavior						
Yes	545	27	610	33.71	22.22 a	< .01
No	1470	73	1198	66.29		
Number of Sexual Risk Behaviors						
0 Sexual risk behavior	1470	73	1198	66.29	28.26 b	< .01
1 Sexual risk behavior	363	18.03	387	21.71		
2 Sexual risk behaviors	134	6.86	153	8.4		
3 Sexual risk behaviors	33	1.53	47	2.4		
4 Sexual risk behaviors	15	0.58	23	1.2		

Notes: # weighted %; a Degree of freedom or df = 1; b df=4

Table 4: Correlates of Lifetime Frequent Use of Alcohol, Illicit Drugs and Sexual Risk Behavior among Male and Female Adolescents

I. Probability of Lifetime Frequent Use of Alcohol (Frequent User vs. Nonuser & Infrequent User)										
<i>Risk factors</i>	<i>Female</i>					<i>Male</i>				
	Adjusted OR	95% CI a		Rao-Scott χ^2 b	p	Adjusted OR	95% CI a		Rao-Scott χ^2 b	p
Age				13.99	***				5.69	*
Young (\leq 15 years)	1					1				
Old ($>$ 15 years)	1.898	1.357	2.656	13.99	***	1.699	1.099	2.625	5.69	*
Ethnicity				75.19	***				83.44	***
Others	1					1				
Hispanic	1.055	0.592	1.879	0.03	ns	1.175	0.604	2.284	0.23	ns
African American	0.561	0.308	1.019	3.60	ns	0.485	0.266	0.886	5.55	*
White	1.812	1.050	3.126	4.56	*	1.798	0.966	3.346	3.42	ns
Grade level				28.13	***				75.17	***
9th	1					1				
10th	1.629	1.197	2.216	9.65	***	2.019	1.389	2.935	13.54	***
11th	2.137	1.295	3.528	8.82	***	3.204	1.860	5.518	17.62	***
12th	3.915	2.345	6.534	27.27	***	8.633	5.082	14.664	63.59	***
School performance				9.91	**				4.10	*
Grade C or better	1					1				
Mostly D & Fs	2.637	1.442	4.824	9.91	**	1.905	1.021	3.557	4.10	*
Delinquent Behavior				29.21	***				10.80	**
None or No Delinquent Behavior	1					1				
Run Away from Home	3.028	1.627	5.637	12.21	***	3.448	1.255	9.472	5.77	*
Serious Delinquent Behaviors	1.640	1.300	2.068	17.43	***	1.240	0.909	1.691	1.84	ns
Gang Membership	1.879	1.204	2.932	7.72	**	1.379	0.875	2.173	1.92	ns
Forced sexual intercourse				4.01	*				2.78	ns
No	1					1				
Yes	1.597	1.01	2.525	4.01	*	2.142	0.874	5.247	2.78	ns
Initiation of alcohol before 15				485.91	***				374.14	***
No	1					1				
Yes	15.997	12.502	20.469	485.91	***	20.397	15.027	27.686	374.14	***
Initiation of Marijuana before 15				22.30	***				52.43	***
No	1					1				
Yes	2.487	1.704	3.63	22.30	***	3.333	2.406	4.617	52.43	***
First sexual intercourse before 15				7.45	**				6.01	**
No	1					1				
Yes	1.447	1.11	1.886	7.45	**	1.58	1.096	2.277	6.01	**

Table 4 Continued:

II. Probability of Lifetime Frequent Use of Illicit Drugs (Frequent User vs. Nonuser & Infrequent User)										
Risk factors	Female					Male				
	Adjusted OR	95% CI a		Rao-Scott χ^2 b	p	Adjusted OR	95% CI a		Rao-Scott χ^2 b	p
Age				10.50	***				18.65	***
Young (≤ 15 years)	1					1				
Old (> 15 years)	1.833	1.271	2.643	10.50	***	2.183	1.532	3.111	18.65	***
Ethnicity				25.03	***				10.96	**
Others	1					1				
Hispanic	0.671	0.331	1.363	1.22	ns	0.495	0.289	0.846	6.62	**
African American	0.635	0.331	1.220	1.86	ns	0.439	0.251	0.766	8.38	**
White	1.316	0.674	2.571	0.65	ns	0.720	0.458	1.133	2.02	ns
Grade level				32.01	***				26.85	***
9th	1					1				
10th	1.742	1.257	2.413	11.11	***	1.154	0.737	1.808	0.39	ns
11th	1.865	1.378	2.525	16.29	***	1.723	1.020	2.910	4.14	*
12th	2.741	1.855	4.049	25.62	***	3.046	1.800	5.157	17.21	***
School performance				15.45	***				9.60	**
Grade C or better	1					1				
Mostly D & Fs	2.692	1.643	4.411	15.45	***	2.534	1.407	4.564	9.60	**
Delinquent Behavior				30.51	***				22.47	***
None or No Delinquent Behavior	1					1				
Run Away from Home	1.582	0.697	3.581	1.21	ns	3.006	1.265	7.141	6.21	**
Serious Delinquent Behaviors	1.788	1.341	2.385	15.66	***	1.387	0.958	2.009	2.99	ns
Gang Membership	3.276	1.756	6.110	13.91	***	1.806	1.258	2.593	10.26	***
Forced sexual intercourse				3.65	*				23.24	***
No	1					1				
Yes	1.48	0.99	2.213	3.65	*	2.116	1.177	3.805	23.24	***
Initiation of alcohol before 15				34.43	***				23.24	***
No	1					1				
Yes	2.272	1.727	2.989	34.43	***	2.16	1.579	2.953	23.24	***
Initiation of Marijuana before 15				323.80	***				331.65	***
No	1					1				
Yes	19.644	14.203	27.17	323.80	***	28.305	19.752	40.562	331.65	***
First sexual intercourse before 15				16.89	***				7.20	**
No	1					1				
Yes	1.909	1.402	2.598	16.89	***	1.477	1.111	1.964	7.20	**

III. Probability of Sexual Risk Behavior (At least one sexual risk vs. No risk)

Risk factors	Female					Male				
	Adjusted OR	95% CI a		Rao-Scott χ^2 b	p	Adjusted OR	95% CI a		Rao-Scott χ^2 b	p
Age				7.83	**				3.72	*
Young (≤ 15 years)	1									
Old (> 15 years)	2.568	1.326	4.974	7.83	**	1.508	0.993	2.290	3.72	*

Table 4 Continued:

III. Probability of Sexual Risk Behavior (At least one sexual risk vs. No risk) – continued										
<i>Risk factors</i>	<i>Female</i>					<i>Male</i>				
	Adjusted OR	95% CI a		Rao-Scott χ^2 b	p	Adjusted OR	95% CI a		Rao-Scott χ^2 b	p
Ethnicity				2.41	ns				11.34	**
Others	1					1				
Hispanic	0.924	0.418	2.044	0.85	ns	0.825	0.328	2.077	0.17	ns
African American	0.869	0.373	2.025	0.11	ns	1.756	0.751	4.107	1.69	ns
White	1.363	0.936	1.985	0.04	ns	1.185	0.575	2.442	0.21	ns
Grade level				22.04	***				33.55	***
9th	1					1				
10th	1.253	0.741	2.121	0.71	ns	1.512	0.967	2.365	3.28	ns
11th	1.915	1.03	3.559	4.22	*	2.363	1.247	4.477	6.96	**
12th	3.444	1.829	6.484	14.67	***	5.069	2.688	9.557	25.16	***
School performance				1.74	ns				0.18	ns
Grade C or better	1					1				
Mostly D & Fs	1.539	0.811	2.919	1.74	ns	0.872	0.463	1.643	0.18	ns
Delinquent Behavior				2.36	ns				11.34	**
None or No Delinquent Behavior	1					1				
Run Away from Home	1.326	0.580	3.034	0.45	ns	2.243	1.060	4.745	4.47	*
Serious Delinquent Behaviors	0.835	0.601	1.160	1.15	ns	1.506	0.941	2.409	2.92	ns
Gang Membership	1.247	0.660	2.355	0.46	ns	2.677	1.488	4.817	10.80	***
Forced sexual intercourse				21.49	***				9.39	**
No	1					1				
Yes	3.648	2.111	6.305	21.49	***	4.078	1.66	10.019	9.39	**
Initiation of alcohol before 15				2.06	ns				2.82	ns
No	1					1				
Yes	0.803	0.595	1.084	2.06	ns	0.757	0.547	1.048	2.82	ns
Initiation of Marijuana before 15				0.97	ns				0.11	ns
No	1					1				
Yes	1.256	0.798	1.975	0.97	ns	0.914	0.541	1.545	0.11	ns
First sexual intercourse before 15				117.83	***				134.73	***
No	1					1				
Yes	9.068	6.09	13.503	117.83	***	10.22	6.902	15.132	134.73	***
Life Time Use of Illicit Drugs				28.53	***				24.94	***
Nonuser	1					1				
Infrequent User	1.685	1.145	2.48	7.00	**	1.803	1.188	2.737	7.66	**
Frequent users	3.608	2.252	5.781	28.46	***	3.546	2.155	5.835	24.82	***
Life Time Use of Alcohol				38.95	***				14.58	***
Nonuser	1					1				
Infrequent User	3.32	1.956	5.634	19.77	***	1.414	0.885	2.261	2.10	ns
Frequent users	5.016	3.022	8.325	38.90	***	2.237	1.45	3.451	13.24	***

Notes: All odds ratios (ORs) were mutually adjusted for the other variables in the table.

a CI = confidence interval ; b 1 degree of freedom or df

*** p ≤ .001; ** p ≤ .01; * p ≤ .05; ns=not significant

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