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Early Initiation of Substance Use and Subsequent Risk Factors Related to Suicide among Urban High School Students

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Abstract

Objective—To examine the association between onset of substance use and risk factors related to suicide.

Method—1,252 adolescents in two urban school districts completed surveys as part of a large, randomized controlled prevention effectiveness trial. Risk factors measured included depressive symptoms, suicide ideation, suicide ideation specifically with alcohol and/or drug use, endorsement of suicide as a personal option, and suicide attempt.

Results—In our final multivariate models that controlled for current substance use and demographic characteristics, we found that earlier onset of hard drug use among boys was associated with all five suicide risk factors. In comparison, among girls, earlier onset of regular cigarette smoking, getting drunk, and hard drug use was associated with some of suicide risk factors.

Conclusions—The findings confirm the importance of screening for substance use in early adolescence. The association between early substance use and suicide risk factors differed by gender; both research and intervention efforts need to incorporate gender differences.

Keywords

Onset of substance use; depressive symptoms; suicide risk factor

1. Introduction

Early onset of substance use is considered to be an important risk factor for subsequent problem behaviors and psychiatric disorders (DuRant, et al., 1999; McGue & Iacono, 2005; Rohde et al., 2003). Most studies examining substance use onset have assessed its relationship with later substance use and substance use problems. Early alcohol use is

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associated with later alcohol related problems and abuse (SAMHSA, 2004; Stueve & O'Donnell, 2005; Warner & White, 2003). Early cigarette smoking has been found to be associated with lifetime alcohol use disorder and drug use disorder (Rohde et al., 2003). Early marijuana use is associated with alcohol, marijuana and other substance abuse and disorders (Brook et al., 2002).

Problem behaviors tend to covary (Jessor & Jessor, 1977). Thus, early initiation of substance use also is a known marker for problem behaviors not pertaining to substance use. Early onset of cigarette use, for example, is associated with a variety of problem behaviors, including violent and physically risky behaviors (DuRant et al, 1999); early initiation of alcohol use is associated with later sexual risk (Stueve & O'Donnell, 2005); and earlier initiation of marijuana use has been linked to later low academic achievement (Ellickson et al., 2004).

Less known is whether substance use onset is associated with suicide risk factors. Suicide is the third leading cause of death among 15–19 year olds, accounting for approximately 11% of the annual deaths in this age group (Anderson & Smith, 2005; Minino & Smith, 2001). According to the Youth Risk Behavior Survey (conducted in 2003), 17% of high school age students had seriously considered attempting suicide in the past year and 8.5% had attempted suicide during the past year (CDC, 2004).

Engaging in drug use can be a marker for (Hallfors et al., 2004) and precursor of (Brent, 1995; Brook et al., 2002; Hallfors et al., 2005) depression and other suicide risk factors. Examining the relevance of substance use onset relative to these suicide risk factors will help to further refine the set of identified markers as well as to better understand the epidemiology involved. Previous studies have found earlier use of alcohol and hard drugs (Brook et al., 2002) to be associated with later major depressive disorder. Early tobacco use has not been shown to be related (Brook et al., 2002; Rohde et al., 2003), and findings regarding marijuana use onset have been mixed (e.g., Brook et al., 2002 compared to Lynskey et al., 2004).

Only a few studies have investigated association between substance use onset and suicide ideation. Early onset of marijuana and other drug use was not found to be associated with later thoughts of suicide (Cottler et al., 1998; Lynskey et al., 2004); early cigarette smoking was associated with later suicide ideation in bivariate but not multivariate analyses (Fergusson et al., 2000). Findings regarding suicide attempts have been mixed. One study reported no difference between suicide attempters versus non-attempters on early onset of marijuana or other drug use (Kelly et al., 2004), but another study reported higher odds of attempt among early marijuana users (Lynskey et al., 2004). Although informative, these studies are limited by their use of special samples, such as drug abusers (Cottler et al., 1998; Kelly et al., 2004), twins (McGue & Iacono, 2005; Lynskey et al., 2004), and predominantly white participants (Brook et al., 2002). Also, some studies assessed only one type of drug (Lynskey et al., 2004; Rohde et al., 2003) rather than comparing across different substances.

Most extant studies have not examined associations between substance use and suicide risk factors by gender. The few that have, report sex differences in the relationship between drug use and depression and suicidal behaviors (Metha et al., 1998; Hallfors et al., 2004; Poulin et al., 2005). The association between substance use onset and these suicide risk factors also may vary by gender, but again, the literature is scant. One study using a clinical sample of youth with substance use disorders found that male suicide attempters had earlier onset of alcohol use disorders than non-attempters but found no similar association among females and no relationship with onset of any other substance (Kelly et al., 2004). Previous studies relied on special clinical samples, however research using a more general population sample

is needed. Our study focused on high school students from two large urban school districts. Because more than half of the public school students in the U.S. attend schools in large school districts, (CCD 2000), finding from this population can contribute to our knowledge about the general adolescent population.

The purpose of the present study is to examine the extent to which onset of substance use is associated with depressive symptoms and other suicide risk factors in a community sample of urban high school students. The study contributes to extant knowledge by including analyses stratified by gender and controlling for current use as well as individual demographic characteristics.

2. METHOD

2.1. Subjects

Data were collected during 2002–2004 from students (grades 9–11) in nine high schools within two large U.S. urban school districts. Site A is a school district in a large city in the Southwest; Site B is a district in a large metropolis on the Pacific coast. At Site A, student ethnic composition was 87% Hispanic, 9% black, and 4% white. Approximately 90% of students qualified for the federal free or reduced lunch program. This program is based on federal income poverty guidelines, which, in 2002, was set at 130% and 185% of federal income poverty guidelines, respectively (Federal Register 2001). Ethnic composition at Site B was 40% Asian, 21% Hispanic, 14% black, 10% white, and 15% American Indian and other; 61% of students qualified for free/reduced price lunch.

Students were participants in a randomized controlled effectiveness trial of the Reconnecting Youth substance use prevention program targeting high school youth at risk for dropping out of school (Eggert et al., 1994a). A detailed description of participants and recruitment for this project is presented elsewhere (Cho et al., 2005; Hallfors et al., 2006c). Among the 1,252 student participants, 885 met risk criteria for school drop-out, based on truancy and grade point average. An additional 367 “typical” students randomly selected from students in participating schools not meeting the high-risk criteria for dropping out were also included (Hallfors et al., 2006b). Data for the present study were collected at baseline only, prior to condition assignment and to the intervention. Of the “high-risk” students eligible to be included across all schools, about half (47%) completed the questionnaire. Although these high-risk participants had significantly higher mean grade point average and rates of attendance than the overall pool of high-risk students, there were no differences in gender or race/ethnicity. Among “typical” students selected to participate, about 65% “typical” completed the survey. There were no significant differences between the “typical” students who took part in the study and the overall pool of “typical” students (Hallfors et al., 2006a). The study was approved by the Institutional Review Board of the Pacific Institute for Research and Evaluation. Study participants had written parental consent. Participants completed the High School Questionnaire: Profile of Experiences[®] (HSQ) at four time points.

2.2. Measures

The HSQ was developed by Eggert and colleagues (Eggert et al., 1994a; Eggert et al., 1994b). HSQ multi-item scales have demonstrated acceptable reliability and validity both in an efficacy trial (Eggert et al., 1998; Eggert et al., 1994b) and in our effectiveness trial (Cho et al., 2005). The self-administered HSQ includes (a) substance use outcomes including both onset and past 30-day alcohol use, marijuana use, and cigarette smoking, and composite indexes of other drug use, adverse drug consequences, drug control problems, and drug use progression; (b) emotional states including hopelessness, stress, anxiety, anger, self-esteem, depression, and perceived acceptability of suicide; (c) behavior indicators including

delinquent behaviors, peer high risk behaviors, pro-social weekend behaviors, and partying; and (d) posited mediators such as school connectedness, conventional peer bonding, personal coping strategies, personal control, and perceived family support. We adapted the HSQ to an audio computer-assisted self interviewing (ACASI) format, a technology which assists students with limited reading ability, decreases respondent fatigue and data processing time, and improves willingness to report sensitive information (Turner et al., 1998).

Suicide Risk Factor Variables—Depressive symptoms (Cronbach's $\alpha = .88$) was assessed with a modified CES-D scale (Center for Epidemiologic Studies Depression scale, Radloff, 1977) that included the following items: I feel lonely, I feel that people dislike me, I feel depressed, I can't shake off feeling "down" or "blue" even with help from family/friends, I feel that nobody truly cares about me, I feel sad (Radloff, 1977). Response options were 0 (never), 1 (sometimes), 2 (usually), 3 (always). High level of depressive symptoms was assigned to respondents scoring a mean of 1.7 or higher on the combined items.

Suicide Ideation was measured with the item: I have thoughts about suicide. High suicide ideation was coded 1 ("usually," "always" "sometimes") and low ideation was coded 0 ("never"). **Suicide Ideation with Alcohol and/or Drug use** was derived from the item: Due to using alcohol and/or drugs in the last month, I had thoughts of suicide (0 = not at all, 1 = once, 2 = 2 or 3 times, 3 = about once/week, 4 = several times/week, 5 = almost every day, 6 = everyday). A dichotomous variable was created indicating those who replied "once" or more frequently (coded 1) versus "not at all" (coded 0). **Endorsement of Suicide as a Personal Option** was assessed with the item: I think that suicide as an answer to life's problems is O.K. for me. Response options were 0 (never), 1 (sometimes), 2 (usually), 3 (always). This measure was coded never (0) or any other option (1).

Suicide Attempt was measured using two items. Students were asked to indicate how many times they felt so bad that they attempted suicide 'in the last 30 days' and 'in the last year.' Those reporting an attempt at least once in response to either question were coded 1 and those not reporting an attempt were coded 0.

Substance Use Variables—Substance Use Onset was measured by asking respondents what grade they were in when they first... "got drunk from drinking too much," "started smoking one or more cigarettes/week," and "got high on marijuana." Onset of illicit hard drug use was based on the earliest reported grade for having tried cocaine (crack, coke), depressants or tranquilizers (downers, reds, barbs, Valium, etc), or stimulants (amphetamines, crank, speed, etc.). The range of grade of onset was 1st to 12th grade; non-users were assigned a value of 13. Grade of substance use onset was treated as a continuous variable. The HSQ asked for grade instead of age of onset. Grade in school is expected to be a more salient characteristic to students than age to elicit better recall of events.

Current Substance Use was assessed using 30-day measures, rated on a seven point scale from 0 (not at all) to 6 (every day) for the following four categories of substances: 1) alcohol, including beer or wine, and hard liquor; 2) smoking tobacco; 3) marijuana (weed, pot, grass); and 4) other illegal drugs, including cocaine (coke, crack), opiates (heroin, morphine, codeine), depressants (downers, reds, barbs, etc.), tranquilizers (Valium, Librium), hallucinogens (angel dust, LSD, PCP, magic mushrooms), inhaled substances (glue, gasoline, paint thinner, spray cans, white-out), and stimulants (amphetamines, crystal, speed, etc.). Mean values were calculated for multiple items.

Demographic Variables—Several demographic variables were included as control variables. They are grade in school, risk for school drop out based on truancy and GPA

(high risk = 1; typical = 0), gender (male = 1; female = 0), parental education (equal or lower than high school = 1; all others = 0), and family living structure (living with two biological parents = 0; all others = 1), and the site of residence (Site A or B). Racial/ethnic groups were categorized as Asian/Pacific Islanders, American Indian/others, African American, White, or Hispanic/Latino.

2.3. Statistical analysis

All analyses were performed using SAS (Version 8.0). First, descriptive analyses were conducted assessing prevalence and distributions of suicide risk factors; gender and ethnic differences were tested using chi-square. Second, multivariate logistic regression models were conducted assessing suicide risk factors. Models first included substance use onset predictors controlling for grade in school, dropout risk status, race/ethnicity, parental education, family living structure, and site. Because we expected gender differences based on the previous studies (Metha et al., 1998; Hallfors et al., 2004, Poulin et al., 2005, Hallfors et al., 2005), separate analyses were conducted by gender. The numbers of youth in each racial/ethnic category were sometimes too small to provide reliable estimates, so some models excluded the race/ethnicity variable. Third, subsequent models included the onset variables, current substance use variables and all control variables. A backward stepwise procedure was then used to remove those variables with an adjusted statistical significance level greater than .05. Adjusted odds ratios and 95% confidence intervals were calculated and Wald chi-square statistics testing the global null hypothesis for each regression model are reported.

3. Results

3.1. Descriptive and Bivariate analyses

Compared to boys, girls had higher prevalence of depressive symptoms ($\chi^2 = 24.69$, $p < .001$), suicide ideation ($\chi^2 = 35.29$, $p < .001$), suicide ideation with alcohol and/or drug use ($\chi^2 = 11.59$, $p < .001$), endorsement of suicide as a personal option ($\chi^2 = 27.44$, $p < .001$), and suicide attempts ($\chi^2 = 35.86$, $p < .001$) (Table 1).

Table 2 presents racial/ethnic differences in suicide risk factors. Differences are all statistically significant at the significance level of .05 except for suicide ideation. However differences exist in which racial/ethnic group is ranked highest for each suicide risk factor. For example, whites are highest in depressive symptoms and suicide ideation. However, the “other” ethnic group (comprised of American Indian, Mixed ethnicity, and others) category is ranked highest in suicide attempt and endorsement of suicide as a personal option. In addition, since our study sample includes a large proportion of Latino adolescents, we assessed whether there were significant differences between Latino youth compared to non-Latino youth. We found that Latino youth ranked higher in suicide ideation with alcohol and/or drug use (7.8% vs. 4.2% $p < .05$). None of the other risk factors showed a difference by Latino status.

3.2. Multivariate logistic regressions

First, we conducted separate logistic regressions for each suicide risk factor using first onset variables controlling for grade, parental education, family living structure, ethnicity, and site (Table 3). Association between substance use onset and suicide risk factors varied by gender. For boys, onset of hard drug use was the strongest and most consistent predictor of all suicide risk factors. The higher the grade of onset (i.e., the later the onset of hard drug use), the lower the odds of depressive symptoms and all other suicide risk factors. In addition, onset of regular smoking was associated with suicide ideation. For girls, early onset of first “got drunk” predicted depressive symptoms, “suicide ideation with alcohol

and/or drug use”, personal endorsement of suicide and suicide attempt. Early onset of smoking cigarettes predicted suicide ideation, “suicide ideation with alcohol and/or drug use”, and personal endorsement of suicide. Onset of hard drug use was associated with “suicide ideation with alcohol and/or drug use”, personal endorsement of suicide, and suicide attempt. Onset of marijuana use was not associated with any suicide risk factor for either gender (Table 3).

Next, we entered current substance use to the models to test whether the earlier onset of these variables have independent effects controlling for the levels of current substance use. For boys, onset of hard drug use maintained its association with all five suicide risk factors. The later the onset of hard drug use, the lower the likelihood of suicide risk. Onset of regular cigarette smoking was also associated with suicide ideation. Current smoking was associated with depressive symptoms and “suicide ideation with alcohol and/or drug use” and current marijuana use was associated with personal endorsement of suicide (Table 4).

For girls (Table 5), grade first got drunk was associated with depressive symptoms and “suicide ideation with alcohol and/or drug use.” Onset of regular smoking was associated with suicide ideation, “suicide ideation with alcohol and/or drug use”, and personal endorsement of suicide. Onset of hard drug use was associated with “suicide ideation with alcohol and/or drug use”. Current alcohol use was associated with “suicide ideation with alcohol and/or drug use”, and suicide attempt. Current smoking is associated with higher depressive symptoms. Current hard drug use was associated with suicide ideation, endorsement of suicide as a personal option, and suicide attempt.

4. Discussion

Our study, based on a community sample of urban high school students, extends previous research by demonstrating that the association between onset of substance use and suicide risk indicators varies both by type of substance and by gender. Controlling for current substance use, we found that, for boys, earlier initiation of hard drug use was significantly associated with all of the suicide risk factors; early cigarette use was associated with suicide ideation. For girls, early onset of cigarette smoking was associated with suicide ideation, “suicide ideation with alcohol and/or drug use,” and endorsement of suicide. For girls, early onset of getting drunk was associated with depressive symptoms and early onset of hard drug use was associated with “suicide ideation with alcohol and/or drug use”.

Variations in sampling and analysis strategies may account for differences between our findings and previous reports. For example, Brook and colleagues (2002) found an association between earlier use of alcohol, hard drug use and marijuana with later depression in their predominantly white community sample, but they did not report gender differences. Kelly et al. (2004) found that early onset of alcohol use was associated with suicide attempt in boys, but the sample was limited to adolescents with clinical substance use disorders. Lynskey and colleagues (2004) found early onset of marijuana use to be associated with subsequent suicide attempt and reported no sex difference for this relationship. However, this study measured early onset as use before 17 years old and had a sample of all twins. We also measured onset variables more conservatively than most studies (e.g., “getting drunk” “getting high on marijuana” and “regular smoking”).

A unique contribution of the present study was the examination of endorsement of suicide as a personal option, which we found was related to early onset of smoking among girls, early onset of hard drug use, and current marijuana use among boys. Personal attitudes toward suicide may play an important role in predicting suicidal behaviors (see, e.g., Hallfors et al., 2006a). However, relatively little attention has been paid to this measure. Suicidal adolescents tend to have more accepting, permissive attitudes toward suicide, and to fear

death to a lesser degree compared to non-suicidal adolescents (De Wilde et al., 1993; Linehan et al., 1987; Orbach et al., 1993; Pfeffer et al., 1979; Stein et al., 1992).

This study has several limitations. First, our sample is not a representative one; two-thirds are youth identified as at risk for school dropout, based on below median GPA and upper quartile truancy. “High risk” students are more likely to experience concurrent substance use and emotional distress compared to “typical” students (Hallfors et al., 2006b). Also, the sample is limited to urban adolescents and represents more minority students than would be expected in a nationally representative sample. Second, our study is based on cross-sectional analyses which limit our ability to determine causal direction. However, the primary predictor variable, grade of onset of substance use, was asked retrospectively (common to most other studies) and therefore does provide information about temporal ordering. Third, our measure of current substance use is based only on the frequency of use. It would have been desirable to also examine quantity of substance use, but this was not asked in the HSQ survey. Fourth, study results may be biased due to problems with accurate recall and reporting when first substance use occurred. Some have concluded that adolescent self-reports of age of first substance use can be unreliable (Bailey et al., 1992; Fendrich & Mackesy-Amiti, 1995), although others have concluded that these data are sufficiently reliable for epidemiological analyses (Johnson & Mott, 2001; Parra et al., 2003). Finally, due to our small samples of particular ethnic groups (especially African Americans and Whites), we are not able to adequately examine racial/ethnic difference. Further research is needed to test whether racial/ethnic difference exists in the pattern of relationship between onset of substance use and suicide risk.

Early onset of substance use is known to be a marker for co-occurring problem behaviors among adolescents. Our findings demonstrate that both early onset and current use of substances are related to suicide risk, and that there are also significant differences by gender as well as by type of substance use in these associations. Our findings illustrate the particularly strong association between hard drug use and suicidal behaviors among boys. Thus boys who had early onset of hard drug use should be screened for suicide risk and should be counseled to reduce or quit hard drug use. In contrast, girls who had an early onset of smoking or alcohol use should similarly be screened.

Findings related to gender differences, suicide risk factors, and current substance use are consistent with our previous research, using data from the National Longitudinal Study of Adolescent Health (Add Health), a representative survey of over 20,000 U.S. adolescents (Hallfors et al., 2004; Hallfors et al., 2005; Waller et al., 2006). In that research, we found substance use (especially cigarettes and marijuana use) was associated with increased depression in boys, while modest involvement in any substance use was associated with elevated depression in girls (Hallfors et al., 2005). Little research, however, has been conducted to investigate why and how different levels and different types of substance use have different effects by gender. One possible explanation is that there may be social and psychological differences for boys and girls. Using substances may have different meanings for boys and girls, and may be perceived differently by others around them due to social norms. Another explanation is that there may be genetic or biological differences between boys and girls. For example, findings based on Add Health’s sample of monozygotic and dizygotic twins indicate that suicide risk factors may be heritable, and that the contribution of heritability varies by gender (Cho et al., 2006). Female twins were more influenced by genetic factors (than by social environment) for depression and quantity of cigarette smoking, while male twins were more influenced by genetic factors for alcohol use and binge drinking. Thus, gender differences in suicide risk factors related to substance use may be explained in part by genetic differences between males and females.

In conclusion, the present findings confirm that there are important gender differences in the association between substance use and suicide risk. Present findings also underscore the importance of preventing early onset of substance use to alleviate mental health problems related to suicide. Future research is needed to explore the causal mechanisms of gender-specific substance use behavior and suicide risk factors.

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Table 1

Gender Difference in Prevalence of Suicidal Risk Factors

Suicide Risk Factors	Total (N = 1,252) N (%)	Boys (N = 602) N (%)	Girls (N = 650) N (%)	Chi-square
High depressive symptoms	151 (12%)	44 (7%)	107 (16%)	24.69 ***
Suicide ideation	306 (24%)	102(17%)	204(31%)	35.29 ***
Suicide ideation with alcohol and/or drug use	73 (6%)	21 (2%)	52 (4%)	11.59 ***
Endorsement of suicide as a personal option	197 (16%)	61 (10%)	136 (21%)	27.44 ***
Suicide attempt	113 (9%)	24 (4%)	89 (14%)	35.86 ***

<p=.001

Note: Due to missing data, total number of responses varies by outcome measure.

Table 2

Ethnic Difference in Prevalence of Suicide Risk Factors

Suicide Risk Factors	Total	Asian (n = 340)	Black (n = 180)	Latin (n = 577)	White (n = 95)	Others (n = 60)	Chi-square (p-value)
High depressive symptoms	151(12.1%)	30(8.8%)	16(8.9%)	79(13.7%)	16(16.8%)	10(16.7%)	9.76*
Suicide ideation	306 (24.4%)	86(25%)	33(18%)	142(25%)	29(31%)	10(27%)	5.84
Suicide ideation with alcohol and/or drug use	73(5.8%)	15(4.4%)	3(1.7%)	45(7.8%)	5(5.3%)	5(8.3%)	11.74**
Endorsement of suicide as a personal option	197(15.7%)	62(18.2%)	15(8.3%)	95(16.5%)	14(14.7%)	11(18.3%)	9.65**
Suicide attempt	113(9.0%)	25(7.4%)	8(4.4%)	59(10.2%)	11(11.6%)	10(16.7%)	11.79**

* <p=05;

** <p=01

Table 3

Logistic Regression: Impact of Substance Use Onset on Suicide Risk Factors by Gender (Controlling for grade, parental education, family living structure, ethnicity, and site)

Grade of Substance use onset	Depressive symptoms		Suicide Ideation		Suicide Ideation with alcohol and/or drug use		Personal Endorsement of Suicide		Suicide Attempt	
	OR	CI	OR	CI	OR	CI	OR	CI	OR	CI
Boys										
Grade first drunk	1.09	.9-1.3			.91	.7-1.2	1.07	.9-1.2	.98	.8-1.2
Grade first regular smoking	.99	.8-1.1	.90*	.8-1.0	.87	.7-1.0	.93	.8-1.0	.96	.8-1.1
Grade first got high marijuana	1.0	.8-1.2	.99	.9-1.1	.91	.7-1.2	1.00	.9-1.2	1.14	.9-1.4
Grade first hard drug use	.74***	.6-.9	.86*	.8-1.0	.74**	.6-.9	.76***	.6-.9	.65***	.5-.8
Girls										
Grade first drunk	.88*	.8-1.0	.95	.9-1.0	.78***	.7-.9	.91	.8-1.0	.83**	.7-.9
Grade first regular smoking	.93	.8-1.0	.92*	.9-1.0	.87*	.8-1.0	.90*	.8-1.0	.92	.8-1.0
Grade first got high marijuana	1.0	.9-1.1	.97	.9-1.0	.99	.9-1.1	1.0	.9-1.2	1.06	.9-1.2
Grade first hard drug use	.93	.8-1.1	.92	.8-1.0	.80**	.7-.9	.91*	.8-1.0	.87*	.7-1.0

* <p=.05,

** <p=.01,

<p=.001 Note: Results of covariates are not reported in this table. Due to missing data, total number of responses varies by outcome measure. Due to small n's for some racial/ethnic categories in the suicide attempt, ideation with drug use, and depression among boys, the race/ethnic variable was excluded in these models.

Table 4

Full Model Logistic Regression: Boys

	Depressive symptoms		Suicide Ideation		Suicide Ideation with Alcohol & Drug use		Personal Endorsement of suicide		Suicide Attempt	
	OR	CI	OR	CI	OR	CI	OR	CI	OR	CI
Grade first drunk										
Grade first regular smoking			.89**	.8-1.0						
Grade first got high marijuana										
Grade first hard drug use	.81***	.7-.9	.86*	.8-1.0	.68***	.6-.8	.85*	.7-1.0	.69***	.6-.8
Current Alcohol use										
Current Smoking	1.21*	1.0-1.5			1.36***	1.1-1.7				
Current Marijuana use							3.29**	1.4-7.9		
Current hard drug										
Parent Educ. (HS)							3.85***	1.9-7.7		
Grade										
Ethnic (ref = other/mixed) Asian			1.70*	1.1-2.7						
Latino							.33***	.2-.6		
White							.14**	.0-.6		
Black										
Family structure (Not 2 parent)									.32*	.1-.9
Dropout status (highrisk)							2.31*	1.0-5.0		
Wald chi-square	24.21***		28.15***		46.78***		43.10***		35.76***	

*
<p=.05,**
<p=.01***
<p=.001 Note: Only significant odds ratios are shown.

Table 5

Full Model 1 Logistic Regression: Girls

	Depressive Symptoms		Suicide Ideation		Suicide Ideation with Alcohol & Drug use		Personal Endorsement of suicide		Suicide Attempt	
	OR	CI	OR	CI	OR	CI	OR	CI	OR	CI
Grade first drunk	.88**	.8–1.0			.84*	.7–1.0				
Grade first regular smoking			.89***	.8–.9	.89*	.8–1.0	.90**	.8–1.0		
Grade first got high marijuana										
Grade first hard drug use					.84**	.7–1.0				
Current Alcohol use					1.82***	1.3–2.4			1.73***	1.4–2.1
Current Smoking	1.23**	1.1–1.4								
Current Marijuana use										
Current hard drug			2.34*	1.0–5.4			4.20**	1.7–10.2	5.03**	1.9–13.5
Parent Educ. (HS)	1.88**	1.2–3.0								
Grade							.69*	.5–.9	0.59*	.4–.9
Ethnic (ref = other/mixed) Asian	.55*	.3–1.0					1.66*	1.0–2.6		
Latino										
White										
Black										
Family structure (Not 2 parent)										
Dropout status (highrisk)			1.63*	1.1–2.4			1.82*	1.1–3.0		
Wald chi-square	36.85***		30.92***		71.71***		35.41***		47.09***	

* <p=.05,

** <p=.01

<p=.001 Note: Only significant odds ratios are shown.