Socioeconomic Status Predicts Substance Use And
Alcohol Consumption In U.S. Undergraduates

Corresponding author: Chris C. Martin, chris.martin.e@gmail.com

Present address: Georgia Institute of Technology, 313 Ferst Drive, Atlanta, GA 30332-0535

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ABSTRACT

In health sociology, the prevailing consensus is that socioeconomic status lowers illness risk. This model neglects the fact that unhealthful consumption patterns may covary with affluence. The current study examines consumption of drugs and alcohol among affluent U.S. college students. I hypothesized that undergraduate students from high-SES households would have high rates and levels of drug and alcohol consumption. Using data from 18,611 18- to 24-year-old

undergraduates across 23 public and private institutions, I found that high-SES undergraduates were more likely than peers to use marijuana, choose varied drugs, consume alcohol frequently, and use alcohol and substances to cope with stress. The first three results were robust after controlling for gender, race, residence type, and relationship status. Marital status and race were stronger predictors than SES—Asians and married students were the least likely to use alcohol and drugs.

KEYWORDS

Higher education, social class, substance use, alcohol, young adulthood, Asian Americans

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The prevailing consensus in the sociology of health is that socioeconomic status (SES) is a resource that protects individuals from mental illness. Most health sociologists draw upon Pearlin's (1981) stress model, and Link and Phelan's fundamental-causes model (2010), both of which present little to no downside to socioeconomic advantage. Whereas epidemiologists and medical scholars use the construct *diseases of affluence* to denote chronic conditions that ensue from unhealthful diets in wealthy societies and among wealthy individuals, sociologists do not use this construct. In the case of alcohol and drug use, conventional models such as the stress model and fundamental-causes model may fall short because addiction can ensue from recreational choices and peer norms rather than inadequate buffers or inordinate stressors.

Alcohol and drug use, which are antecedents of addiction and classifiable as deviant behavior when taken to excessive levels, may indeed be greater than among people from high socioeconomic status (SES) backgrounds. However, deviance is typically linked with discrimination and strain (Agnew, 2005; Boardman, Finch, Ellison, Williams, & Jackson, 2001). As a result, concepts such as *diseases of affluence* and *diseases of civilization* have not entered the sociological vocabulary.

Linking SES with deviant behavior such as intense alcohol and drug consumption is not altogether novel. In the criminological literature, it is commonly acknowledged that SES is a poor predictor of offending among both adolescents and adults (Agnew, Matthews, Bucher, Welcher, & Keyes, 2008; Dunaway, Cullen, Burton, & Evans, 2000). Criminologists have shown that high SES predicts a taste for risk, low perceived risk of detection, high social power, and

unconventional values, factors that promote deviant behavior. However, such behavior is somewhat suppressed by low levels of alienation, aggression, and financial strain; and high levels of aspirations and self-control (Wright, Caspi, Moffitt, Miech, & Silva, 1999). This combination of positive and negative mechanisms results in a weak aggregate correlation between SES and criminal offending. In the sociology of health, however, this model of positive and negative mediation, or inconsistent mediation, is not used.

Three streams of research are relevant to the current study. First, social psychological work on class indicate that material affluence and perceived status cause one's sense of social obligation to decrease (Kraus, Piff, & Keltner, 2011). Social class also endows people with a greater sense of entitlement, promoting an increase in the practice and endorsement of deviant behavior (Piff, 2014). Thus, people in higher social classes are less reluctant than others to engage in deviant behavior.

Second, social psychological work suggests that the onset of mental illness and substance usage can be jointly predicted by low parental commitment and containment (Luthar & Goldstein, 2008; Yap, Cheong, Zaravinos-Tsakos, Lubman, & Jorm, 2017). Commitment is the propensity of parents to prioritize children amidst competing priorities. Professionals who work 60 hours or more per week often have insufficient parental involvement. Consequently, their children perceive low commitment, which predicts greater distress and substance use (Larzelere & Patterson, 1990). Containment refers to the stringency of anticipated parental reactions to deviant behavior. High containment means that adolescents expect parents to be punitive rather than tolerant. Containment is lower among wealthier households, where individuals have greater entitlement (Luthar & Goldstein, 2008). Survey research indicates the link between affluence and

outcomes such as depression, anxiety, and somatic symptoms is mediated by low commitment and containment (Luthar, Barkin, & Crossman, 2013).

Third, research from several disciplines points to higher rates of drug and alcohol consumption in affluent neighborhoods. Comparisons of substance abuse rates across neighborhood types indicate that rates are higher in suburbs than the inner city; and among suburban adolescents, substance use is more strongly linked with subjective maladjustment (Luthar & D'Avanzo, 1999). Suburban consumption rates also appear to be higher than national norms (Luthar & Goldstein, 2008). In accordance with these findings, researchers have found higher alcohol and substance use among adolescents in affluent households (Patrick, Wightman, Schoeni, & Schulenberg, 2012), schools (Botticello, 2009), and communities (Song et al., 2009). Consumption is sensitive to affordability, which partially explains this association (Farrell, Manning, & Finch, 2003; Martin et al., 2009).

Sociological work suggests on emerging adulthood suggests that some affluent high school students enter college with the expectation of celebrating one's youth by engaging in heavy socializing and deviant behavior (Armstrong & Hamilton, 2013; Hamilton, 2016). Such behavior is encouraged by some affluent parents, whose college lives were similarly hedonistic (Hamilton, 2016). In contrast, high-school students from lower socioeconomic strata perceive college education as a path for upward social mobility (Armstrong & Hamilton, 2013). These findings do not implicate social class as a direct cause—students who opt for this “party pathway” *also* tend to be white and heterosexual, and they carry a family legacy of sorority or fraternity membership. However, these studies do suggest a weak correlation between affluence and the consumption of alcohol and drugs.

The current study examines whether high parental SES predicts greater alcohol and substance usage, henceforth *substance usage*, in college undergraduates. I examine four outcomes, hypothesizing that all will be correlated positively with parental SES. The first three outcomes, which are *behavioral outcomes*, are the likelihood of using marijuana, the diversity of drugs consumed, and the quantity of alcohol consumed. I initially included the likelihood of using any drug, but its correlation with marijuana use was almost perfect. The fourth outcome, an *instrumental outcome*, is the likelihood of using alcohol and drugs to cope with stress. These dependent variables were first selected and then analyzed. Their inclusion is not the result of selective reporting after analyses of numerous outcomes.

I selected marijuana consumption as an outcome because marijuana, unlike cocaine and heroin, is relatively inelastic to price (Gallet, 2014). An association between SES and marijuana usage is unlikely to solely result from its affordability. Also, marijuana consumption is relatively common, which increases statistical power. The diversity of illicit substances is the second outcome. The likelihood of experimenting with numerous substances, rather than just one substance, should rise among those who prioritize the party pathway and among those who enjoy risk and perceive self-invulnerability, two factors associated with high SES. Frequency of alcohol consumption was selected because the first two outcomes only measure incidence. Frequency is informative because daily drinking is a better sign of an addiction disorder than monthly drinking. Frequent drinking entails greater risk of punishment among underage students, so daily consumption is also a manifestation of high entitlement, or low perceived risk of detection.

The fourth outcome is the use of substances to disengage from stressors. Disengagement is an avoidant style of coping, which contrasts with approach-oriented and emotion-oriented

style. In general, people opt for disengagement coping when they feel helpless and pessimistic, which can ensue from deprivation. Accordingly, greater affluence predicts lower levels of disengagement coping (Finkelstein, Kubzansky, Capitman, & Goodman, 2007). However, disengagement coping can take many forms, one of which is substance use. If high-SES students are more habitual in their use of substances, high SES should predict *greater* substance-based coping among college students.

The four outcomes were modeled in both unadjusted and adjusted analyses. In the adjusted analyses, I added race, relationship status, gender, and residence type. Whites are more likely to enter the party pathway, and Asians are likely to forgo substance usage because of the cultural emphasis on academic achievement (Armstrong & Hamilton, 2013; Lee & Zhou, 2015). Men are more likely than women to use substances, a manifestation of greater risk taking in general (McCabe, Teter, & Boyd, 2006; Nolen-Hoeksema, 2004), and marriage tempers substance usage (Duncan, Wilkerson, & England, 2006). Students who live with parents receive parental supervision, and are distant from campus parties. Students who live independently lack such supervision. If they reside in fraternity or sorority houses, they are also in proximity to parties and perceive drinking as normative (Page & O'Hegarty, 2006). Residential type is therefore included in the adjusted models.

Method

Sample

Data came from 18,611 undergraduates, aged 18-24, who participated in the Healthy Minds (HMS) 2016 study. HMS is an annual survey of university students in the United States that examines mental health and counseling service utilization. In 2016, 23 schools administered the survey: Appalachian State University, Boston University, Cal Poly (San Luis Obispo),

California Institute of the Arts, Emmanuel College, Hamilton College, Harrisburg Area Community College, Liberty University, Merrimack College, Miami University (Ohio), Oregon State University, Rollins College, Saint Joseph's University, Springfield College, Stanford University, Tufts University, University of Chicago, University of Maryland—College Park, University of Michigan, University of Nevada—Reno, University of Richmond, University of Wisconsin—Madison, and the College of William and Mary. Each used HMS with a random sample of 4,000 students (large schools) or all students. Students were invited and reminded to participate via email. Non-responders were reminded up to three times. The overall participation rate for the 2016 study was 26%. HMS includes individual-level non-response weights, constructed from calculations of disproportionate responding by gender, race/ethnicity, academic level, and grade point average. Because graduate students are different in maturity and SES, I only examined undergraduates, excluding participants over 24 because they have passed the young adulthood stage. Participants in the 23-24 age range reported lower SES, so for robustness, I also tested models with those aged 18-22, finding no meaningful differences.

The Monitoring the Future (MTF) dataset is the most common used dataset in the emerging-adulthood literature. However, data on drug and alcohol usage are only available for 870 students (weighted N) in MTF (Schulenberg, J. E., Johnston, L. D., O'Malley & Bachman, J. G., Miech, R. A. & Patrick, 2018). The HMS dataset has information on 18,325 students, giving researchers greater statistical precision and power than MTF.

A question about drug usage was included in the main survey (N = 18,325). A question about frequency of alcohol consumption was in the Substance Use module, administered at six schools (N = 3,415). The Brief COPE inventory (Carver, 1997), which includes questions about

substance usage for coping, was in the Stress and Coping module, administered at 13 schools (N = 10,795).

Measures

Participants were asked a question about Hispanic ethnicity and a question about their race. Using answers from both questions, I coded respondents as (1) *Non-Hispanic White* if they answered no for Hispanic, and exclusively *white* for race, (2) *Hispanic White* if they answered yes for Hispanic, and exclusively *white* for race, (3) *Hispanic only* if they answered yes for Hispanic, and selected no race, (4) *Black* if exclusively *black* for race, (5) *Asian* if exclusively *Asian* for race, (6) *Asian-White* if they selected exactly two races, Asian and White, and (7) *Other* if they selected any other race or races. Other races that could have selected were American Indian, Native American, or Alaskan Native; Middle Eastern, Arab, or Arab American; Pacific Islander; Hawaiian Native; and “Other (please specify).” I avoided coding students as *biracial* because it can encompass any two races. Asian-White biracial constituted 1.8% of the sample, so I coded it separately; other biracial populations were proportionally smaller.

Residence type was coded into four categories: (1) on-campus dorms, on-campus apartments, or on- or off-campus co-operative housing (reference); (2) fraternity or sorority houses; (3) off-campus non-university or “other” housing; and (4) living with parents or relatives. Relationship status was measured with six options, which I collapsed into four categories: single (reference); in a relationship; married, domestic partnership, or engaged; and other. Gender was measured by asking for gender identity. Options were male, female, trans male/trans man, trans female/trans woman, genderqueer/gender non-conforming, and other.

Because of small cell counts, I created a trichotomous variable: male (reference), female, and trans/queer/other (TQO).

Participants answered a single question about recent substance usage, “Over the past 30 days, have you used any of the following drugs?” The options were marijuana, cocaine (any form, including crack, powder, or freebase), heroin, methamphetamines (also known as speed, crystal meth, or ice), other stimulants (such as Ritalin, Adderall) without a prescription, ecstasy, other drugs without a prescription (please specify), and “no, none of these.” Participants could select multiple drugs but “none” was only selectable as an exclusive answer. I created a dummy code for marijuana. I indexed drug variety by counting selected options.

Frequency of alcohol usage was indexed by this question from the Alcohol Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, De la Fuente, & Grant, 1993): “How often do you have a drink containing alcohol?” The options were 1 (*never*), 2 (*monthly or less*), 3 (*2-4 times a month*), 4 (*2-3 times a week*), 5 (*4 or more times a week*).

Disengagement coping was measured with the Brief COPE (Carver, 1997). Respondents were asked how they “respond to stressful situations”. Two items on the Brief COPE measured alcohol-and-drug disengagement: “I use alcohol or drugs to make myself feel better” and “[...] to help me get through it” ($\alpha = .92$). Respondents answered on a scale from 1 (*I usually don't do this at all*) to 4 (*I usually do this a lot*). I computed the mean and to adjust for a sawtooth pattern I rounded up fractional values. The Brief COPE also includes a two-item scale of behavioral disengagement: “I give up trying to deal with it” and “I give up the attempt to cope” ($\alpha = .69$). I computed the mean.

I created a composite score for parental SES using three questions. The first two questions, measuring parental educational attainment, were answered on a 7-item scale from 1

(8th grade or lower) to 7 (graduate degree). The third question was “Which of the following best describes your family’s financial situation growing up?” The options were 1 (*very poor, not enough to get by*), 2 (*Had enough to get by but not many “extras”*), 3 (*comfortable*), and 4 (*well to do*). The composite score was derived using polychoric principal component analysis, recommended for generating an SES score from ordinal questions (Kolenikov & Angeles, 2009).

Data Analysis

All analyses were conducted in Stata SE 15. I used multilevel models with students (Level 1) nested within schools (Level 2). For dichotomous outcomes, I used logistic models. For the two coping-style variables, answers were right-skewed, so I used ordered logistic models. Unless otherwise specified, all analyses were weighted. I grand-centered SES at Level 1 to make intercepts and coefficients meaningful (Nezlek, 2011). The intercept is the outcome if parental SES is average and other characteristics match the reference values (i.e., single, non-Hispanic, White, male, on-campus resident).

Results

Table 1 contains descriptive statistics for categorical variables. I break down parental education because it is more interpretable than the SES score. Table 2 contains descriptive statistics for the continuous variables, along with age and parental education.

Table 1 here.

Because multilevel models were used in analyses, I computed intraclass coefficients for all outcomes. These intraclass coefficients, in Table 2, show that most variation is at the individual level rather than the school level.

Table 2 here

Correlations between key variables are in Table 3. I include average parental educational attainment for interpretability. Parental educational attainment and SES had comparable positive correlations with marijuana usage, variety in drug usage, and frequency of alcohol consumption. These results indicate a zero-order association between SES and drug and alcohol consumption, as hypothesized, but do not account for the nested structure of the data.

Table 3 here

Multilevel modeling results for the behavioral outcomes are in Table 3.4. Note that only the third column shows linear coefficients. The table includes z statistics to make cross-column comparisons possible. Supporting my hypotheses, these results show parental SES is predictive of marijuana usage, variety in drug usage, and frequency of alcohol consumption. The SES effects are much stronger in the unadjusted models.

Table 4 here

Although SES was a predictor of consumption, as hypothesized, race was a stronger predictor. Alcohol and drug usage were highest among Whites and lowest among Asians. Asian-White biracial students were at the midpoint between Asians and Whites. There was also a noteworthy White–Black contrast across all outcomes, although rates among Blacks were not as low as Asians.

As anticipated, students who lived with parents were less likely, and students who lived in a fraternity or sorority were more likely to use substances. The effect sizes in both cases were high.

Aligning with prior research on relationship status and gender, all results showed that married individuals and women were less likely to use alcohol and drugs. Being in a relationship rather than single also weakly predicted lower alcohol and drug usage.

Substance use coping, the instrumental outcome, is displayed in the fourth column of Table 4. Parental SES was predictive of substance usage coping in the adjusted analysis, as hypothesized, but not in the unadjusted analysis. I modeled behavioral disengagement to compare the results with substance-use disengagement (see Table 3.4). Behavioral disengagement was much higher among low-SES students.

Discussion

A number of psychological and sociological perspectives suggest that SES is predictive of deviant behavior. The current study sought to examine whether SES among college students is predictive of one particular form of deviant behavior, namely, drug and alcohol consumption. SES was predictive of consumption of marijuana in the last 30 days and consumption of a large variety of drugs. SES was also predictive of a high level of alcohol consumption. These effects were robust after controlling for race, gender, residence type, and relationship status.

The analysis of disengagement revealed that there was no *increased* risk for substance-use disengagement but there was *decreased* risk for disengagement coping among high-SES students. Low-SES students may feel pessimistic about completing tasks, and therefore combine behavioral disengagement with substance-use disengagement—they may give up on a task and then drink to de-stress. High-SES students may solely use substances to distract themselves from academic stress. Both high school and college students facing achievement-related stress use alcohol and substance use to diminish their stress (National Center on Addiction and Substance Abuse, 2007, 2012). Indeed, students in elite high schools who use effective coping strategies *also* use drugs and alcohol to cope with academic stress (Leonard et al., 2015). There is a future-oriented mindset among such students, who believe that a stress-inducing focus on academic achievement in the short-term bears fruit in the long term.

Substance-use disengagement is less permanent than behavioral disengagement, signifying transient distraction rather than quitting entirely, which could explain why the patterns are dissimilar for substance-use and behavioral disengagement. The patterns suggest that a certain set of high-SES students may use substances to cope with achievement stress, while a certain set of low-SES students may use substances to cope with pessimism. Thus, there are modest rates of substance-abuse coping among both sets. It is noteworthy that many factors that predict behavioral outcomes also predict substance-use disengagement, but SES has dissimilar coefficients.

Although SES was a robust predictor of alcohol and drug usage, the strongest predictor was race. Alcohol and drug usage were highest among Whites. Non-Hispanic Whites, due to their privileged status, may feel immune to sanctions, and therefore engage in more frequent and intense alcohol and substance use. Asian students were least likely to use alcohol and drugs, and Asian-White biracial students were at the approximate midpoint between Asians and Whites.

Whereas some White parents encourage partying, Asian parents likely constrain their children's pursuit of extracurricular activities unless those activities contribute to one's marketability (Hamilton, 2016; Lee & Zhou, 2015). Social learning may also be a factor: Asian Americans and Pacific Islanders have the lowest rate of substance use, and thus Asian children are less likely to observe their parents using drugs (Price, Risk, Wong, & Klinge, 2002; Yap et al., 2017). Social learning may explain why there is a racial contrast despite higher affluence among Asian households than White households (Sakamoto, Goyette, & Kim, 2009).

Across all outcomes, the coefficients for Asian-White biracial students were midway between the Asian and White coefficients. This pattern suggests that the cultural effect is stronger when transmitted by two Asian parents rather than one. Of course, Asians may also

shun alcohol use because they metabolize alcohol differently, which leads to heightened responses to alcohol and lower alcohol dependence (Eng, Luczak, & Wall, 2007), but this genotypic difference does not explain differential drug consumption.

Black students may have lower rates than White students because disadvantaged students tend to view college as a path to social mobility rather than a venue for partying (Armstrong & Hamilton, 2013). In addition, some Greek life organizations practice *de facto* discrimination against Black students (Sidanius, Van Laar, Levin, & Sinclair, 2004), and Black students have greater reason to fear arrest for drug possession and underage drinking (Beckett, Nyrop, & Pfingst, 2006).

As anticipated, students who lived with parents were less likely, and students who lived in a fraternity or sorority were more likely to use substances. The effect sizes in both cases were high. Living with parents is a manifestation of low SES, representing fiscal constraints and attendance at a local school, but living in a fraternity or sorority house is a value-driven choice. The high effect sizes suggest that physical proximity and socially normative consumption robustly predict the individual consumption. The coefficients for residence type in this model are relatively strong, which suggests that high-SES students who live in Greek housing and off-campus apartment may have readily accessible alcohol, which they can consume when stressed. High-SES students who live on campus in dormitories may be less prone to store alcohol in their residence.

This study's primary limitation is the response rate. Although non-response weighting corrects this problem to a degree, the response rate was likely correlated with trait conscientiousness, which also predicts healthier life choices (Bogg & Roberts, 2013). Mentally healthy students are also under-represented because HMS elicits fewer responses from such

students (Eisenberg, Golberstein, & Gollust, 2007). These findings should not be generalized to the non-college population because low-SES college students are unrepresentative of the low-SES emerging adult population. They gain acceptance to college if they have traits and characteristics, such as self-control and general intelligence, that compensate for their socioeconomic disadvantage. These same traits may constrain their use of alcohol and drugs.

Previous studies have shown that high SES predicts greater alcohol and drug use in early adulthood, but this is the first study with a very large sample size to focus exclusively on college students. College students, unlike young adults in general, have chosen to pursue a particular educational career, so one cannot generalize from all young adults to college students. Colleges are also particular institutions. They provide access to a party scene where popularity can hinge on intense alcohol and drug use, and a professional pathway where the likelihood of success hinges on abstention from alcohol and drugs. Young adults who opt for jobs rather than college do not find themselves in a similar environment.

The overall findings are consistent with the hypothesis that white students who have high-SES parents are likely to pursue the party pathway. Some scholars have argued that high-SES students who pursue this pathway are nevertheless successful in their post-college career because they leverage their parents' social capital to mitigate a poor transcript (Armstrong & Hamilton, 2013). But, they argue, the few low-SES students who traverse this pathway end up "paying for the party," suffering career consequences. Thus, colleges maintain inequality.

The current findings paint a more complicated picture. Given their alcohol and drug consumption rates, high-SES students may be more likely than their peers to suffer direct outcomes of substance consumption such as neural damage and addiction disorders, and indirect outcomes such as unintentional and intentional injury. Drug use also increases the risk of

unemployment, creating downward mobility for affluent students (Arria et al., 2013). Many privileged students may consume alcohol and drugs in moderation, and thus suffer few consequences. However, any alcohol and drug consumption is an antecedent of high levels of consumption. The consequences of such consumption, such as illness, injury, and unemployment cannot be undone by parental privilege.

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Table 1. Descriptive Statistics, Weighted Percentages.

	Models 1-2	Model 3	Model 4
Age			
18-20	36.7	33.6	36.3
21-24	63.3	66.4	63.7
Gender			
Male	44.2	44.5	43.2
Female	54.8	54.3	56.0
Trans./Other	1.0	1.2	0.8
Race/Ethnicity			
Non-Hispanic White	68.3	67.9	74.4
Hispanic White	5.2	5.9	4.3
Hispanic Only	2.9	3.8	2.5
Black	4.2	4.2	4.2
Asian	11.0	9.8	7.6
Asian-White	1.9	1.8	1.5
All Other	6.5	6.6	5.5
Relationship Status			
Single	61.5	62.2	61.1
In Relationship	36.1	36.2	36.2
Married	1.6	0.8	1.9
Div./Wid./Other	0.8	0.9	0.8
Parent 1 Education			
8th grade or less	1.6	1.5	1.4
8th-12th grade	1.7	1.9	1.7
High School Deg.	10.1	10.3	10.9
Some College	10.5	11.5	10.3
Associates	6.6	6.7	7.9
Bachelor's	34.5	36.4	34.3
Graduate	35.1	31.7	33.5
Parent 2 Education			
8th grade or less	1.6	1.3	1.5
8th-12th grade	2.0	2.0	1.9
High School Deg.	12.0	13.5	12.2
Some College	12.4	13.5	12.4
Associates	8.0	8.1	8.6
Bachelor's	35.1	36.7	35.6
Graduate	28.9	24.9	27.8
N	18611	3469	10944

Table 2. Measures of Central Tendency and Dispersion for Continuous Variables

	Mean	Median	SD	N	Kurtosis	Skewness
Parental SES (0-4)	2.69	2.72	0.59	20,960	2.96	-0.51
Marijuana (Dummy)	0.23	0	0.39	19,097	2.76	1.32
No. of Drugs (0-6)	0.30	0	0.59	19,097	12.09	2.65
Freq. of Alcohol (1-5)	3.05	3	1.00	3,566	2.00	-0.21
Subst. Use Coping (1-4)	1.37	1	0.61	11,186	5.30	1.71
Behavioral Disengagement (1-4)	1.51	1.5	0.62	11,179	4.74	1.41

Note. Kurtosis and skewness are unweighted.

Table 3. Table of Pairwise Correlations and Intraclass Coefficients, Weighted

	Age	Par. Educ.	SES	Marijuana (Y/N)	Drug Count	Alc. Freq.	Drug Diseng.	Beh. Diseng.
Age	1							
N	21596							
Par. Educ.	-.07***	1						
N	21495	21495						
SES	-.08***	.92***	1					
N	20960	20960	20960					
Marijuana (Y/N)	<.01	.04***	.05***	1				
N	19097	19017	18611	19097				
Drug Count ¹	.03***	.04***	.05***	.83***	1			
N	19097	19017	18611	19097	19097			
Alc. Freq.	.17***	.09***	.11***	.32***	.34***	1		
N	3566	3547	3469	3539	3539	3566		
Drug Diseng. ¹	.09***	.02	.02	.44***	.47***	.31***	1	
N	11186	11149	10944	10955	10955	972	11186	
Beh. Diseng.	.03*	-.08***	-.10***	.08***	.09***	-.02	.26***	1
N	11179	11142	10937	10948	10948	972	11179	11179
ICC	.01	.13	.13	.11	.03	.02	.02	.01

Note. The observation count is included because it varies greatly across cells.

¹ Variable is right-skewed. Use caution when interpreting the coefficient.

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

Table 4. Multilevel Model Results for Marijuana in Last 30 Days, Number of Drugs in Last 30 Days, Alcohol Frequency, Substance-Use Disengagement, and Behavioral Disengagement

	Marijuana	No. of Drugs	Alcohol Freq.	Substance Use Disengage- ment	Behavioral Disengage- ment
Model	Logistic (OR)	Neg. Binomial (IRR)	Linear	Ordered Logistic (OR)	Ordered Logistic (OR)
Unadjusted					
Intercept	0.288*** (-8.31)	0.301*** (-9.48)	2.760*** (37.93)	--	--
SES	1.172*** (3.82)	1.150*** (3.66)	0.186*** (3.72)	1.095** (2.80)	0.836** (-4.02)
Random Effects					
L2 Var.(Intercept)	0.392	0.279	0.024	0.174	0.016
L2 Var.(SES)	0.014	0.011	0.008	--	0.011
L2 Covar. (Intercept, SES)	-0.045 (-1.49)	0.021 (-1.02)	-0.005 (-0.70)	--	0.002 (0.40)
L1 Var. (Residual)	--	--	1.330	--	--
N	18,611	18,611	3,469	10,944	10,937
Adjusted					
Intercept	0.341*** (-6.98)	0.337*** (-8.75)	2.854*** (23.77)	--	--
SES	1.129** (2.98)	1.106** (2.68)	0.120** (2.67)	1.050 (1.32)	0.861** (-3.14)
Residence: On-Campus	1	1	1	1	1
Frat./Sor.	2.425*** (6.99)	2.364*** (7.92)	0.659** (2.96)	2.539*** (9.74)	1.066 (0.42)
Off-Campus	1.548* (7.36)	1.536*** (8.11)	0.320 (1.41)	1.747*** (6.63)	1.087 (1.29)
With Parents/Relatives	0.618***	0.651**	-0.447***	0.740**	1.326**

	(-4.53)	(-3.99)	(-3.60)	(-3.16)	(3.06)
Non-Hisp. White	1	1	1	1	1
Hisp. White	0.949	0.999	-0.177*	0.880	1.116
	(-1.78)	(-0.01)	(-1.99)	(-1.18)	(0.73)
Hispanic Only	1.382**	1.162 [†]	-0.356***	1.169	1.154
	(2.69)	(1.79)	(-3.61)	(1.64)	(1.115)
Black	0.913*	0.858*	-0.446***	0.711	1.087
	(-1.28)	(-2.28)	(-3.52)	(-1.48)	(0.41)
Asian	0.485***	0.581***	-0.623***	0.689***	1.304**
	(-7.21)	(-5.49)	(-10.78)	(-4.02)	(3.84)
Asian-White	0.752**	0.785*	-0.347***	0.907	1.081
	(-2.97)	(-2.83)	(-7.15)	(-0.54)	(0.54)
Other	1.116	1.075	-0.367***	1.148	1.216*
	(1.28)	(1.40)	(-3.68)	(1.31)	(2.16)
Single	1	1	1	1	1
In Rel.	0.940	0.949 [†]	0.039	0.869**	0.913*
	(-1.56)	(-1.84)	(0.50)	(-3.34)	(-2.28)
Marr.	0.439***	0.544***	-0.589**	0.561**	0.892
	(-6.27)	(-4.22)	(-2.81)	(-2.92)	(-0.57)
Other	2.029**	1.901**	0.970**	0.963	1.218
	(2.82)	(3.29)	(3.29)	(-0.16)	(1.46)
Male	1	1	1	1	1
Female	0.677***	0.702***	-0.096 [†]	0.824**	1.373***
	(-8.65)	(-8.25)	(-1.87)	(-3.34)	(7.96)
Trans/Other	0.848	0.752	-0.637***	1.334	3.806***
	(-0.69)	(-1.26)	(-5.00)	(1.35)	(4.79)
<hr/>					
Random Effects					
L2 Var.(Intercept)	0.387	0.266	0.015	0.180	0.014
L2 Var.(SES)	0.016	0.013	0.004	--	0.006
L2 Covar. (Intercept, SES)	-0.034	-0.008	-0.004	--	<0.001
	(-1.32)	(-0.49)	(-0.95)		(0.96)
L1 Var. Residual	--	--	1.238	--	--

N	18,325	18,325	3,415	10,802	10,795
No. of Schools	23	23	6	13	13

Note. Z statistics in parentheses. OR = Odds ratio. IRR = Incidence rate ratio. Var. = variance. Covar. = covariance. For substance use disengagement, the Level 1 slope was fixed. Non-linear models used 7 integration points