Research Brief

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School Policies, School Connection, and Adolescents :

WHAT PREDICTS YOUNG ADULT SUBSTANCE USE?

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OVERVIEW

Schools take different approaches to creating and fostering a healthy and safe environment for youth.[i] Varied approaches include setting limits for acceptable behavior, defining the consequences for breaking school rules, and the provision of services to address problem behaviors. One important issue that schools have to address is substance use among students, particularly during adolescence, when substance use is often initiated.[ii] Although not all youth who experiment with drugs and alcohol in adolescence continue to use substances or develop substance use dependencies as adults, adolescent substance use is highly predictive of young adult substance use. Using data from the Longitudinal Study of Adolescent Health (Add Health), this brief seeks to illuminate the relationship between school substance-use policies, school connectedness, and young adult drug and alcohol use.

KEY FINDINGS

- Adolescents who report higher levels of connection to their school are less likely to binge drink or use drugs in young adulthood.
- Adolescents who attended schools with "zero tolerance" drug and/or alcohol policies are no more or less likely to be binge drinkers or drug users as young adults.
- Adolescents who attended schools with in-school drug awareness programs or alcohol or drug treatment programs, or schools with more services not related to substance use, are no more or less likely to be binge drinkers or drug users as young adults.
- Several individual, family, and peer factors are related to a greater likelihood of young adult drug use and binge drinking, including having close friends who drink alcohol and having a parent who is binge drinker. Adolescents who use substances before age 13 are more likely to be drug users as young adults.
- These findings suggest that policies that support a positive school climate and promote students' connection to school may have a stronger influence on youth's use of drugs and alcohol than harsh deterrence policies or in-school substance-use education or treatment programs.

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BACKGROUND

Schools have implemented policies ranging from educational prevention programs, such as the popular Drug Abuse and Resistance Education program (D.A.R.E.), to providing alcohol and drug treatment services.[iii] Many schools have adopted "zero-tolerance" policies for alcohol- or drug-related offenses, which mandate specific consequences (typically suspension or expulsion) for students. The popularity of these types of policies grew in the 1990s, first in reaction to high rates of school violence, and then as an approach to deterring other problem behaviors, including substance use.[iv] However, there has been limited evidence of the effectiveness of zero-tolerance policies in reducing problem behaviors or improving school safety.[v] Further, some research shows that harsh policies are related to lower levels of school connectedness, yet school connectedness has been associated with a lower risk of substance use and other risky behaviors.[vi,vii] However, there is little research that indicates whether school connectedness is related to lower levels of substance use later in life. We used the Longitudinal Study of Adolescent Health (Add Health) to examine:

(1) how zero tolerance policies and/or in-school substance-use programs or other supportive services are related to young adult binge drinking and drug use, and

(2) how school connectedness, school attachment, and caring teachers are related to young adult binge drinking and drug use.

See the Data and Methods section at the end of this brief for more detail about the measures used in this analysis.

RESULTS

DESCRIPTION OF THE SAMPLE

Most adolescents in this analysis attended schools with zero-tolerance policies for alcohol possession (85.0 percent), alcohol consumption (90.6 percent), drug possession (93.8 percent), or drug use (93.8 percent), and slightly fewer went to schools using a drug awareness and resistance education program (83.0 percent). Less than half of adolescents attended schools with drug abuse treatment (45.0 percent) or alcohol abuse treatment (46.4 percent) programs (see Table 1). On average, students' schools offered three other services unrelated to alcohol or drugs (e.g., family planning services, sexually transmitted infection screening, emotional counseling, physical fitness/recreation centers).

School connection was common among these adolescents. The average level of school connectedness, measured as the respondent's level of agreement with five statements about their feelings about school (e.g., feeling like he/she is part of the school, feeling safe at school), was 3.7 out of 5. The average level of school attachment, a composite of adolescents' responses to three of the school connectedness measures specifically about their feelings about inclusion at school, was 3.7 out of 5. Finally, just over half reported that they felt their teachers cared (52.5 percent). For more information about the school connectedness measures, see the Data and Methods section at the end of this brief.

By the time they were young adults, about one in seven youth in this sample was a binge drinker, and about one in eight used illicit drugs.

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SCHOOL POLICIES, SCHOOL CONNECTEDNESS, AND SUBSTANCE USE

We first ran logistic regression models for each school policy and program, controlling for key personal, family, and individual characteristics. We found that the school policies – both supportive and punitive – were not related to young adult substance use, after accounting for individual and family factors, including race/ethnicity, gender, parental binge drinking, parental education, peer drinking, early school suspension, and substance use before age 13 (Table 2).[2]

In separate logistic regression models controlling for the same individual and family factors, we found that adolescents with higher levels of school connectedness were less likely to use drugs as young adults (Table 3). School connectedness, however, was not related to later binge drinking. Adolescents who had greater feelings of school attachment (a subcategory of school connectedness) were less likely to be young adult drug users, but were no more or less likely to be binge drinkers as young adults (Table 4). Adolescents who felt that teachers cared about them were less likely to binge drink or use drugs in young adulthood.

To test whether the relationship between high school policies and subsequent young adult substance use varied depending on the level of an adolescent's connection to school, we ran logistic regression models with interactions between school policies and school connectedness measures that controlled for individual and family characteristics (results not shown). We found that the lack of relationship between school policies and substance use was not changed as a function of young adults' level of connectedness with the school they attended as an adolescent. This suggests that, regardless of an adolescent's feelings of belonging and connection to his or her school, zero-tolerance drug and alcohol policies, as well as supportive services such as substance-use education and treatment programs, are unrelated to later drug and alcohol use. The reverse also holds true – regardless of whether an adolescent attends a school with mandatory disciplinary policies or substance use education or treatment programs, school connectedness is associated with lower risk for drug use later in life.

Additionally, several family, peer, and individual characteristics can each explain some of the differences in the likelihood of substance use among young adults, above and beyond school characteristics and other factors (see Tables 2 through 4). Females, regardless of race/ethnicity, parental education, and family/peer drinking, are less likely to be drug users and less likely to be binge drinkers than males. White youth are more likely than black youth to be binge drinkers or drug users as young adults, while Hispanic youth are equally likely as whites to be young adult substance users. Adolescents who used drugs and/or alcohol before age 13 are more likely to use drugs as young adults, regardless of gender, race/ethnicity, family, and peer factors. Adolescents who report that more of their best friends drink are more likely to be binge drinkers or drug users in young adulthood. Finally, adolescents who had a parent who was a binge drinker are more likely to be binge drinkers themselves as young adults and also have a higher likelihood of being young adult drug users.

[2] We also ran multilevel models to account for students nested within schools, that is, accounting for the fact that some study participants attended the same schools, and found similar results.

CONCLUSION AND IMPLICATIONS

The findings presented in this brief confirm previous research finding that school connectedness is associated with lower risk of drug use, and that caring teachers can lower the risk of both drug use and alcohol abuse. They also add to the body of literature that indicates that zero-tolerance policies, when applied to drug and alcohol infractions, do not lower the risk of substance use. Together with the findings that family and peer influences matter above and beyond other individual and school characteristics, this suggests that school policies that target individuals most at risk and that promote a positive school climate could have the greatest impact on later substance abuse. Encouragingly, there is a growing body of evidence-based programs that use targeted behavioral supports, promote socio-emotional learning, and involve the school, family, and community in substance use prevention and promoting a positive school climate. [viii,ix,x,xi]

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Table 1. Descriptive statistics for adolescents interviewed at Wave I and Wave III, who were age 19 or younger at Wave I

Variable	Percent or Mean
Gender	
Male	50.3
Female	49.7
Race/Ethnicity	
White, non-Hispanic	66.9
Black, non-Hispanic	15.8
Hispanic	11.9
Other race, non-Hispanic	5.4
Wave I (Respondents aged 12 to 19)	
Age	
11	0.1
12	3.5
13	15.3
14	16.6
15	16.8
16	16.5
17	16.4
18	13.1
19	1.7
Parent was binge drinker	5.5
Parental educational attainment	
Less than high school	13.7
GED or high school diploma	29.1
More than high school	25.6
Number of three best friends who drank	
0	44.9
1	21.1
2	13.8
3	20.2
Used substance before age 12	24.8
Ever suspended	26.8
Felt teachers cared	52.5

Table 1. Continued

Variable	Percent or Mean
School connectedness scale (range 1-5)	3.7
School attachment scale (range 1-5)	3.7
School was public school	92.6
Number of school services not related to alcohol/drugs	2.9
School had drug abuse program	45.0
School had alcohol abuse program	46.4
School had drug awareness and resistance education program	83.0
School had zero tolerance alcohol possession policy	85.0
School had zero tolerance alcohol use policy	90.6
School had zero tolerance drug possession policy	93.8
School had zero tolerance drug use policy	93.8
School had any zero tolerance policy	96.3
Wave III (Respondents aged 18 to 26)	
Binge drinker	14.1
Drug user	12.8

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Table 2. Results from logistic regression models with drug use at Wave III as dependent variable

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Female	-0.55*** (0.08)	-0.55*** (0.08)	-0.55*** (0.08)	-0.55*** (0.08)	-0.55*** (0.08)	-0.57*** (0.08)
Race/ethnicity						
Black (ref = white)	-1.38*** (0.15)	-1.39*** (0.15)	-1.39*** (0.15)	-1.38*** (0.15)	-1.37*** (0.14)	-1.38*** (0.15)
Latino	-0.21 (0.13)	-0.21 (0.13)	-0.20 (0.13)	-0.21 (0.13)	-0.22 (0.13)	-0.21 (0.13)
Other Race	-0.32 (0.20)	-0.33 (0.20)	-0.33 (0.20)	-0.32 (0.20)	-0.33 (0.20)	-0.33 (0.20)
Age at Wave 1	-0.18*** (0.02)	-0.18*** (0.02)	-0.18*** (0.02)	-0.18*** (0.02)	-0.18*** (0.02)	-0.18*** (0.02)
Parental binge drinking						
Not interviewed (ref = binge drinker)	-0.17 (0.17)	-0.17 (0.17)	-0.17 (0.17)	-0.17 (0.17)	-0.17 (0.17)	-0.16 (0.17)
Not a binge drinker	-0.49* (0.21)	-0.49* (0.21)	-0.48* (0.21)	-0.48* (0.21)	-0.48* (0.21)	-0.49* (0.21)
Number of friends who drink	0.26*** (0.04)	0.26*** (0.04)	0.26*** (0.04)	0.26*** (0.04)	0.26*** (0.04)	0.26*** (0.04)
Early substance use	0.53*** (0.08)	0.53*** (0.08)	0.53*** (0.08)	0.53*** (0.08)	0.52*** (0.08)	0.49*** (0.08)
Parental education						
Less than high school (ref = more than high school)	-0.47*** (0.12)	-0.46*** (0.12)	-0.46*** (0.12)	-0.46*** (0.12)	-0.47*** (0.12)	-0.47*** (0.12)
High school/ GED	-0.36*** (0.10)	-0.36*** (0.10)	-0.36*** (0.10)	-0.36*** (0.10)	-0.36*** (0.10)	-0.36*** (0.10)

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Table 2. Continued

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Suspended prior to 7th grade	0.11 (0.09)	0.11 (0.09)	0.11 (0.09)	0.11 (0.09)	0.11 (0.09)	0.059 (0.09)
School was public school	-0.41** (0.13)	-0.40** (0.13)	-0.40** (0.13)	-0.39** (0.13)	-0.39** (0.14)	-0.44*** (0.13)
Drug awareness and resistance education program	-0.017 (0.13)					
Zero tolerance - drug use		0.12 (0.25)				
Zero tolerance - drug possession			0.12 (0.18)			
Drug abuse treatment program				-0.097 (0.09)		
Number of school services					0.015 (0.02)	
School connectedness						-0.15** (0.05)
Constant	1.46*** (0.42)	1.33** (0.48)	1.31** (0.46)	1.41*** (0.39)	1.42*** (0.40)	2.11*** (0.41)
Observations	12,692	12,692	12,692	12,692	12,692	12,692
Standard errors in parentheses						
*** p<0.001, ** p<0.01, * p<0.05						

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Table 3. Results from logistic regression models with binge drinking at Wave III as dependent variable

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Female	-1.12*** (0.07)	-1.12*** (0.07)	-1.12*** (0.07)	-1.12*** (0.07)	-1.12*** (0.07)	-1.11*** (0.07)
Race/ethnicity						
Black (ref = white)	-1.02*** (0.15)	-1.02*** (0.15)	-1.01*** (0.15)	-1.02*** (0.15)	-1.01*** (0.15)	-1.02*** (0.15)
Latino	-0.27 (0.15)	-0.26 (0.15)	-0.27 (0.15)	-0.26 (0.15)	-0.27 (0.15)	-0.26 (0.15)
Other Race	-0.58** (0.18)	-0.58** (0.18)	-0.57** (0.18)	-0.57** (0.18)	-0.58** (0.19)	-0.58** (0.18)
Age at Wave 1	-0.12*** (0.02)	-0.12*** (0.02)	-0.13*** (0.02)	-0.12*** (0.02)	-0.13*** (0.02)	-0.12*** (0.02)
Parental binge drinking						
Not interviewed (ref = binge drinker)	-0.35** (0.14)	-0.35** (0.13)	-0.35* (0.13)	-0.36** (0.13)	-0.35* (0.13)	-0.36** (0.14)
Not a binge drinker	-0.41* (0.16)	-0.41* (0.16)	-0.41* (0.16)	-0.41* (0.16)	-0.40* (0.16)	-0.41* (0.16)
Number of friends who drink	0.35*** (0.04)	0.35*** (0.04)	0.35*** (0.04)	0.35*** (0.04)	0.35*** (0.04)	0.35*** (0.04)
Early substance use	0.12 (0.08)	0.12 (0.08)	0.12 (0.08)	0.12 (0.08)	0.12 (0.08)	0.13 (0.08)
Parental education						
Less than high school (ref = more than high school)	-0.49** (0.15)	-0.49*** (0.14)	-0.50*** (0.14)	-0.48** (0.14)	-0.49** (0.15)	-0.49** (0.15)
High school/GED	-0.15 (0.09)	-0.15 (0.09)	-0.15 (0.09)	-0.14 (0.09)	-0.15 (0.09)	-0.15 (0.09)
Suspended prior to 7th grade	-0.065 (0.08)	-0.064 (0.08)	-0.058 (0.08)	-0.064 (0.08)	-0.061 (0.08)	-0.053 (0.08)

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Table 3. Continued

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
School was public school	-0.11 (0.14)	-0.11 (0.14)	-0.11 (0.14)	-0.10 (0.15)	-0.095 (0.15)	-0.11 (0.14)
Drug awareness and resistance education program	0.053 (0.10)					
Zero tolerance - drug use		-0.024 (0.15)				
Zero tolerance - drug possession			-0.12 (0.12)			
Drug abuse treatment program				-0.11 (0.09)		
Number of school services					0.018 (0.02)	
School connectedness						0.0075 (0.01)
Constant	0.76 (0.39)	0.84 (0.43)	0.92* (0.41)	0.79 (0.40)	0.80* (0.40)	0.65 (0.49)
Observations	12,692	12,692	12,692	12,692	12,692	12,692
Standard errors in parentheses						
*** p<0.001, ** p<0.01, * p<0.05						

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Table 4. Results from logistic regression models with school attachment and teachers caring

	Binge Drinker at Wave III		Drug User at Wave III	
	Model (1)	Model (2)	Model (1)	Model (2)
Female	-1.12*** (0.07)	-1.12*** (0.07)	-0.56*** (0.08)	-0.55*** (0.08)
Race/ethnicity				
Black (ref = white)	-1.02*** (0.15)	-1.01*** (0.15)	-1.38*** (0.15)	-1.37*** (0.15)
Latino	-0.26 (0.15)	-0.27 (0.15)	-0.21 (0.13)	-0.21 (0.13)
Other Race	-0.58** (0.18)	-0.58** (0.18)	-0.32 (0.20)	-0.33 (0.20)
Age at Wave 1	-0.12*** (0.02)	-0.12*** (0.02)	-0.18*** (0.02)	-0.18*** (0.02)
Parental binge drinking				
Not interviewed (ref = binge drinker)	-0.36** (0.14)	-0.34* (0.14)	-0.16 (0.17)	-0.15 (0.17)
Not a binge drinker	-0.41* (0.16)	-0.40* (0.16)	-0.49* (0.21)	-0.48* (0.21)
Number of friends who drink	0.35*** (0.04)	0.34*** (0.04)	0.26*** (0.04)	0.25*** (0.04)
Early substance use	0.13 (0.08)	0.091 (0.08)	0.51*** (0.08)	0.49*** (0.08)
Parental education				
Less than high school (ref = more than high school)	-0.49** (0.14)	-0.49*** (0.14)	-0.47*** (0.12)	-0.48*** (0.12)
High school/GED	-0.15 (0.09)	-0.15 (0.09)	-0.36*** (0.10)	-0.37*** (0.10)
Suspended prior to 7th grade	-0.053 (0.08)	-0.100 (0.08)	0.079 (0.09)	0.071 (0.09)

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Table 4. Continued

	Binge Drinker at Wave III		Drug User at Wave III	
School was public school	-0.11 (0.14)	-0.16 (0.14)	-0.42** (0.13)	-0.45*** (0.13)
School attachment	0.035 (0.05)		-0.09* (0.04)	
Felt teachers cared		-0.27*** (0.08)		-0.30*** (0.07)
Constant	0.66 (0.47)	1.00* (0.41)	1.86*** (0.41)	1.65*** (0.39)
Observations	12,692	12,692	12,692	12,692
Standard errors in parentheses				
*** p<0.001, ** p<0.01, * p<0.05				

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Data and Methods

This brief uses data from The National Longitudinal Study of Adolescent Health (Add Health), a nationally-representative survey of 20,745 adolescents in grades seven through 12 who were attending 132 middle schools and high schools in 1994-1995. It was designed to provide a broad understanding of the health and well-being of adolescents and their subsequent development by following respondents over time, into young adulthood. A third wave of data (Wave III) was collected in 2001-2002 from students who were in 12th grade in Wave I. In this third wave of data collection, the youth were ages 18 to 26. At Wave I, an administrator from each of the 132 included schools was asked to complete a questionnaire. A parent (usually the resident mother) of each adolescent was also interviewed at Wave I.

The initial sample of youth who were interviewed at both Wave I and Wave III and who have valid longitudinal weights accounting for both waves of data is 14,322 young adults. For this analysis, we restricted the sample to 14,271 young adults who were age 19 or younger at Wave I. The analytic sample (n=12,692) was smaller because cases with missing data on the dependent variables of interest (n=1579 or 11% of the study sample) were excluded.

Control variables

Multivariate analyses controlled for gender, race/ethnicity, age at Wave I, parental binge drinking, the number of friends who drink, early substance use, parental education, past suspension from school, and public school status.

Race/ethnicity (Wave I) was categorized as non-Hispanic black, non-Hispanic white, Hispanic/Latino, and other non-Hispanic race.

Parental binge drinking (Wave I) was based on parental response to the question "How often in the last month have you had five or more drinks on one occasion?" A parent was categorized as a binge drinker if they had five or more drinks in one sitting two or more times in the past month, and as a non-binge drinker if they reported binge drinking less than twice in the past month. Because of the high number of adolescents whose parents were not interviewed, parents were also categorized as not being included in the survey. In Tables 2 through 4, the omitted reference category is the parent was a binge drinker.

Number of best friends who drink (Wave I) is based on the adolescent's report. Adolescents were asked how many of their three best friends drank alcohol at least once a month. Responses range from zero to three.

Early substance use (Wave I) is categorized as either having used any alcohol, tobacco, or drugs before age 13, or not having used substances before age 13.

Parent level of educational attainment (Wave I), for either parent of the respondent, was categorized as less than high school, high school or GED, or more than high school. In Tables 2 through 4 the omitted reference category is more than high school.

School policies and school connectedness

All school policy variables are based on school administrator responses at Wave I.

A school was categorized as having a zero-tolerance policy if the school administrator said that the consequence for the first occurrence of the specific alcohol or drug infraction was out-of-school suspension or expulsion. Zero-tolerance variables were coded for possessing alcohol, drinking alcohol at school, possessing an illegal drug, and using an illegal drug at school.

Administrators reported whether their schools had specific substance-related programs, including a drug awareness and resistance education program, a drug abuse program, and an alcohol abuse program. For each of these the school was categorized as having the service if it was provided the service on school premises, and as not having the service if it was provided by the district at other schools, if students were referred for services elsewhere, or if they were neither provision or referral was offered.

The number of school services is the total number of health-related services a school provides on premises from the list of the following 15 services: athletic physical, non-athletic physical, treatment for minor illnesses or injuries, diagnostic

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screenings, treatment for sexually transmitted diseases, immunizations, family planning counseling, family planning services, prenatal/postpartum health care, nutrition/weight loss program, emotional counseling, rape counseling program, physical violence program (e.g., family violence, partner abuse), day care for children of currently enrolled students, physical fitness/recreation center.

School connectedness is a scale first constructed by McNeely, Nonnemaker, and Blum[xii] from the following five items:

- You feel close to people at your school.
- You feel like you are part of your school.
- You are happy to be at your school.
- The teachers at your school treat students fairly.
- You feel safe in your school.

Responses on a Likert-type scale from "strongly agree" to "strongly disagree." Responses to the five items were summed and the scale was reverse-coded so that a higher score indicates greater connectedness. If respondents were missing any of the individual items, they were coded as missing.

School attachment is a scale created from three of the five school connectedness items that was first used by developed by Bollen and Hoyle[xiii] to measure social belonging and was later used with Add Health data by Moody and Bearman[xiv] to measure school attachment. Responses to the three items:

- you feel close to people at your school;
- you feel like you are part of your school; and
- you are happy to be at your school

were summed and the scale was reverse-coded so that a higher score indicates greater school attachment. If respondents were missing any of the individual items, they were coded as missing.

Perceiving that teachers care was categorized as "yes" if adolescents said that they felt their teachers cared about them "quite a bit" or "very much", and as "no" if they said they felt their teachers cared "not at all," "very little," or "somewhat."

Young adult drug and alcohol use

Respondents were coded as drug users if they had used illicit drugs in the past year at Wave III of the survey. Illicit drugs included cocaine, crystal meth, and "other drugs such as LSD, PCP, ecstasy, mushrooms, inhalants, ice, heroin, or prescription medicines not prescribed for you."

Respondents were coded as binge drinkers if they had consumed five or more drinks in a row at least one day per week in past year at Wave III.

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