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School-based health centers and adolescent substance use: moderating effects of race/ethnicity and socioeconomic status

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Abstract

BACKGROUND—School-based health centers (SBHCs) have been associated with many positive health and academic outcomes. The current study extends previous research and examines possible differences in the association between SBHC exposure and adolescent alcohol, tobacco and other drug use by race/ethnicity, sex, and socioeconomic status (SES).

METHODS—California Healthy Kids Survey data from 504 traditional high schools in California were linked with publically available data on SBHCs and school demographics. Multi-level logistic regression analyses were conducted controlling for school and individual characteristics.

RESULTS—Significant interactions suggest that SBHC exposure was inversely associated with past 30-day alcohol use, binge drinking, and cigarette and e-cigarette use among African-American youth and negatively associated with cigarette and marijuana use among Asian youth, relative to Whites. There was also a significant interaction between SBHC exposure and parent education for past 30-day alcohol use and binge drinking. No significant sex interactions were observed.

CONCLUSIONS—SBHC exposure appears to be inversely related to substance use among youth in some ethnic minority groups and youth of lower SES. This may have implications regarding SBHC placement and investment. Additional research is necessary to understand the mechanisms through which SBHCs may influence adolescent substance use and other health behaviors.

Keywords

Adolescence; substance use; ethnic minorities; SES

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Human Subjects Approval Statement

This study was approved by the Prevention Research Center's Institutional Review Board # 555340-20.

School-based health centers (SBHCs) are designed to bring confidential, developmentally-appropriate, affordable, youth-friendly health services to the setting where many young people are located in an effort to overcome barriers to access and use. Their mere presence in schools may help contribute to healthy outcomes in youth through several mechanisms, including (1) providing additional services, (2) leveraging opportunities to intervene with youth (eg, identifying substance-using youth when dealing with those who seek assistance for depression), and (3) associated outreach and referral activities that can encourage youth help-seeking. Increased availability of services may be expected to result in higher levels of health service access and potentially use, the magnitude of which will depend on factors such as student need. A systematic review of SBHC impacts by the Community Preventive Service Task Force of the US Centers for Disease Control and Prevention noted that, in general, SBHCs were associated with improved educational and health outcomes including high school graduation, school performance, delivery of preventative services, asthma morbidity, contraceptive use among females, and emergency department admission rates.¹

However, relatively few studies have examined whether SBHC access may affect alcohol, tobacco and other drug use, with some providing positive results (at least for certain subgroups and certain substances) while others have failed to find significant effects for substance use outcomes.¹ For example, one study found that among inner-city African-American high school students in the Midwest, use rates for cigarettes and marijuana (but not alcohol) were lower among 11th compared to 9th graders in SBHC schools, while the reverse was true in non-SBHC schools.² The lower rates of cigarette and marijuana use among 11th graders compared to 9th graders at SBHC schools suggests that greater exposure to SBHCs may have had a beneficial effect on those behaviors. More recently, a quasi-experimental study found that among a largely (90%) African-American sample, those with access to an SBHC were more likely to have made use of behavioral health services and less likely to have drunk alcohol and to have smoked marijuana compared to students without access.³ Conversely, one study found no differences in substance use between adolescents with and without SBHC access.⁴

Fewer studies have examined whether SBHC effects on substance use behaviors differ by socioeconomic status (SES) or sex. Some research indicates that SBHCs affect demographic subgroups differently as one study found that the inverse association between SBHCs and drinking and marijuana was stronger for males compared to female high school students.⁵

Differential effects of SBHCs may be expected, however, given that sociodemographic and cultural factors are associated with levels of access to and use of services via the traditional health care system. Low-income and minority youth are least likely to be insured or to have a usual source of health care.^{6,7} Although females often make contact with the health care system when they become sexually active, males, in contrast, generally become disconnected from primary care health services during adolescence.⁸ Further, cultural (ie, racial and ethnic group) and contextual or situational differences such as SES, social norms, and region) factors affect steps in the help-seeking process from problem recognition to the decision to seek help to service selection.⁹ For example, cultural factors may influence the extent to which aberrant behaviors are accepted or perceived as a cause for concern by others, such as parents or teachers, and, thus, are defined as problematic. Attitudes

associated with the decision to seek help—such as receptivity to health care, anticipated and real negative consequences from others, and stigma tolerance—may be influenced by culture (eg, East Asian cultural attitudes regarding the use of extra-familial or outside help as a source of shame and “loss of face”).^{10–12} Research also suggests that distrust of the health care system tends to be higher among minority students, and may not only reflect differences in past cultural experiences but expectations for care (eg, mistrust of health providers) that influence help seeking.^{13,14}

Minority youth are underserved by the traditional health care system and, thus, at risk for unmet health needs. Therefore, given SBHC efforts to reach and serve minority and low-income youth, as well as evidence of differential referral patterns to SBHCs as a function of youths’ race/ethnicity and income status, SBHCs may be expected to have a greater beneficial effect among youth of color and low-income youth, though they are intended to benefit all adolescents. The current study seeks to examine this issue using a large statewide survey sample with more than 500 high schools. We expect that race/ethnicity and SBHC presence will interact such that SBHCs will be more strongly and inversely associated with substance-use risk behaviors among racial/ethnic minority youth compared to white youth. We also hypothesize that a similar pattern will emerge among lower SES compared to higher SES youth. Though females are more likely than males to visit SBHCs,^{15,16} it is unclear whether there may be a differential association. Therefore, our examination of sex differences is exploratory.

METHODS

Participants and Procedure

High school sample—Publicly available educational and aggregated student demographic data from 2013 were downloaded from the California Department of Education (CDE) website and matched on school ID. Analyses were restricted to regular/traditional California public high schools that had enrolled 9th through 12th graders, participated in the 2013–14 California Healthy Kids Survey (CHKS), and had at least 10 CHKS participants, for a final sample of 504 schools. Alternative, regional occupational programs, charter, and community day schools were excluded as they serve unique student populations. A list of all California schools served by an SBHC clinic that was located on campus was obtained from the California School-Based Health Alliance website and then linked to CDE data. Of the 504 high schools, 50 had an SBHC.

School-level characteristics obtained from the CDE included total number of students, percentage of students in different race/ethnic groups (Hispanic, non-Hispanic White, African-American, Asian/Pacific Islander), and percentage of students eligible for free or reduced-price lunch. A school urbanicity indicator was obtained from the National Center on Education Statistics (NCES). Based on the NCES indicator and the distribution of schools with and without SBHCs in the sample, schools were classified as being in a city/urban, suburban, or town/rural setting; these categories were dummy coded with schools in town/rural settings as the referent group. A dichotomous SBHC indicator was also created based on data from the California School-Based Health Alliance website.

Student participants—Student-level data for this study were obtained from the 2013–14 California Healthy Kids Survey (CHKS), which was completed by 330,764 9th through 12th graders in the 504 public high schools. The CHKS is a statewide cross-sectional survey conducted by WestEd, a non-profit research organization in collaboration with the CDE. The CDE requires the following criteria to be met for the data to be certified, representative and valid: (1) 100% of all district schools participated or 100% of all selected schools participated in an approved sampling plan; (2) An appropriate class subject or class period was identified and used; (3) 100% of selected classrooms participated; (4) The number of completed, usable answer forms obtained per grade was 60% or more of the selected sample; or (5) If active parental consent was used, 70% or more parents within each grade's selected sample returned signed permission forms, either consenting or not consenting to their child's participation.¹⁷

The CHKS questionnaire is anonymous and self-administered in classrooms either as a written or Internet-based survey. Active or passive parental consent is obtained prior to survey administration, and students are assured that their responses to survey questions will be kept confidential. The survey takes about one class period to complete.

Instrumentation

Lifetime and past-month substance use—Students were asked, “During your life, how many times have you used the following substances...(a) a whole cigarette; (b) electronic cigarettes, e-cigarettes, or some other vaping device such as e-hookah, hookah pens or vape pens; (c) one full drink of alcohol (such as a can of beer, glass of wine, wine cooler, or shot of liquor); and (d) marijuana (pot, weed, grass, hash, bud). Students were also asked how many days they used each of those substances during the past 30 days, including, “five or more drinks of alcohol in a row, that is, within a couple of hours?” with six possible response options ranging from “0 days” to “20–30 days.” Because of the skewed distributions of these variables, we created dichotomous measures of both lifetime and past 30-day use of each substance.

Demographic characteristics—Students were asked to report their age, sex, and race/ethnicity. Race/ethnicity categories included Hispanic, non-Hispanic white, black, Asian/Pacific Islander, American Indian, and other. Race/ethnic categories were dummy coded with non-Hispanic white as the referent group. As a proxy for socioeconomic status students were also asked, “What is the highest level of education your parents completed? (Mark the educational level of the parent who went the furthest in school.)” A dichotomous (0/1) parent education variable was created: parent did not graduate from college (1) versus parent graduated from college (0).

Data Analysis

Descriptive statistics were first examined to compare school and student characteristics at schools with and without SBHCs, including prevalence rates of lifetime and past 30-day substance use by sex and race/ethnicity. Multi-level logistic regression analyses were then conducted to examine possible sociodemographic differences in the association between having an SBHC and past 30-day substance use. Regression models included cross-level

SBHC $\times$ sex, SBHC $\times$ race/ethnic group, and SBHC $\times$ parent education terms and corresponding main effects. Other student-level demographic characteristics and lifetime use of each substance were included as covariates along with school-level demographic characteristics. Where significant cross-level interactions were observed, additional subgroup analyses were conducted to further examine the nature of the interactions. HLM version 7.0 software was used for multi-level analyses, allowing for random effects at the school level to adjust for variance attributable to student-level observations nested within schools.¹⁸ Robust standard errors were used for tests of statistical significance.

RESULTS

Descriptive Statistics

Student sample characteristics are provided in Table 1. Higher percentages of students attending schools with SBHCs were Asian/Pacific Islander, African-American and had parents who did not graduate from college compared to schools without SBHCs. Schools without SBHCs had higher percentages of students who were white and who fell into the other racial/ethnic category than schools with SBHCs. Prevalence rates for lifetime and past-30-day alcohol use, binge drinking, cigarette and e-cigarette use were similar among students attending schools with and without SBHCs. However, somewhat higher prevalence rates for lifetime and past-30-day marijuana use were observed among students attending schools with SBHCs.

School-level characteristics in Table 2 indicate that schools with SBHCs had higher percentages of students who were Asian/Pacific Islander, African-American and eligible for free or reduce price meals, while schools without SBHCs had higher percentages of students who were white. A higher percentage of schools with SBHCs were in urban cities, while higher percentages of schools without SBHCs were in suburban areas, towns, and rural areas.

Regression Analyses

Results of multi-level logistic regression analyses with student- and school-level covariates and cross-level interaction terms are provided in Table 3. Significant interactions between SBHC status and African-American race/ethnicity were observed for past 30-day alcohol use, binge drinking, and cigarette and e-cigarette use, indicating an inverse association between having an SBHC and these behaviors among African-American students relative to white students. Significant interactions were also observed between SBHC status and Asian/Pacific Islander race/ethnicity for past 30-day cigarette and marijuana use, also indicating an inverse association between having an SBHC and these behaviors among Asian/Pacific Islander students relative to white students. A significant interaction between SBHC status and parent education was observed for past 30-day alcohol use and binge drinking, indicating an inverse association between having an SBHC and both of these behaviors among students whose parent(s) did not graduate from college relative to students whose parent(s) did graduate from college.

To further explore the nature of these interactions, covariate-adjusted percentages for past 30-day substance use behaviors were plotted, as shown in Figure 1. Figures 1(a)–(c) indicate lower prevalence rates of past 30-day alcohol use, binge drinking, and cigarette use among African-American students at schools with SBHCs relative to those at schools without SBHCs, while similar or higher rates of these behaviors were observed for white students in attending schools with SBHCs relative to schools without SBHCs. For example, among African-Americans attending a school without an SBHC about 14% report any past 30-day binge drinking compared to about 10% of African-Americans attending a school with an SBHC. Figure 1(d) indicates a lower prevalence rate of e-cigarette use among black and white students at schools with SBHCs relative to those at schools without SBHCs, but the inverse relationship was stronger for black students. Figure 1(e) indicates a lower prevalence rate of past 30-day marijuana use among Asian/Pacific Islander students relative to Whites, and an inverse association between schools with SBHCs and marijuana use among Asian/Pacific Islander students, but not Whites. The prevalence of past-30-day marijuana use was higher among white students at schools with SBHCs compared to those at schools without SBHCs. Figure 1(f) shows a lower prevalence rate of past 30-day alcohol use among students whose parent(s) did not graduate from college at schools with SBHCs relative to those at schools without SBHCs. In contrast, a slightly higher prevalence rate of past-30-day alcohol use was observed among students whose parent(s) graduated from college at schools with SBHCs relative to those at schools without SBHCs. No significant interactions between SBHC, sex and other race/ethnic variables were observed for past-30-day substance use behaviors.

Of the school characteristics, having an SBHC was positively related to past 30-day prevalence of alcohol use, binge drinking and marijuana use; these results should be interpreted with caution in the presence of cross-level interaction terms. Percent Hispanic, Asian/Pacific Islander and African-American were inversely related to past 30-day binge drinking prevalence. A suburban school location was positively related to past 30-day prevalence of cigarette and marijuana use relative to a town/rural location.

Regarding main effects of student characteristics, age was positively associated with past 30-day binge drinking, but was inversely related to past 30-day e-cigarette and marijuana use. Boys were more likely than girls to report past 30-day binge drinking, cigarette, e-cigarette and marijuana use. Hispanic and Asian/Pacific Islander students were less likely to report almost all of the past 30-day substance use behaviors than Whites, while African-American students were more likely to report past 30-day cigarette and marijuana use than Whites. Students whose parents did not graduate from college were more likely to report all types of past 30-day substance use than students whose parents did graduate from college.

DISCUSSION

This large scale study examined how SBHCs may be differentially associated with substance use behaviors in youth demographic sub-groups. SBHC evaluations are often limited by methodological and logistical challenges inherent in conducting research within schools including having enough power to detect the effect of exposure to SBHCs.¹⁹ The current study makes use of several data sources to assess the association between SBHC access and

ATOD use among high school students. Preventing binge drinking, smoking and marijuana use among youth, particularly among ethnic minority youth, is critical to reducing health disparities. Our findings suggest that access to a school-based health center has the potential to prevent or reduce ATOD use among high risk youth, and therefore may be an effective public health approach for reducing ATOD-related health disparities.

The current study found that SBHCs had a differential association with substance use behaviors among (1) African-Americans and Asian/Pacific Islanders compared to white youth; and (2) youth whose parent(s) did not complete college compared to those who did. Among African-Americans, access to an SBHC was inversely associated with alcohol use, binge drinking, cigarette and e-cigarette use. Among Asian/Pacific Islanders, SBHC access was inversely associated with cigarette and marijuana use. In contrast, among white youth, there were positive associations between SBHC access and alcohol and marijuana use, no association between SBHC access and cigarette use, and a weak inverse association between SBHC access and e-cigarette use. SBHC access was also negatively associated with alcohol use and binge drinking among low-income youth, but was positively related to alcohol use and unrelated to binge drinking among higher income youth. Sex did not appear to moderate the relationship between SBHC exposure and ATOD use.

Several mechanisms may explain these findings. Given that SBHCs are typically located in low-income schools with larger minority populations, it may be that SBHC staff are conducting focused outreach and targeted ATOD prevention efforts to minority populations and low-income youth to a greater extent than white and higher SES youth. Teachers may also be more likely to refer minority and low SES youth due to perceived or actual needs, behavioral issues and other concerns. This may lead to higher levels of exposure/use, which, in turn, could contribute to a greater sense of school connectedness. This is supported by an earlier study that found that access to SBHCs was positively associated with school connectedness, which, in turn, was positively associated to GPA and grade promotion.²⁰

Contrary to our hypothesis, no differential SBHC association with substance use behaviors emerged among Hispanic/Latino students relative to whites; and, surprisingly, we did see an effect for Asian/Pacific Islander youth. Though the association between ATOD use and SBHCs was negative, the magnitude and significance varied by substance and ethnic minority group. This may be a function of outreach, messaging, curriculum, and/or utilization rates and the individual level. Without knowing utilization rates, it is difficult to speculate why a relationship emerged among some ethnic groups but not others. Future research should look to incorporate SBHC-level data to identify what aspects of an SBHC are particularly effective.

Previous research suggests that among insured adolescents with a managed care plan, teens attending schools with SBHCs were 10 times more likely to make a mental health or substance use visit, with 96.5 percent of mental health visits and 100 percent of substance abuse visits occurring at SBHCs.²¹ A follow-up study among low-income adolescents with access to a community health network and/or a school-based health center found that a higher percentage of youth, 35%, indicated mental health as the primary reason for seeking care at an SBHC compared to 3% at the community health network.²² This may be due to

increased availability or access such as no wait time, youth trust in SBHC services and confidentiality, and/or a greater number of referral sources, in particular, teachers, staff, and administrators. Coupled with the results of the current study, there is evidence to suggest that SBHCs may be well positioned to address substance use, particularly among low-income and minority youth.

Limitations of this study include a cross-sectional design, a focus on traditional high schools, and a variable response rate by school. We addressed these limitations by controlling for school-level variables associated with presence or absence of SBHCs, and lifetime substance use behaviors. Future research would benefit from collecting or using existing longitudinal data and expanding the focus to include non-traditional schools, in particular, alternative schools, whose students may be at higher risk for substance abuse. Additionally, because SBHC exposure cannot be equated to actual use, results may differ when utilization is considered and should be examined in future studies. Unfortunately, assessment of utilization was not possible in the current study as no questions about SBHC visits or use of specific types of SBHC services were included in the survey. To more fully understand the impact of SBHCs on population-level outcomes, future research should provide a more thorough accounting of important school, clinic, and community characteristics such as the presence of other health providers in the school serving students, the extent of SBHC clinic outreach and student engagement with the clinic, and the range and quality of services offered by SBHC and nonSBHC resources, especially the use of evidence-based strategies that have been shown empirically to result in better prevention outcomes. Few studies to date have examined the heterogeneity of services across SBHCs, perhaps a contributing factor to the mixed results seen across the literature. Additionally, schools and communities may differ substantially in terms of their youth services programs, school nutrition policies, physical education requirements, and school-based health education that may impact the schools' approaches to healthy environments. Inclusion of these school, clinic and community factors in future research will help provide a fuller understanding of facilitating resources and how they operate synergistically to support SBHC functions. However, this study is a first step and provides initial findings on the impact SBHCs may have on adolescent substance use behaviors. Further investigation with more in-depth longitudinal data is also necessary to explore underlying mechanisms of influence to better understand how SBHCs affect adolescent substance use and other health behaviors.

IMPLICATIONS FOR SCHOOL HEALTH

A review of SBHC impact by the US Centers for Disease Control and Prevention identified several evidence gaps in the literature including the question: "Are there thresholds or points of diminishing returns on community income, insurance coverage, and other measures of need above which SBHCs are less effective?"¹ The current study suggests that when focusing on ATOD use, SBHCs may have a differential impact depending on race/ethnicity and socioeconomic status. In particular, SBHCs were not associated with mitigating influences on any of the measures of substance use among Hispanic students, while such moderating influences did emerge for other minority and low SES students. To help ensure

that Hispanic students who would benefit from substance use services are better served, SBHCs should do the following:

- Seek guidance from the research literature and the community, such as through focus groups, during the planning phase to gain a clear understanding of the issues that may be especially important to Hispanic students and their families with respect to the use of youth-oriented health services to ensure that they are culturally relevant;
- Partner with Latino health organizations and engage Latino community leaders to raise awareness among both parents and youth of the services provided by SBHCs;
- Ensure that informational/educational materials developed for outreach as well as service delivery are developed to appeal to and be understood by Spanish speakers;
- Provide guidance to teachers and administrators on making referrals to ensure that all students who would benefit from SBHC enrollment are encouraged to avail themselves of their services.

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Figure 1.
SBHC Status and Prevalence of Past 30-day Substance Use Behaviors, by Race/Ethnicity [1(a)–(e)] and Parent Education [1(f)]

Table 1

Student Characteristics by School SBHC Status, Mean (SD) or Percent

Characteristic	Total sample (N = 330,764)	SBHC (N = 41,753)	No SBHC (N = 289,011)
<u>Demographics</u>			
Age	15.4 (1.2)	15.7 (1.2)	15.4 (1.2) *
Male	49.4	49.6	49.4
Hispanic	48.9	45.4	49.5
Asian/Pacific Islander	13.9	27.3	12.0 *
African-American	3.9	7.1	3.4 *
White	21.3	9.0	23.1 *
Other	9.7	8.5	9.8 *
Parent did not graduate from college	62.5	72.2	61.1 *
<u>Alcohol use</u>			
Lifetime	42.3	41.8	42.3
Past-30-day alcohol	23.4	22.3	23.5
Past-30-day binge	13.8	12.9	13.9
<u>Cigarette use</u>			
Lifetime	15.0	14.5	15.1
Past-30-day	6.8	6.3	6.9
<u>E-cigarette use</u>			
Lifetime	27.2	26.1	27.4
Past-30-day	14.3	13.0	14.5
<u>Marijuana use</u>			
Lifetime	30.9	33.5	30.6 *
Past-30-day	16.8	18.3	16.6 *

*
p < .01

Table 2

School Characteristics by SBHC Status, Mean (SD) or Percent

Characteristic	Total sample (N = 504)	SBHC (N = 50)	No SBHC (N = 454)
Total number of students	1,616 (846.6)	1,631 (832.8)	1,615 (848.9)
Percent Hispanic	46.1 (26.3)	46.3 (26.1)	46.1 (26.3)
Percent Asian/Pacific Islander	12.9 (15.6)	24.4 (22.7)	11.6 (14.0) **
Percent African-American	6.0 (8.5)	13.5 (15.5)	5.2 (6.9) **
Percent White	30.8 (23.7)	12.8 (16.3)	32.7 (23.6) **
Percent eligible for free/reduce priced meals	54.4 (25.7)	69.5 (18.4)	52.7 (25.8) **
City/urban (%)	32.3	66.0	28.6 **
Suburban (%)	41.5	28.0	43.0 *
Town/rural (%)	23.2	6.0	25.1 **

*
p < .05;**
p < .01

Table 3
Results of Multi-level Logistic Regression Analyses, Odds Ratio (95% Confidence Interval)

Variable	Any past-30-day use					
	Alcohol	Binge drinking	Cigarettes	E cigarettes	Marijuana	
<u>Student level</u>						
Age	1.03 (1.02, 1.04)**	1.09 (1.07, 1.10)**	0.99 (0.98, 1.01)	0.97 (0.96, 0.98)**	0.96 (0.95, 0.97)**	
Male	0.88 (0.86, 0.91)**	1.22 (1.19, 1.26)**	1.21 (1.16, 1.26)**	1.17 (1.13, 1.20)**	1.18 (1.15, 1.22)**	
Hispanic	0.95 (0.92, 0.98)**	0.90 (0.87, 0.93)**	0.83 (0.79, 0.88)**	0.97 (0.93, 1.10)	0.90 (0.87, 0.94)**	
Asian/Pacific Islander	0.62 (0.58, 0.65)**	0.56 (0.53, 0.60)**	0.79 (0.73, 0.85)**	0.81 (0.76, 0.87)**	0.72 (0.68, 0.77)**	
African-American	0.97 (0.89, 1.04)	0.96 (0.88, 1.06)	1.43 (1.29, 1.58)**	1.09 (0.99, 1.19)	1.14 (1.05, 1.23)**	
Other	0.94 (0.90, 0.98)**	0.95 (0.91, 1.00)	1.07 (1.00, 1.14)*	1.02 (0.97, 1.08)	0.99 (0.94, 1.04)	
White	REF	REF	REF	REF	REF	
Parent did not graduate from college	1.11 (1.08, 1.14)**	1.15 (1.11, 1.18)**	1.19 (1.15, 1.25)**	1.13 (1.09, 1.17)**	1.12 (1.09, 1.16)**	
<u>Cross level</u>						
SBHC × male	1.00 (0.93, 1.07)	1.00 (0.93, 1.09)	1.09 (0.98, 1.21)	1.00 (0.93, 1.08)	0.98 (0.91, 1.05)	
SBHC × Hispanic	0.95 (0.85, 1.05)	0.94 (0.84, 1.05)	0.90 (0.75, 1.09)	0.91 (0.80, 1.03)	0.91 (0.80, 1.04)	
SBHC × Asian/Pac.Isl.	0.90 (0.78, 1.03)	0.86 (0.73, 1.10)	0.81 (0.67, 0.98)*	0.84 (0.70, 1.01)	0.81 (0.68, 0.98)*	
SBHC × Afr. American	0.75 (0.62, 0.91)**	0.62 (0.49, 0.78)**	0.61 (0.45, 0.84)**	0.67 (0.53, 0.86)**	0.87 (0.70, 1.07)	
SBHC × Other	0.88 (0.78, 1.00)	0.90 (0.79, 1.04)	0.78 (0.60, 1.00)	0.88 (0.76, 1.02)	1.00 (0.85, 1.18)	
SBHC × Parent educ.	0.86 (0.79, 0.95)**	0.87 (0.79, 0.96)**	0.92 (0.79, 1.07)	0.99 (0.89, 1.09)	0.97 (0.89, 1.06)	
<u>School level</u>						
SBHC	1.27 (1.11, 1.46)**	1.31 (1.15, 1.50)**	1.12 (0.88, 1.42)	1.12 (0.97, 1.31)	1.19 (1.03, 1.37)*	
Total number of students	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	
Percent Hispanic	0.996 (0.994, 1.00)	0.996 (0.992, 1.00)*	1.00 (0.995, 1.005)	1.00 (0.997, 1.005)	0.997 (0.993, 1.001)	
Percent Asian/Pac.Isl.	0.99 (0.98, 1.00)	0.99 (0.98, 1.00)*	0.996 (0.991, 1.002)	0.998 (0.994, 1.003)	0.996 (0.992, 1.001)	
Percent African-American	0.996 (0.993, 1.00)	0.99 (0.98, 1.00)*	1.00 (0.99, 1.01)	1.00 (0.995, 1.005)	1.001 (0.996, 1.001)	
Percent White	0.996 (0.993, 1.00)	0.997 (0.994, 1.00)	1.00 (0.99, 1.01)	1.003 (0.998, 1.008)	0.998 (0.994, 1.002)	
Percent eligible for free/reduce priced meals	0.998 (0.997, 0.999)*	0.999 (0.997, 1.01)	0.999 (0.997, 1.001)	1.00 (0.998, 1.001)	0.998 (0.997, 1.00)	
City/urban	1.01 (0.96, 1.07)	1.02 (0.95, 1.09)	1.10 (0.99, 1.21)	1.02 (0.94, 1.11)	1.10 (1.04, 1.17)	
Suburban	0.98 (0.93, 1.04)	0.99 (0.93, 1.06)	1.09 (1.00, 1.18)*	1.03 (0.96, 1.10)	1.07 (1.01, 1.13)*	

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Variable	Any past-30-day use	Alcohol	Binge drinking	Cigarettes	E cigarettes	Marijuana
Town/rural	REF	REF	REF	REF	REF	REF

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