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Problem Behavior, Victimization, and Soda Intake in High School Students

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Abstract

Objective—To examine associations of problem behaviors and victimization with nondiet soda intake among a national sample of 16,188 US high school students.

Methods—We used the 2009 national Youth Risk Behavior Survey. The outcome measure was daily nondiet soda intake.

Results—Smoking, having any sex partners, not always wearing a seat belt, being bullied/threatened/injured on school property, and being physically hurt by their boyfriend/girlfriend were significantly associated with daily nondiet soda intake after adjustment for age, sex, race/ethnicity, and weight status.

Conclusions—Our findings suggest a need to examine why nondiet soda intake is associated with these behaviors to understand potential mechanisms.

Keywords

soda; adolescents; problem behaviors; being victimized; YRBS

Detrimental behaviors or being victimized might be associated with soda intake because evidence suggests that for children, sweet taste has analgesic properties,¹ and the stronger their sweet preference, the greater its analgesic effect on them.² Moreover, palatable foods (ie, foods high in sugar or fat) and addictive drugs stimulate some of the same neural systems in the brain (eg, the reward pathway) that process behavior reinforcement (eg, dopamine and opioids).^{3–5} For example, a study reported that youth with a family history of alcoholism and positive depressive symptoms preferred sweeter solutions.⁶ One experimental study reported that smokers had significantly higher liking of sweets than did never smokers.⁷ Although it is speculative, it is also plausible that unhealthy behaviors (eg, substance use) could be associated with other secondary unhealthy dietary behaviors such as

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Human Subjects Statement

Student participation in the survey was anonymous and voluntary, and local parental permission procedures were followed. The CDC's institutional review board granted approval for the national YRBS.

Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

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high sugar intake through the consumption of calorically sweetened beverages. Calorically sweetened beverages include, but are not limited to, soft drinks (soda or pop), fruit drinks, sports drinks, energy drinks, tea and coffee drinks, sweetened milk, and any other beverages to which sugars have been added.⁸ Previous studies that investigated the association between calorically sweetened beverages and problem behaviors, however, had inconsistent findings.^{9,10} For instance, Miller reported that problem behaviors and substance use (eg, sexual risk taking, fighting, seat-belt omission, marijuana use, smoking, and alcohol use) were associated with increased frequency of energy drink intake among college students.⁹ Another cross-sectional study with a relatively small convenience sample of 145 US adolescents attending alternative high schools reported that consumption of nondiet soda was significantly positively associated with cigarette smoking but not with alcohol use or marijuana use.¹⁰ Furthermore, consumption of sports drinks and other calorically sweetened beverages was not significantly associated with cigarette smoking, alcohol use, or marijuana use.¹⁰

Calorically sweetened beverage intake has been associated with obesity,^{11,12} dental caries,¹³ type 2 diabetes,¹⁴ displacement of nutrient-rich foods (eg, dairy),¹⁵ disruptive behaviors, and poor mental health (eg, psychological distress).^{16,17} A cross-sectional population-based study of Norwegian adolescents reported that high consumption of sugar-containing soft drinks (4 glasses or 0.8 liter/day) was associated with mental distress, hyperactivity, and conduct problems.¹⁶ Another cross-sectional study with 4741 Australians aged 16 years found that compared with those not consuming soft drinks, high soft drink consumers (> 0.5 liter/day) had 60% higher risk of various poor mental health (eg, depression, stress-related problems, or suicidal ideation) after controlling for demographic and lifestyle factors.¹⁷

Calorically sweetened beverages are the largest source of added sugars and an important contributor of calories in the diet of US youth.¹⁸ A study based on the 2005–2008 National Health and Nutrition Examination Survey data found that 70% of boys and 60% of girls reported drinking calorically sweetened beverages on any given day,¹⁹ and soda was the most commonly consumed calorically sweetened beverage among adolescents (about 67% of all calorically sweetened beverage calories).²⁰ In addition to added sugars in nondiet sodas, these beverages may also contain caffeine. The concentration of caffeine in caffeinated sodas ranges from 35 to 55 mg per 12-ounce can.²¹ The major source of caffeine among adolescents is soft drinks (> 60% of all caffeine consumed by youth came from soft drinks)²² although energy drinks and coffee contain more caffeine than sodas (range of 107–480 mg/12 ounces).²¹ Based on a previous study conducted in US high school students, characteristics of daily nondiet soda consumers were somewhat similar to those of daily energy drink consumers (ie, males, fast food restaurant users, and those who watch TV > 2 hours/day).²³ Furthermore, high concentrations of sugar and caffeine are hypothesized to potentially be addictive, and foods and beverages containing these ingredients are often consumed in a way similar to (eg, constant need) other substances commonly understood to be addictive (eg, drug abuse).^{3,24,25}

To our knowledge, because no US studies have examined associations between detrimental behaviors, victimization, or psychological distress and soft drink intake using a nationally representative sample of adolescents, the purpose of this initial cross-sectional analysis was

to examine possible associations of problem behaviors (including substance use) and being victimized with nondiet soda intake among a nationally representative sample of US high school students. We hypothesized that high school students with problem behaviors and those who have been victimized may have a higher consumption of nondiet soda than that of those without these problems.

METHODS

Sample and Survey Administration

Data from the 2009 national Youth Risk Behavior Survey (YRBS) were obtained. The national YRBS, a component of the Youth Risk Behavior Surveillance System of the Centers for Disease Control and Prevention (CDC) is a school-based survey conducted biennially to monitor the prevalence of priority health risk behaviors among US high school students. In 2009, a 3-stage cluster sample design was used to produce a nationally representative sample of students in grades 9 through 12 who attend public and private high schools in the 50 states and the District of Columbia. Sampling strategies and the psychometric properties of the questionnaire have been reported elsewhere.^{26,27}

Student participation in the survey was anonymous and voluntary, and local parental permission procedures were followed. The CDC's institutional review board granted approval for the national YRBS.²⁷ Students completed the 98-item self-administered questionnaire during a regular class period and recorded their responses directly on a computer-scannable questionnaire booklet. The school response rate was 81%; the student response rate was 88%; and the overall response rate was 71%. Usable questionnaires were obtained from 16,410 students. For this cross-sectional analysis, we excluded 222 students who did not provide a valid response to the question about drinking nondiet soda, resulting in a final analytic sample of 16,188 students.

Outcome Variable

The main outcome measure was nondiet soda intake. Students were asked, "During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.)" Response options were none through 4 or more times/day. Based on our previous analysis,²⁸ we created 3 mutually exclusive nondiet soda intake categories: none, 1–6 times/week, and ≥ 1 time/day for bivariate analyses. Based on previous studies,^{23,29} we dichotomized the nondiet soda intake variable into < 1 time/day and ≥ 1 time/day for logistic regression analyses.

Exposure Variables

Problem behaviors included smoking cigarettes on ≥ 1 day during the 30 days before the survey (no or yes), drinking at least one drink of alcohol on ≥ 1 day during the 30 days before the survey (no or yes), using marijuana ≥ 1 time during the 30 days before the survey (no or yes), having sex partners during the 3 months before the survey (never had sexual intercourse, had sexual intercourse but not during the past 3 months, or ≥ 1 person), and wearing a seat belt when riding in a car driven by someone else (always or less than always).

Being victimized included ever being bullied on school property during the 12 months before the survey (no or yes); being threatened or injured by someone with a weapon on school property during the 12 months before the survey (no or yes); ever being hit, slapped, physically hurt on purpose by their boyfriend or girlfriend during the 12 months before the survey (no or yes); and ever being physically forced to have sexual intercourse (no or yes). Unknown values or missing data regarding exposure variables ranged from 0.4% to 9.2% and were excluded from analyses when the variable was used.

Covariates

Mutually exclusive response categories for each covariate were created. Demographic variables included were age (14, 15, 16, 17, and 18 years), sex, and race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, and non-Hispanic other). Student weight status was categorized as underweight/normal weight [< 85 th percentile for body mass index (BMI) by age and sex], overweight (85 th to < 95 th percentile), and obese (95 th percentile),³⁰ based on BMI calculated from self-reported height and weight. Previous studies showed that soft drink intake varied by age, sex, race/ethnicity, and weight status^{20, 29}; therefore, multivariable logistic regression analyses were adjusted for these variables.

Data Analysis

Chi-square tests were used to examine the unadjusted association between nondiet soda intake and demographic characteristics, weight status, problem behaviors, and victimization. Statistical significance was set at $p < .05$. Multivariable logistic regression models were used to calculate adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for variables associated with drinking nondiet soda at least 1 time/day after controlling for age, sex, race/ethnicity, and weight status. We created 2 multivariable logistic regression models, one to examine the association between problem behaviors and nondiet soda intake ($N = 12,057$) and the second model ($N = 13,525$) to assess the association between being victimized and nondiet soda intake. Samples varied due to missing data for variables of study. The analytic sample used in the first model had a higher proportion of older students and non-Hispanic white than the students excluded from the model. The analytic sample used in the second model had a higher proportion of older students, males, and non-Hispanic white than the students excluded from that model. The sample weight variable was applied to all analyses to adjust for nonresponse and oversampling of black and Hispanic students. All statistical analyses were performed using the Statistical Analysis Software (SAS) (version 9.2, SAS Institute Inc, Cary, NC) and incorporated appropriate procedures to account for complex sample design.

RESULTS

Overall, 29.2% of students drank nondiet soda 1 time/day during the 7 days before the survey. Nondiet soda intake varied significantly by demographic characteristics and weight status. The percentage of students who drank nondiet soda 1 time/day was higher among male students, non-Hispanic black students, and obese students (χ^2 tests, all $p < .004$; Table 1). Nondiet soda intake also varied significantly by all problem behaviors examined (χ^2

tests, all $p < .0001$). The percentage of students who drank nondiet soda 1 time/day was significantly higher among those who smoked cigarettes on 1 day during the 30 days before the survey, those who had at least one drink of alcohol on 1 day during the 30 days before the survey, those who used marijuana 1 time during the 30 days before the survey, those who had one or more sex partners during the 3 months before the survey, and those who did not always wear a seat belt when riding in a car driven by someone else. Although crude ORs showed statistically significant associations with consuming nondiet soda 1 time/day, the adjusted ORs had more limited significant associations. After controlling for age, sex, race/ethnicity, and weight status in multivariable logistic regression analysis, only the following variables remained significantly associated with nondiet soda intake 1 time/day during the 7 days before the survey: smoking cigarettes on 1 day during the 30 days before the survey (vs on 0 days; aOR = 1.77), having sex partners during the past 3 months [had sex but not during the past 3 months (aOR=1.20) and 1 person (aOR = 1.49) vs those who never had sex], and not always wearing a seat belt when riding in a car driven by someone else (vs always wearing a seat belt; aOR = 1.43; Table 2).

Nondiet soda intake also varied significantly by all being-victimized variables (χ^2 tests, all $p < .004$). After controlling for age, sex, race/ethnicity, and weight status in multivariable logistic regression analysis, the following variables were significantly associated with increased nondiet soda intake 1 time/day during the 7 days before the survey: ever being bullied on school property during the 12 months before the survey (vs no; aOR = 1.21); being threatened or injured with a weapon on school property during the 12 months before the survey (vs no; aOR = 1.28); and ever being physically hurt on purpose by their boyfriend or girlfriend during the 12 months before the survey (vs no; aOR = 1.39; Table 3).

DISCUSSION

In the present study, almost one third of students reported drinking a can, bottle, or glass of nondiet soda at least 1 time/day. The prevalence is somewhat lower than that reported in results from a cross-sectional study in Texas that showed 59.5% of 11th graders reported having at least one nondiet soda on the previous day in 2004–2005.²⁹ Discrepancies between studies could be due to differences in the ages of respondents, geographic differences, measurements, and/or change over time. Results of our cross-sectional analysis showed that cigarette smoking, having any sex partners, not always wearing a seat belt when riding in a car, being bullied, being threatened/injured on school property, and being physically hurt by a boyfriend or girlfriend were significantly associated with drinking nondiet soda at least 1 time/day.

We found that the strongest factor associated with daily soda intake was cigarette smoking. Considering the possible adverse health consequences of both cigarette smoking (eg, cancer³¹ and cardiovascular disease³²) and calorically sweetened beverage intake (eg, obesity^{11,12} and type 2 diabetes¹⁴) intervention efforts are needed to reduce cigarette smoking and soda intake among youth. Several studies have examined associations between problem behaviors (such as substance use) and intake of calorically sweetened beverages or caffeinated beverages.^{9,10,33} Somewhat similar to the present study, other researchers also have found that drinking alcohol³⁴ and smoking^{10,34,35} were significantly positively

associated with high intake of calorically sweetened beverages among adolescents. Only one cross-sectional study in the literature addresses marijuana use among adolescents, and this study included a relatively small convenience sample of 145 US adolescents attending alternative high schools and reported that marijuana use and alcohol use were not significantly associated with consumption of nondiet soda, sports drinks, and other calorically sweetened beverages¹⁰ although these findings may not be generalizable. Another cross-sectional analysis of 602 US undergraduate students (mean age=20 years old) reported that problem behaviors, such as cigarette use, alcohol use, marijuana use, illicit prescription drug use, sexual risk taking, serious physical fighting, failing to use seat belts, and taking risks on a dare, were positively related to increased frequency of energy drink intake after controlling for age, race, sex, parental education, and college grade point average.⁹ In a longitudinal study, Collins and colleagues³³ investigated whether heavy use of caffeine is a predictor in the early stage of the substance use (ie, tobacco and alcohol) onset process among 4325 seventh graders in the United States who completed measures at baseline and 1-year follow-up. Increased risk for substance use onset was found for as little caffeine consumption as 6 cups of coffee in their lifetime or 6 cola drinks in the past week, which led the authors to conclude that intake of caffeine may be a predictor in the early substance use onset process.³³ Furthermore, evidence suggests that addictive drugs and palatable foods (foods that are commonly high in sugar) stimulate some of the same neural systems in the brain (a reward pathway).³⁻⁵ Again, this points to addiction, so individuals may consume both effects of drugs might be associated with calorically sweetened beverages.

The association between substance use and intake of calorically sweetened beverages could also reflect shared attitudes about the 2. Although limited information exists on whether attitudes about substance use and soda intake cluster in families, recent research has shown that parents and peers influence adolescent substance use³⁶ as well as calorically sweetened beverage intake.^{37,38} Adolescents whose parents have favorable attitudes for alcohol, tobacco, and other drug uses or adolescents whose friends use drugs are more likely to be involved in substance use.³⁶ In addition, adolescents without restrictive family food rules (ie, always allowed to drink calorically sweetened beverages)³⁸ or youth with misperceptions (mostly overestimation) of peer calorically sweetened beverage intakes are more likely to consume calorically sweetened beverages.³⁷

We were not able to find any published studies examining possible associations between being victimized and calorically sweetened beverage intake. However, previous studies reported that sweet taste has an analgesic effect.^{1,39} For example, an experimental study showed that holding sucrose in the mouth was significantly associated with a 35% prolongation of children's threshold times compared to holding water in their mouths while undergoing the cold pressor test.¹ Furthermore, sugar is hypothesized to potentially be an addictive substance, and palatable foods high in sugar are often consumed in a way similar to the way drugs are abused.^{3,4,24} In other words, addictive drugs and palatable foods might stimulate some of the same neural systems in the brain (a reward pathway).³⁻⁵ Thus, adolescents subjected to stressful conditions such as being victimized might consume foods high in sugar to blunt their pain and/or to activate the brain reward pathway to feel better as

a form of self-medication coping strategies for being victimized. Nonetheless, the significant relation between being victimized and nondiet soda intake requires further investigation.

Limitations

The strength of this study is that it is based on a large, nationally representative sample with a relatively high response rate. However, it has limitations. First, YRBS is based on self-report, so the potential exists for reporting bias. However, a previous study showed that YRBS survey questions demonstrated good test-retest reliability.²⁶ Kappa statistics (a measure of agreement) ranged from 58% to 82% for problem behavior variables and from 41% to 66% for being victimized variables.²⁶ Second, the associations are cross-sectional and do not permit testing for causality or ascertaining the direction of the association. Because this work represents an initial cross-sectional investigation into these associations, longitudinal research is needed to explore further the potential causal linkage. Third, evidence suggests that per-capita kilocalories from calorically sweetened beverages were higher among adolescents from lower-income households compared with adolescents from higher-income households.²⁰ However, we were not able to control for household income status because YRBS does not collect any information on socioeconomic status. Fourth, a range of portion size for soda intake might be too broad because the question asked for drinking a can, bottle, or glass of soda. Fifth, data were available on only nondiet soda intake. Therefore, other types of calorically sweetened beverages, such as fruit-flavored drinks, sport drinks, and energy drinks, were not included in this analysis. However, nondiet soda was the most commonly consumed calorically sweetened beverage and represented about 60% of all calorically sweetened beverage calories among US adolescents.²⁰ Furthermore, because the nondiet soda intake question did not specify whether or not soda was caffeinated, both caffeinated and noncaffeinated nondiet soda may be included in the responses. Lastly, for being victimized variables, the time frame was within the past 12 months, but nondiet soda intake was within the past 7 days.

Conclusion

High consumption of calorically sweetened beverages is a public health concern because of its association with factors indicating adverse physical^{11–14} and mental health.^{16, 17} Considering the association between adverse health consequences and calorically sweetened beverage consumption, efforts to decrease calorically sweetened beverage consumption among adolescents are critical. In addition, this analysis indicates that problem behaviors and victimization are significantly associated with daily consumption of nondiet soda among high school students. These significant associations suggest research should examine why nondiet soda intake is associated with negative behaviors to understand potential mechanisms. Evidence suggests that adverse childhood exposure, such as childhood abuse and household dysfunction during childhood, has been associated with higher risk for being severely obese among adults.⁴⁰ Thus, further research is needed to examine whether calorically sweetened beverage intake might be a link between these traumatic experiences and obesity. Moreover, our findings emphasize the need for more direct and appropriate strategies to prevent and address the emotional consequences of these traumatic youth experiences.

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Table 1
 Respondent Characteristics and Their Associations With Nondiet Soda Intake^a during the 7 Days Before the Survey Among High School Students—United States, Youth Risk Behavior Survey, 2009

Characteristic	N ^b	% ^c	Nondiet Soda Intake			p value ^d
			None % (95% CI)	1–6 Times/Week % (95% CI)	1 Time/Day % (95% CI)	
Total	16,188	100	19.4 (18.2, 20.6)	51.4 (49.7, 53.1)	29.2 (27.1, 31.2)	
Age	16,119					
14 years	1,659	11.5	19.3 (16.8, 21.8)	53.3 (49.5, 57.2)	27.4 (24.0, 30.7)	
15 years	3,652	24.7	16.8 (15.0, 18.6)	54.1 (51.5, 56.6)	29.2 (26.8, 31.6)	
16 years	4,073	25.9	19.4 (17.8, 21.1)	50.9 (48.6, 53.2)	29.7 (26.5, 32.8)	
17 years	4,180	24.3	22.0 (20.0, 24.1)	49.4 (47.1, 51.7)	28.6 (25.7, 31.5)	
18 years	2,555	13.5	19.7 (16.5, 22.9)	49.6 (46.3, 52.8)	30.7 (28.3, 33.2)	.003
Sex	16,124					
Female	8,202	47.9	23.0 (21.1, 24.9)	53.7 (51.7, 55.6)	23.3 (20.9, 25.7)	
Male	7,922	52.1	16.1 (14.8, 17.3)	49.3 (46.9, 51.8)	34.6 (31.7, 37.5)	<.0001
Race/Ethnicity	15,896					
Non-Hispanic White	6,840	58.9	20.0 (18.2, 21.9)	50.9 (48.4, 53.4)	29.1 (26.2, 31.9)	
Non-Hispanic Black	2,758	14.3	17.8 (15.0, 20.6)	48.5 (45.8, 51.2)	33.7 (30.0, 37.5)	
Hispanic	4,695	18.5	17.3 (15.7, 18.8)	54.6 (52.8, 56.5)	28.1 (26.1, 30.2)	
Non-Hispanic Other ^e	1,603	8.3	22.3 (19.4, 25.2)	53.5 (50.8, 56.2)	24.2 (20.8, 27.6)	.0003
Weight Status^f	14,992					
Underweight/normal weight	10,656	72.3	20.1 (18.6, 21.6)	51.2 (49.3, 53.1)	28.7 (26.4, 31.0)	
Overweight	2,459	15.7	18.1 (16.0, 20.1)	54.7 (51.5, 57.9)	27.2 (24.1, 30.3)	
Obese	1,877	12.0	16.9 (14.1, 19.8)	49.4 (46.1, 52.8)	33.6 (30.0, 37.3)	.003

Note.

^aDrinking a can, bottle, or glass of soda or pop (not including diet soda or diet pop) during the 7 days before the survey

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^q Unweighted sample size

^r Because of rounding, weighted percentages may not add up to 100%.

^s Chi-square tests were used for each variable to examine differences across categories.

^t Non-Hispanic Other includes non-Hispanic American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, or multirace.

^u Underweight/normal weight was defined as body mass index (BMI) < 85th percentile, overweight was defined as BMI 85th to < 95th percentile, and obesity was defined as BMI 95th percentile.

Table 2

Problem Behaviors and Their Associations With Nondiet Soda Intake^a during the 7 Days Before the Survey Among High School Students—United States, Youth Risk Behavior Survey, 2009

Problem Behaviors	Bivariate Analysis Nondiet Soda Intake				Logistic Regression Analysis Nondiet Soda Intake 1 Time/Day			
	All	None		1–6 Time/Week		1 Time/Day		Adjusted Odds Ratio (95% CI) ^d
		% (95% CI) ^b	% (95% CI)	% (95% CI)	% (95% CI)	p value ^c	Crude Odds Ratio (95% CI)	
Smoked Cigarettes on 1 Day, past 30 Days (N = 15,568)^e								
No	80.6 (80.0, 82.3)	21.4 (20.1, 22.6)	53.1 (51.4, 54.8)	25.5 (23.6, 27.4)		Reference	Reference	
Yes	19.4 (17.7, 21.0)	11.3 (9.9, 12.7)	46.5 (43.9, 49.1)	42.2 (39.5, 44.9)	<.0001	2.13 (1.94, 2.35)	1.77 (1.51, 2.08)	
Drank Alcohol on 1 Day, past 30 Days (N = 14,698)								
No	58.2 (56.6, 59.8)	21.9 (20.6, 23.3)	53.0 (51.5, 54.5)	25.1 (23.2, 26.9)	<.0001	Reference	Reference	
Yes	41.8 (40.2, 43.4)	15.9 (14.2, 17.5)	50.4 (47.8, 53.0)	33.7 (30.8, 36.7)		1.52 (1.36, 1.71)	1.05 (0.92, 1.19)	
Used Marijuana 1 Time, past 30 Days (N = 15,940)								
No	79.3 (77.9, 80.7)	21.1 (19.8, 22.4)	52.2 (50.6, 53.9)	26.7 (24.8, 28.7)	<.0001	Reference	Reference	
Yes	20.7 (19.3, 22.1)	12.7 (10.9, 14.6)	49.3 (46.0, 52.6)	38.0 (34.8, 41.1)		1.68 (1.52, 1.87)	0.97 (0.81, 1.14)	
Number of Sex Partners, past 3 Months (N = 14,893)								
Never had sexual intercourse	54.2 (51.0, 57.4)	22.6 (20.5, 23.8)	54.1 (52.0, 56.2)	23.7 (21.7, 25.8)	<.0001	Reference	Reference	
Had sexual intercourse, but not during the past 3 months	11.8 (10.7, 12.9)	16.8 (14.8, 18.9)	51.1 (48.0, 54.2)	32.1 (28.8, 35.3)		1.52 (1.30, 1.77)	1.20 (1.01, 1.43)	
1 person	34.0 (31.7, 36.4)	15.3 (13.5, 17.2)	48.4 (46.4, 50.4)	36.3 (33.2, 39.3)		1.83 (1.58, 2.12)	1.49 (1.29, 1.72)	
Wore a Seat Belt in a Car Driven by Other (N = 16,003)								
Always	49.3 (46.2, 52.5)	23.1 (21.4, 24.7)	53.0 (50.9, 55.0)	24.0 (22.1, 25.8)	<.0001	Reference	Reference	

Problem Behaviors	Bivariate Analysis Nondiet Soda Intake				Logistic Regression Analysis Nondiet Soda Intake 1 Time/Day				
	All	None		1-6 Time/Week		1 Time/Day	p value ^c	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI) ^d
		% (95% CI) ^b	% (95% CI)	% (95% CI)	% (95% CI)				
Less than always	50.7 (47.5, 53.8)	15.6 (14.2, 16.9)	49.8 (47.8, 51.9)	34.6 (32.2, 36.9)	1.68 (1.53, 1.84)	1.43 (1.31, 1.56)			

Note.

- ^a Drinking a can, bottle, or glass of soda or pop (not including diet soda or diet pop) during the 7 days before the survey
- ^b Because of rounding, weighted percentages may not add up to 100%.
- ^c Chi-square tests were used for each variable to examine differences across categories.
- ^d The multivariable logistic regression model (N = 12,057) included all 5 problem behaviors as well as age, sex, race/ethnicity, and weight status.
- ^e Unweighted sample size

Table 3
 Being Victimized and Their Associations With Nondiet Soda Intake^a During the 7 Days Before the Survey Among High School Students—United States, Youth Risk Behavior Survey, 2009

	Bivariate Analysis				Logistic Regression Analysis			
	Nondiet Soda Intake				Nondiet Soda Intake 1 Time/Day			
	All	None	1–6 Time/Week	1 Time/Day				
	% (95% CI) ^b	% (95% CI)	% (95% CI)	% (95% CI)	Crude Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI) ^d	p value ^c	
Being Victimized								
Been Bullied on School Property, Past 12 Months (N = 15,432)^e							.0009	
No	80.1 (78.9, 81.3)	19.9 (18.5, 21.2)	51.5 (49.6, 53.5)	28.6 (26.4, 30.8)	Reference	Reference		Reference
Yes	19.9 (18.7, 21.1)	16.2 (14.3, 18.2)	50.4 (47.0, 53.8)	33.3 (30.3, 36.4)	1.25 (1.11, 1.41)	1.21 (1.04, 1.41)		1.21 (1.04, 1.41)
Been Threatened or Injured by Someone With a Weapon on School Property, Past 12 Months (N = 16,148)							<.0001	
No	92.3 (91.6, 93.1)	19.6 (18.4, 20.9)	52.1 (50.2, 53.9)	28.3 (26.2, 30.5)	Reference	Reference		Reference
Yes	7.7 (6.9, 8.4)	17.0 (13.9, 20.1)	43.1 (39.3, 46.8)	39.9 (36.2, 43.7)	1.68 (1.41, 2.01)	1.28 (1.07, 1.53)		1.28 (1.07, 1.53)
Were Ever Hit, Slapped, or Physically Hurt on Purpose by Their Boyfriend/Girlfriend, Past 12 Months (N = 15,999)							<.0001	
No	90.2 (89.3, 91.2)	19.8 (18.5, 21.1)	51.9 (50.2, 53.6)	28.3 (26.3, 30.3)	Reference	Reference		Reference
Yes	9.8 (8.8, 10.7)	15.3 (13.0, 17.7)	46.0 (42.6, 49.5)	38.6 (35.5, 41.8)	1.60 (1.42, 1.79)	1.39 (1.22, 1.58)		1.39 (1.22, 1.58)
Ever Been Physically Forced to Have Sexual Intercourse (N = 15,532)							.004	
No	92.6 (91.8, 93.4)	19.6 (18.3, 20.9)	51.7 (50.0, 53.5)	28.7 (26.6, 30.8)	Reference	Reference		Reference
Yes	7.4 (6.6, 8.2)	17.8 (15.8, 19.8)	47.9 (44.1, 51.7)	34.3 (30.1, 38.4)	1.30 (1.07, 1.57)	1.23 (1.00, 1.50)		1.23 (1.00, 1.50)

Note.

^aDrinking a can, bottle, or glass of soda or pop (not including diet soda or diet pop) during the 7 days before the survey

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^b Because of rounding, weighted percentages may not add up to 100%.

^c Chi-square tests were used for each variable to examine differences across categories.

^d The multivariable logistic regression model (N = 13,525) included all 4 being victimized as well as age, sex, race/ethnicity, and weight status.

^e Unweighted sample size