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U.S. Adolescent Alcohol Use by Race/Ethnicity: Consumption and Perceived Need to Reduce/Stop Use

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Abstract

Understanding racial/ethnic drinking patterns and service provision preferences is critical for deciding how best to use limited alcohol prevention, intervention, and treatment resources. We used nationally representative data from 150,727 U.S. high school seniors from 2005–2016 to examine differences in a range of alcohol use behaviors and the felt need to reduce or stop alcohol use based on detailed racial/ethnic categories, both before and after controlling for key risk/protective factors. Native students reported particularly high use but corresponding high felt need to reduce/stop use. White and dual-endorsement students reported high use but low felt need to stop/reduce alcohol use.

Introduction

Recognized disparities by race/ethnicity exist in alcohol-related consumption patterns, harms, use disorders, and treatment need in both U.S. and international settings (e.g., see Chartier & Caetano, 2010; Delker, Brown, & Hasin, 2016; Hurcombe, Bayley, & Goodman, 2010; Keyes, Liu, & Cerda, 2012; Mulia, Tam, Bond, Zemore, & Li, 2017; Patrick & Terry-McElrath, 2017). These disparities can be observed even during adolescence; research has confirmed significant variation in the prevalence of a range of alcohol use behaviors between adolescents who identify with different racial/ethnic groups (e.g., Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2017; Miech et al., 2017; Kann et al., 2016; National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2002). The 2011 Health and Human Services Action Plan to Reduce Racial and Ethnic Health Disparities called for science to conduct and support research informing disparities-reduction initiatives (Koh, Gram, & Glied, 2011). As local and national service providers evaluate where and how best to use limited alcohol prevention, intervention, and treatment resources, understanding drinking patterns (including overall prevalence as well as high-frequency consumption) and support and service provision preferences among adolescents who identify with different racial/ethnic groups is critically important (Galvan & Caetano, 2003; Hurcombe et al., 2010). Yet, few studies focusing on adolescents simultaneously include data on multiple alcohol use outcomes for a wide range of detailed racial/ethnic subgroups (including the growing number of individuals who identify with more than a single racial/ethnic subgroup), or on potential racial/ethnic differences in the extent to which adolescent drinkers may be ready to reduce or stop their alcohol use.

The public health consequences of alcohol use increase with consumption quantity (Centers for Disease Control and Prevention, 2018; NIAAA, 2015), calling for the need to monitor both overall alcohol use as well as measures of high-risk drinking. The most commonly used measure of high-risk drinking is referred to as binge drinking, defined as 5 or more drinks per occasion, or using gender-specific levels of 4+ drinks for women and 5+ drinks for men (NIAAA, n.d.). Binge drinking is estimated to result in blood alcohol concentration (BAC) levels of 0.08%, at which point noted impairment in speech, memory, attention, coordination, and balance occurs, resulting in significant impairment of driving skills and increased risk of injury to self and others (NIAAA, 2015). However, a meaningful number of adolescents drink at levels that far surpass the binge level; an estimated 4% to 11% of US high school seniors reported 10+ drinking in the past two weeks from 2005 to 2016 (Patrick et al., 2013; Miech et al., 2017). Alcohol consumption at such levels can result in possible life-threatening impairment (NIAAA, 2015).

Available studies that have examined racial/ethnic differences in various measures of adolescent alcohol use most frequently have included comparisons among African American, Hispanic, and White adolescents; due to smaller sub-group population sizes, few studies also have been able to examine the prevalence of alcohol use outcomes among other racial/ethnic groups. There is a general consensus that White youth typically report higher prevalence than African American youth for any lifetime or 30-day drinking, or for having 5+ drinks per occasion; White youth have similar or slightly lower use prevalence levels than Hispanic youth for these outcomes (Bersamin, Paschall, & Flewelling, 2005; Carlton-Smith & Skeer, 2015; Chen, Yi, Williams, & Faden, 2009; Eaton et al., 2012; Johnston et al., 2017; Miech et al., 2017; Kann et al., 2016; NIAAA, 2002; Stewart & Power 2003). Racial/ethnic differences in the consumption of 10+ drinks per occasion also been found among the largest main racial/ethnic subgroups. Both Kann et al. (2016) and Patrick et al. (2013) found that high-intensity drinking was significantly more likely for White than African American adolescents; Hispanic and White adolescents did not differ significantly. Fewer studies have reported estimates for alcohol use behaviors among Native American, Alaska Native, Native Hawaiian, or Pacific Islander youth (collectively referred to as Native youth). Available data indicate Native American and Alaska Native adolescents are particularly likely to initiate alcohol use at a young age (Chen et al., 2009) and report similar or higher 30-day, weekly, or 5+ drinking prevalence levels than White youth (Chen et al., 2009; Skager & Austin, 1993; Wallace et al., 2002, 2003; Welte & Barnes, 1987). While few national U.S. studies have reported alcohol use data for Asian American adolescents in comparison with African American, Hispanic, or White adolescents; data indicate past 30-day and 5+ drinking are significantly lower among African American and Asian American adolescents than White adolescents (Bersamin et al., 2005; Chen et al., 2009). A single study providing recent comparable estimates for overall alcohol use prevalence as well as participation in the higher-consumption behaviors of both 5+ and 10+ drinking among African American, Asian American, Hispanic, Native, and White youth would be helpful.

Alcohol use and associated risks appear to be elevated among adolescents with more than one racial/ethnic background when compared with youth who identify with a single non-white minority subgroup (Chen et al., 2009; Goings, Butler-Bente, McGovern, & Howard, 2016; Price, Risk, Wong, & Klinge, 2002; Skager & Austin, 1993). The percentage of the

US population who self-identify as being of more than one race has been increasing dramatically. From 2000 to 2010, the percentage of respondents in the US Census identifying with two or more races increased by 32%, compared to an increase of only 9% for those who identified with a single race (Jones & Bullock, 2012). Individuals who identify with more than one racial/ethnic group made up 2.7% of the US population in 2010 (Jones & Bullock, 2012); projections for 2060 reach 6.2% (Colby & Ortman, 2015). Available research primarily has combined together all adolescents reporting more than one racial/ethnic background when measuring estimates of alcohol use (e.g., Chen et al., 2009; Choi, Harachi, Gillmore, & Catalano, 2006; Skager & Austin, 1993), or has focused on specific racial/ethnic combinations such as African American and White (Goings et al., 2016) or mixed-heritage Asian American/Pacific Islanders (Price et al., 2002). As noted above, clear differences in alcohol use have been observed between adolescents identifying with a single vs. multiple racial/ethnic groups, it may be that significant differences in alcohol use also are found between adolescents identifying with two or more racial/ethnic groups based on specific race combinations. The 2010 US Census identified the four largest specific multiple-race combinations as White and Black; White and Some Other Race¹; White and Asian; and White and American Indian/Alaska Native (Jones & Bullock, 2012). Research that could examine possible differences (or similarities) in alcohol use outcomes between youth identifying with specific race combinations would begin to answer the question of whether or not elevated alcohol risk appears to be equal across adolescents identifying with more than one racial/ethnic background.

Among adolescents who use alcohol, there may be significant racial/ethnic differences in the extent to which they contemplate reductions in their own alcohol use. Adolescents who are contemplating reducing their alcohol use are at a key point in possible behavioral change, and may be particularly receptive to intervention efforts according to the Trans-theoretical Model (TTM) of intentional behavior change (DiClemente, 2003; DiClemente, Schlundt, & Gemmell, 2004; Prochaska & DiClemente, 1984; Prochaska, DiClemente, & Norcross, 1992). For any particular adolescent, considering reductions in drinking may occur for one or several reasons, including the association of alcohol use with negative consequences/emotions; perceived discrepancies between personal alcohol use and normative consumption patterns; or disapproval from family, peer, or broader social groups. Research consistently finds that the wide range of acknowledged negative social and health consequences of underage drinking (Hingson & Kenkel, 2004; United States Department of Health and Human Services, 2007) are especially profound for members of racial/ethnic minority groups, above and beyond what would be expected due to levels of participation in various forms of high-risk drinking (Chartier & Caetano, 2010; Delker et al., 2016; Hurcombe et al., 2010). Research indicates that among adults, there are significant racial differences in both the likelihood of self or significant other referral source to substance use treatment, as well as in rates of treatment initiation (Acevedo et al., 2012). National US data indicate that among adolescents who experienced substance use disorder (SUD), the percentage of Black

¹Federal standards mandate that the US Census use separate questions to collect data on race and Hispanic origin (ethnicity). However, the 2010 Census questionnaire race item included the open-ended category of "some other race"; all responses other than those included in subgroups of White, Black or African American, American Indian or Alaska Native, Asian, or Native Hawaiian or Other Pacific Islander were coded as "Some Other Race", including multiracial, mixed, interracial, or a Hispanic or Latino group (Jones & Bullock, 2012).

and Hispanic adolescents who received any treatment (as well as treatment in medical settings or via self-help programs) for SUD was significantly lower than that for White adolescents, and treatment in medical settings also was less likely for multiracial than White adolescents (Cummings, Wen, & Druss, 2011). These national data found that unadjusted treatment percentages were substantially larger for both Native American/Alaskan Native and Native Hawaiian/Pacific Islander adolescents when compared with White adolescents, but statistically significant differences in SUD treatment were not observed, likely due to smaller sample sizes for these specific subgroups (Cummings et al., 2011). Demonstration of meaningful differences in the extent to which adolescent drinkers are willing to consider reducing their alcohol use by racial/ethnic identity may be useful for service providers working with adolescents in a variety of treatment and non-treatment settings.

Racial/ethnic differences in adolescent alcohol use and considerations of reducing/stopping such use may be affected by known risk and protective factors, such as sex, school and family measures, religiosity, and socioeconomic standing. Sex differences in alcohol use historically have shown higher prevalence among boys vs. girls, but have become increasingly similar in recent years (Johnston et al., 2017; Kann et al., 2016; Miech et al., 2017); sex differences may be attenuated among adolescents with multi-racial backgrounds—a finding observed among adults with multi-racial backgrounds (Hurcombe et al., 2010). Research has found that parental factors are associated with reduced substance use (including alcohol) among White, Black, and White+Black youth; however, school-related measures appear to be particularly important in explaining lower substance use for White +Black youth (Goings et al., 2016). Among younger adolescents, both family- and school-related measures were found to mediate the association between Asian race and alcohol use, but not so for associations between Hispanic race and substance use (Shih, Miles, Tucker, Zhou, & D'Amico, 2010). Religiosity has been found to be associated with lower alcohol use among adolescents (Brown, Parks, Zimmerman, & Phillips, 2001; Wallace et al., 2007). Yet, the protective association between religiosity and lower alcohol use appears to be stronger for White youth than Black or Hispanic youth (Wallace et al., 2007). Higher socioeconomic status (measured by one or more of income, wealth, or parental education) has been found to be associated with higher risk for alcohol use (both any use and binge drinking) among young adults aged 18–23 (Patrick, Wightman, Schoeni, & Schulenberg, 2012). Among adults, differences in treatment completion for alcohol and drugs for Blacks and Hispanics (vs. Whites) were largely explained by socioeconomic status, but alcohol treatment disparities for Native Americans compared with Whites were not similarly explained (Saolner & Lê Cook, 2013). Such studies indicate that efforts to monitor detailed racial/ethnic differences in alcohol use or consideration of stopping/reducing alcohol use also should examine the extent to which risk and protective may explain (or exacerbate) observed differences.

The current paper contributes to the adolescent alcohol epidemiology literature by using nationally representative data from US high school seniors to provide detailed racial/ethnic subgroup-specific measures of alcohol use and perceived need to stop/reduce use. Three research aims guided analyses:

1. Provide detailed racial/ethnic subgroup estimates of adolescent overall alcohol use prevalence (past 12-month use) and of high-frequency consumption (past 2-week 5+ and 10+ drinking);
2. Provide detailed racial/ethnic subgroup estimates of the perceived need to stop/reduce alcohol use among adolescent drinkers; and
3. Examine the degree to which known risk and protective factors (sex, two-parent home, parental education, religious commitment, average school grades, and school truancy) affected observed differential racial/ethnic associations with outcomes.

The detailed racial/ethnic subgroups included (a) five single racial/ethnic subgroups (African American, Asian American, Hispanic, Native Peoples, White), (b) three specific dual-endorsement subgroups (White+African American, White+Hispanic, and White+Native Peoples), and (c) a combined other multiracial subgroup including other dual endorsement groups as well as any endorsement of 3 or more racial/ethnic subgroups.

Methods

Sample

Analyses utilized data from U.S. 12th grade students surveyed as part of the national cohort-sequential Monitoring the Future (MTF) study (for detailed methods, see Bachman, Johnston, O'Malley, Schulenberg, & Miech, 2015; Miech et al., 2017). MTF annually surveys nationally-representative samples of approximately 15,000 12th grade students (modal age 18) from approximately 130 schools. Students usually complete the survey during a high school class period. The University of Michigan Institutional Review Board approved the study.

Given the need to include enough cases to obtain stable estimates for smaller racial/ethnic subgroups, the analytic plan required combining multiple years of data for analysis. The MTF study has collected data on 10+ drinking since 2005; thus, data from 2005 through 2016 were used. The average 12th grade student response rate for these years was 82.1% (the majority of non-response was due to absenteeism; less than 1.8% of students refused participation) (Miech et al., 2017). Of the 171,019 12th grade students who responded to the MTF survey during 2005–2016, a total of 155,665 (91.0%) provided data on race/ethnicity. An additional 4,938 cases were removed due to missing data on alcohol outcomes, leaving a final analytic sample of 150,727, or 88.1% of the original possible sample.

Measures

Respondents self-reported all measures.

Racial/ethnic endorsement. Respondents were asked, “How do you describe yourself? (Select one or more responses.)” Nine response options were provided: Black or African American; Mexican American or Chicano; Cuban American; Puerto Rican; Other Hispanic or Latino; Asian American; White (Caucasian); American Indian or Alaska Native; Native Hawaiian or Other Pacific Islander. Respondents who endorsed one or more of Mexican American or Chicano, Cuban American, Puerto Rican, or Other Hispanic or Latino—but no

other response options—were combined into a single subgroup of Hispanic for the analyses reported below. Detailed data for Hispanic sub-groups is provided in the Supplement Appendix and Supplement Table 1. The small sample sizes for American Indian/Alaska Native, as well as Native Hawaiian/Other Pacific Islander, limited the ability to robustly estimate prevalence levels for some outcomes included in the current analysis. Initial analyses indicated that the prevalence estimates for all alcohol use outcomes were very similar for individuals endorsing these two racial/ethnic subgroups (see Supplement Table 2). Thus, to improve estimate stability, respondents endorsing either of these response options were combined into a single subgroup of Native Peoples in the analyses reported below.

The majority (92.6%) of respondents providing data on race/ethnicity endorsed a single racial/ethnic subgroup. Endorsement of two racial/ethnic subgroups was reported by 6.1% of respondents; an additional 1.3% of the sample endorsed three or more racial/ethnic response options. Researchers decided *a priori* to include only specific multiracial subgroups of 1,000 or more respondents in the analytic sample. Three specific multiracial subgroups met the 1,000 case requirement: White and Black/African American; White and Hispanic; White and Native Peoples. All other respondents were combined into a final group labeled “other multiracial” (including those who endorsed dual-subgroup combinations that did not meet the 1,000 limit, as well as any 3+ endorsement (including respondents who endorsed three or more of Asian American, African American, Hispanic, Native Peoples, or White). Thus, the following nine racial/ethnic subgroups were included in analyses: Asian American, Black or African American (hereafter referred to as African American), Hispanic, Native Peoples, White, White+African American, White+Hispanic, White+Native Peoples, and other multiracial.

Outcomes.: All alcohol use measures were coded as any vs. none dichotomies for analysis. Past 12-month alcohol use was measured as, “On how many occasions have you had alcoholic beverages to drink—more than just a few sips—during the last 12 months?” Past 2-week 5+ drinking was measured as, “Think back over the last two weeks. How many times have you had five or more drinks in a row? (A ‘drink’ is a glass of wine, a bottle of beer, a shot glass of liquor, a mixed drink, etc.)” Past 2-week 10+ drinking was measured as, “During the last two weeks, how many times (if any) have you had 10 or more drinks in a row?” The question examining felt need to reduce/stop alcohol use was worded as, “At any time during the last 12 months, have you felt in your own mind that you should reduce or stop your use of alcohol?” Response options included Yes; No; Haven’t used in the last 12 months (analysis was limited to respondents reporting any past 12-month alcohol use).

Risk/protective measures.: Sex was coded as male or female. Two-parent home indicated if both parents resided in the home with the respondent. Parental education (used as a proxy for socioeconomic status) indicated whether at least one parent had graduated from college. Religious commitment was an average of 2 items (1 missing response allowed) assessing the importance of religion (responses of not important, a little important, pretty important, and very important) and frequency of attendance at religious services (never, rarely, 1–2 times/month, or 1+ times/week). The resulting average was coded into categories of high, medium,

or low based on the resulting mean. Because of state regulations, religious commitment items were not asked of students in schools located in California; thus, we assigned all California students as missing data on this measure and treated this as a separate category. Average high school grades were asked using a 9-point scale ranging from A to D; data were coded into a dichotomy of (0) B- or lower versus (1) B or above. School truancy indicated if the respondent reported any whole days of school missed in the past four weeks because they “skipped” or “cut”.

Possible sample sizes for the alcohol outcomes varied. Six different 12th grade questionnaire forms (randomly distributed) are used in the MTF survey to increase the range of measures but not overburden respondents; not all outcomes were asked on all forms. Questions on past 12-month use and past 2-week 5+ drinking were included on all forms. Past 2-week 10+ drinking was asked on only one form from 2005–2013, and then added to a second form from 2014 onward. Reported need to reduce/stop alcohol use was asked on only one form for all relevant years.

Analysis

All analyses were conducted in SAS version 9.4, and accounted for the MTF complex sampling design and included weights to account for differential probability of selection. For Research Aims (RA) 1 and 2 (providing detailed racial/ethnic estimates of alcohol use measures and need to reduce/stop use), PROC SURVEYFREQ was used to estimate the prevalence of each outcome by racial/ethnic subgroups. For each outcome, a model then was run using PROC SURVEYLOGISTIC to conduct significance tests comparing unadjusted prevalence levels, using White as the referent subgroup. For RA3 (examining the degree to which risk/protective factors may explain the observed prevalence differences), an second SURVEYLOGISTIC model was run for each outcome, simultaneously including all noted covariates. Missing data on covariates were modeled with missing data indicators.

Results

Descriptive Statistics

Table 1 provides overall descriptive statistics. Approximately two-thirds (64%) of U.S. 12th grade students overall reported any past 12-month alcohol use. Just over one-fifth (23%) reported 5+ drinking in the past two weeks, and one out of 10 (10%) reported 10+ drinking during the past two weeks. Among students who reported past 12-month alcohol use, 29% reported feeling that they should reduce or stop their alcohol use. The distribution of racial/ethnic subgroups was 60% White, 15% Hispanic, 12% African American, 4% Asian American, 4% other multiracial, 2% Native Peoples, 2% White+Hispanic, 1% White+Native Peoples, and 1% White+Black.

Race/ethnicity estimates for overall prevalence and high-frequency consumption (RA 1)

Table 2 presents estimates of past 12-month alcohol use; estimates for past 2-week 5+ and 10+ drinking are shown in Tables 3 and 4, respectively. For all tables, data are presented in order by descending prevalence for racial/ethnic subgroups.

Past 12-month alcohol use—Self-identification as White—either as a single- or dual-endorsement subgroup—was associated with the top four prevalence levels (ranging from 66% to 68%), with no significant bivariate differences between these subgroups (see bivariate associations in Table 2). The lowest prevalence levels were reported by Asian American (47%) and African American (51%) students. Compared with White students, the bivariate likelihood of any past 12-month alcohol use was significantly lower for students in the following racial/ethnic subgroups: other multiracial, Hispanic, Native Peoples, African American, Asian American.

Past 2-week 5+ drinking—White 12th grade students had the highest prevalence of past 2-week 5+ drinking at 26% (significantly higher than students in all other racial/ethnic subgroups; see bivariate associations in Table 3). Native, White+Hispanic, and White +Native students reported prevalence levels of 5+ drinking at 22%, followed by White +African American and Hispanic students at 21% (additional models [not shown] indicated no significant differences in 5+ drinking prevalence among students in these subgroups). Seventeen percent of other multiracial students reported 5+ drinking. The lowest prevalence levels of 5+ drinking were reported by students endorsing African American or Asian American subgroups (at 11% and 12%, respectively; significantly lower [$p<.001$] than all other subgroups in additional models not shown).

Past 2-week 10+ drinking—The prevalence of 10+ drinking was highest for White +Native students at 17% (see Table 4), followed by students endorsing Native Peoples (13%) and White (12%). Eight percent of both White+Hispanic and Hispanic students reported 10+ drinking. Among other multiracial and White+African American students, prevalence rates were 7% and 6%, respectively. The lowest prevalence levels were reported by Asian American and African American students (at 3% and 4%, respectively). Compared with White students, 10+ drinking was significantly higher among White+Native students, and significantly lower among Hispanic, other multiracial, White+African American, Asian American and African American students. (No significant differences in 10+ drinking prevalence were observed between White+Native and Native students in additional models [not shown].)

Race/ethnicity estimates for reported need to reduce/stop drinking (RA 2)

Table 5 presents estimates of felt need to stop/reduce alcohol use; data are presented in order by descending prevalence for racial/ethnic subgroups.

The prevalence of feeling the need to reduce/stop alcohol use was highest (47%) among alcohol-using Native students, followed by African American (38%), Hispanic (36%), and Asian American (35%). Self-identification as White—either as a single or dual-endorsement subgroup—was associated with four of the five lowest prevalence levels (the fifth subgroup being other multiracial): only 26% of White, 31% of other multiracial and White+Hispanic, 32% of White+Native, and 34% of White+African American alcohol-using students reported feeling that they should reduce/stop use. Felt need to reduce/stop use was significantly lower for White students in comparison with Native, African American, Hispanic, and Asian American students. In contrast, additional analyses (not shown)

indicated that felt need to reduce/stop use was significantly higher ($p<0.05$ or stronger) for Native students than students in all other subgroups.

Risk/protective factor effects on race/ethnicity associations (RA 3)

The final three right-hand columns in Tables 2–5 present results of multivariable regressions examining associations between race/ethnicity subgroups and alcohol outcomes after controlling for the selected risk/protective factors. In the past 12-month alcohol use model (Table 2), comparisons with White students remained generally stable after controlling for risk/protective factors, with the exception of White+African American students. In the bivariate model, no significant differences were observed between White and White+African American students ($p=0.372$); after controlling for risk/protective factors, the likelihood of past 12-month alcohol use was significantly lower for White+African American students than their White counterparts ($p=0.006$). In the past 2-week 5+ drinking model (Table 3), all comparisons with White students remained stable, as did reported comparisons from models (not shown) between (a) Native, White+Hispanic, White+Native, White+African American, and Hispanic students; and (b) African American and Asian students versus students in all other subgroups. In the past 2-week 10+ drinking model (Table 4), comparisons with White students remained generally stable other than a minor change for White+Hispanic students. In the bivariate model, no significant differences were observed between White and White+Hispanic students ($p=0.054$); after controlling for risk/protective factors, the likelihood of 10+ drinking was significantly lower for White+Hispanic students than their White counterparts ($p=0.046$). Comparisons of 10+ drinking between White+Native and Native students remained stable (model not shown). In the need to reduce/stop drinking model (Table 5), comparisons with White students remained generally stable, as did comparisons with Native students (model not shown).

Controlling for race/ethnicity associations, boys (vs. girls) had a lower likelihood of any past 12-month alcohol use, but a higher likelihood of both 5+ and 10+ drinking. No sex differences were observed in the likelihood of reporting the need to stop/reduce alcohol use. Residing in a two-parent family (vs. not) was associated with lower odds of 12-month alcohol use, 5+ and 10+ drinking, and feeling the need to stop/reduce alcohol use. Having at least one parent with a college degree was associated with higher odds of 12-month alcohol use and 5+ drinking, but no significant associations were observed for 10+ drinking or felt need to stop/reduce use. Reporting low or medium religious commitment (vs. high) was associated with higher odds of all outcomes. Both lower grades and past 4-week school truancy were associated with higher odds of alcohol use (past 12-month, 5+, and 10+), but were not significantly associated with the felt need to stop/reduce alcohol use.

Discussion

Results from this nationally representative study of U.S. 12th grade students from 2005–2016 indicated significant racial/ethnic differences in any past 12-month alcohol use, measures indicating high-risk drinking (including both 5+ and 10+ drinking), and the reported need to reduce/stop drinking among alcohol users. The highest use prevalence levels were reported by White, Native, White+African American, White+Hispanic, and

White+Native students. The felt need to reduce/stop alcohol use was highest among Native students but lowest among White students. Controlling for key risk and protective factors had very minimal effects on the observed racial/ethnic differences.

Overall, Native students presented a unique alcohol use profile. Compared to White students, significantly fewer Native students reported any alcohol use in the past 12 months. However, as alcohol consumption intensity increased, so, too, did the comparative prevalence levels reported among Native students. While some studies with adolescents have found that prevalence of a range of overall alcohol consumption behaviors appears to be similar for Native and non-Native adolescents (lifetime prevalence in National Institute on Drug Abuse, 2003 and Skager & Austin, 1993; past 12-month and 30-day prevalence in Wallace et al., 2002), other research finds that high-consumption behaviors are significantly more prevalent among Native than non-Native youth (Wallace et al., 2002) and adults (Galvan & Caetano, 2003; Kanny, Liu, Brewer, & Lu, 2013). The current study indicates that endorsement of Native Peoples race/ethnicity—either through single or dual endorsement—is associated with higher alcohol consumption. The risk for adolescent substance use disorder (including alcohol and illicit drugs) (Cummings et al., 2011) and overall alcohol-attributable fatalities and injuries (Keyes et al., 2012) are highest among Native individuals. The high prevalence of heavy alcohol use behaviors among Native students may help explain the fact that, in the current study, almost half of Native students who reported past 12-month alcohol use also reported feeling they should reduce or stop their alcohol use (47%). Native students who do consume alcohol may be particularly receptive to intervention efforts given their comparatively high levels of contemplation of change (DiClemente et al., 2004).

Both White and dual-endorsement students (White+African American, White+Hispanic, and White+Native Peoples) also had high prevalence levels for alcohol use behaviors involving heavier consumption, but—in contrast to Native students—had very high prevalence of any alcohol use combined with very low prevalence of feeling they should reduce or stop using alcohol. The clear difference in felt need to reduce or stop alcohol use between students who endorsed Native Peoples versus White or specific dual-endorsement subgroups is especially noteworthy given that White and combined multiracial adolescents also have concerning prevalence levels of adolescent substance use disorder (Cummings et al., 2011). Among adults, the risk for alcohol use disorder is highest for White and Native adults (Chartier & Caetano, 2010). Applying the TTM to adolescent alcohol use, students who have little or no current interest in reducing their drinking behaviors are in the Precontemplation stage (DiClemente et al., 2004). Intervention with such adolescents is more difficult; among both Canadian White and Aboriginal adolescents, attrition from inpatient substance-abuse treatment was associated with being the Precontemplation stage of the TTM (Callaghan et al., 2005). For adolescents in the Precontemplation stage, brief interventions that attempt to make the negative consequences of alcohol use more salient, and that develop the ability to evaluate the pros and cons of drinking and effects on the future, may improve successful motivation to change (Barnett et al., 2002; Monti et al., 1999). Therefore, our results suggest that use of such brief interventions may be especially appropriate for White and specific subgroup multiracial adolescents, as these students were least likely to report feeling the need to reduce or stop their comparatively high levels of alcohol use.

In relation to alcohol use prevalence levels among African American, Asian American, and Hispanic adolescents, results from the current study are supported by previous research finding that the prevalence of any and heavier alcohol use behaviors to be lowest among African American and Asian American students, and similar between Hispanic and White students (Bersamin et al., 2005; Chen et al., 2009; Chartier & Caetano 2010; Eaton et al., 2012; Kann et al, 2016; NIAAA, 2002; Stewart & Power 2003; Wallace et al., 2002, 2003). The current study also extended existing research by documenting that the felt need to reduce/stop alcohol use was relatively high among African American, Asian American, and Hispanic students engaging in alcohol use: roughly one-third of alcohol users in each of these racial/ethnic subgroup. It is important to recognize that even among racial/ethnic groups that report relatively low levels of participation in high-risk drinking, a meaningful percentage of users are considering reducing their alcohol use, while other users are not considering any such change. Intervention opportunities to either (a) support and strengthen motivations to change, or (b) consider the use of brief interventions to make the negative consequences of alcohol use more salient to those in the Precontemplation stage should not be missed.

Specific dual-endorsement often was associated with significantly higher use prevalence than specific single-subgroup endorsement. For example, White+African American students reported higher past 12-month alcohol use and 5+ drinking than African American students, and White+Hispanic students reported higher past 12-month use than Hispanic students. Adolescents who identify as multiracial tend to report higher risk for alcohol and other substance use (Chavez & Sanchez, 2010; Choi et al., 2006; Goings et al., 2016; Price et al., 2002). Among adolescents, multiracial identity (not limited to any particular race combinations) is associated with higher stress, which is associated with higher health and behaviors risks, including alcohol use (Udry, Li, & Hendrickson-Smith, 2003). Some research has found that increased likelihood of substance use among adolescents reporting more than one racial/ethnic identity is part of a group of problem behaviors, including violence and racial discrimination (Choi et al., 2006). As the percentage of the population that identifies with more than one racial/ethnic group continues to expand, improved understanding of the extent of differences in alcohol risk (and risk for other substance use) across multiracial groups is needed (Chavez & Sanchez, 2010; Price et al., 2002).

The current study's results indicated that observed racial/ethnic differences in adolescent alcohol use and reported need to stop/reduce use continued to be observed even after controlling for key risk and protective covariates. Race has been viewed primarily as a social construct (Wallace & Muroff, 2002). Still, there is clear evidence that race has significant independent associations with a range of public health outcomes, including disease patterns, exposure to environmental hazards, and health care and treatment access (Mays, Ponce, Washington, & Cochran, 2003; Crimmins, Hayward, & Seeman, 2004). The robust associations observed in the current study indicate that race/ethnicity is a strong risk indicator for adolescent alcohol use—particularly high-risk use—even when controlling for family, school, religious commitment, and socioeconomic factors. Future research that could investigate the extent to which there are racial/ethnic differences in the actual experienced consequences arising from adolescent alcohol use would be useful to extend knowledge in this area.

While the current study did not investigate racial/ethnic differences in the strength of association between risk/protective factors and alcohol outcomes, several findings related to risk/protective factor associations with alcohol outcomes are noteworthy. Results for sex indicated females reported higher past 12-month prevalence; males reported higher prevalence of 5+ and 10+ drinking; but no sex differences were found in felt need to reduce/stop use. Being male has been considered to be a relatively consistent risk factor for adolescent alcohol use, particularly for consumption at higher levels of intensity (Kann et al., 2016; Patrick et al., 2013). Recent national studies find that, overall, girls now have significantly higher prevalence rates for any lifetime alcohol use than boys (Kann et al., 2016; Miech et al., 2017), but boys continue to report higher prevalence levels of 5+ and 10+ drinking (Johnston et al., 2017; Kann et al., 2016; Miech et al., 2017; Patrick et al., 2013; Patrick, Terry-McElrath, Miech, O'Malley, Schulenberg, & Johnston, 2017). Boys also have a higher likelihood than girls of receiving substance use treatment, even among adolescents that meet criteria for substance use disorder (Haughwout, Harford, Castle, & Grant, 2016). The current study's findings of similar interest in contemplating change in personal drinking behavior for girls than boys appear to be in stark contrast to the observed sex-related differences in adolescent substance use treatment utilization (Haughwout et al., 2016). Efforts to intervene with alcohol-using adolescents should emphasize the importance of reaching out to both girls and boys—not assuming that girls have a lower need or desire for support in reducing their alcohol use. Three other covariates (parental education, school grades, and school truancy) were associated significantly with alcohol use outcomes but not with felt need to stop/reduce use, indicating that again, intervention efforts should reach out to youth regardless of socioeconomic status or level of academic difficulty/involvement.

Limitations

The results presented here should be considered within their limitations. Data were cross-sectional and based on self-reports; however, self-reported substance use data have been found to be reasonably reliable and valid under conditions which the MTF study has striven to provide (Brener, Billy, & Grady, 2003; Miech et al., 2017; O'Malley, Bachman, & Johnston, 1983). Findings may not generalize individuals who do not complete high school. As lower educational attainment is associated with higher alcohol use (Substance Abuse and Mental Health Services Association, 2013), our alcohol use estimates may be somewhat low. Our analysis was unable to disaggregate detailed racial/ethnic subgroups of Asian American, African American, Native Peoples, or White; significantly different levels of alcohol use have been found within each of these overarching classifications (Chartier & Cateano, 2010; Cook, Mulia, & Karriker-Jaffe, 2012; Duranceaux et al., 2008; Harachi, Catalano, Kim & Choi, 2001; Huang, 2014; Galvan & Caetano 2003; Hurcombe et al., 2010; Otsuki, 2003; Wong, Klinge, & Price, 2004; Young, 1988; Hawkins, Cummins, & Marlatt, 2004). Neither the earlier nor current MTF studies were able to control for generational status. Research has recognized that, to varying degrees, acculturation (and accompanying stress) is associated with increased adolescent alcohol use among Hispanic (Eitle, Wahl, & Aranda, 2009; Fosados et al., 2007; Gil, Wagner, & Vega, 2000; Wahl & Eitle, 2010) and Asian American sub-groups (Hahm, Lahiff, & Guterman, 2003, 2004; Thai, Connell, & Tebes, 2010). There is a need for future research to examine differences in adolescent alcohol use within sub-

groups and also to address issues of acculturation. Limitations notwithstanding, the current study contributes significantly to adolescent alcohol use epidemiology by using large, nationally representative samples of 12th grade students from 2005–2016 to examine racial/ethnic differences in adolescent alcohol consumption and felt need to reduce/stop alcohol use.

Conclusions

Among U.S. 12th grade students from 2005–2016, alcohol consumption risks were particularly high for White, Native, and dual-endorsement students both before and after controlling for key risk and protective factors. While Native students reported high risk, the co-occurring high prevalence of felt need to reduce/stop use among drinkers suggests an opportunity to engage these adolescents in interventions aimed at reducing their alcohol use. White and dual-endorsement subgroups may be the most difficult groups with whom to intervene, as youth in these groups reported high risk but low felt need to stop/reduce alcohol use.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Descriptives

			% ^a	(95% CI)
<u>Alcohol outcomes</u>				
Any past 12-month use (n=148,573)			63.5	(62.5, 64.5)
Any past 2-week 5+ drinks/occasion (n=146,774)			22.5	(21.7, 23.3)
Any past 2-week 10+ drinks/occasion (n=29,428)			9.6	(9.0, 10.1)
Past 12 month drinkers reporting need to stop/reduce drinking (n=14,639)			29.4	(28.4, 30.4)
<u>Racial/ethnic endorsement (n=150,727)</u>				
African American			11.8	(10.5, 13.0)
Asian American			4.1	(3.6, 4.7)
Hispanic ^b			14.9	(13.2, 16.6)
Native Peoples ^c			1.6	(1.4, 1.8)
White			60.1	(58.0, 62.3)
White+African American			1.0	(0.9, 1.0)
White+Hispanic			1.8	(1.7, 2.0)
White+Native Peoples			1.2	(1.1, 1.3)
Other multiracial ^d			3.5	(3.3, 3.8)
	%	(95% CI)	%	(95% CI)
<u>Control measures (n=150,727)</u>				
Sex		Religious commitment		
Female	49.9	(49.2, 50.5)	Low	35.1 (33.8, 36.5)
Male	47.1	(46.5, 47.7)	Medium	23.7 (23.0, 24.4)
Missing	3.0	(2.9, 3.2)	High	27.3 (26.1, 28.5)
Two-parent family		California ^e		
No	32.6	(31.7, 33.4)	Missing	1.8 (1.6, 2.0)
Yes	66.6	(65.6, 67.5)	Average school grades	
Missing	0.9	(0.8, 0.9)	B- or lower	27.0 (26.2, 27.7)
At least one parent has a college degree		B or higher		
No	46.3	(44.9, 47.6)	Missing	3.1 (2.9, 3.3)
Yes	49.6	(48.1, 51.0)	Any past 4-week skipping school	
Missing	4.2	(3.9, 4.5)	No	65.3 (64.4, 66.1)
			Yes	29.0 (28.2, 29.8)
			Missing	5.7 (5.5, 6.0)

^aWeighted percentage.^b“Hispanic” includes individuals endorsing one or more of “Cuban American”, “Mexican American or Chicano”, “Puerto Rican”, or “Other Hispanic”.^c“Native Peoples” includes individuals endorsing “American Indian or Alaskan Native” and/or “Native Hawaiian or Other Pacific Islander”.

^d“Other multiracial” includes individuals endorsing any dual racial/ethnic subgroups other than the three dual-endorsement groups shown, as well as all individuals endorsing three or more of the following racial/ethnic subgroups: White, Hispanic, African American, Asian American, Native Peoples.

^eState regulations prevent asking religious commitment measures in California; thus, we assigned all California students to a separate category.

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Table 2.

Estimates of Past 12-month Alcohol Use among U.S. High School Seniors by Specific Racial/Ethnic Subgroup, 2005–2016

Racial/Ethnic Subgroup	% ^a	(95% CI)	<i>n</i> _{group} ^b	Bivariate Associations ^c			Multivariable Associations ^d		
				OR	(95% CI)	<i>p</i>	AOR	(95% CI)	<i>p</i>
White+Hispanic ^e	68.3	(65.8, 70.7)	2,829	1.06	(0.94, 1.18)	0.356	0.95	(0.85, 1.07)	0.378
White	67.1	(65.7, 68.4)	88,728	(ref)			(ref)		
White+Native Peoples ^f	67.1	(64.2, 69.9)	1,626	1.00	(0.88, 1.13)	0.991	0.96	(0.85, 1.08)	0.478
White+African American	65.6	(62.6, 68.7)	1,488	0.94	(0.81, 1.08)	0.372	0.81	(0.70, 0.94)	0.006
Other multiracial ^g	63.9	(62.2, 65.7)	5,369	0.87	(0.80, 0.95)	<0.001	0.81	(0.74, 0.88)	<0.001
Hispanic	62.7	(61.5, 64.0)	22,285	0.83	(0.77, 0.89)	<0.001	0.76	(0.71, 0.82)	<0.001
Native Peoples	60.4	(57.6, 63.2)	2,506	0.75	(0.66, 0.85)	<0.001	0.69	(0.60, 0.79)	<0.001
African American	50.8	(49.3, 52.4)	17,262	0.51	(0.47, 0.55)	<0.001	0.52	(0.48, 0.57)	<0.001
Asian American	46.6	(44.5, 48.6)	6,480	0.43	(0.39, 0.47)	<0.001	0.43	(0.39, 0.47)	<0.001
Sex (referent = female)									
Male							0.89	(0.86, 0.92)	<0.001
Two-parent family (referent = no)									
Yes							0.89	(0.86, 0.92)	<0.001
At least one parent has a college degree (referent = no)									
Yes							1.07	(1.03, 1.11)	<0.001
Religious commitment (referent = high)									
Low							2.25	(2.06, 2.45)	<0.001
Medium							2.11	(1.95, 2.28)	<0.001
California ^h							1.76	(1.56, 1.99)	<0.001
Average school grades (referent = B- or lower)									
B or higher							0.69	(0.66, 0.71)	<0.001
Any past 4-week skipping school (referent = no)									
Yes							2.63	(2.52, 2.74)	<0.001

Notes: Total model *n* = 148,573. Data are presented by descending prevalence value. OR=odds ratio; CI = confidence interval; AOR = adjusted odds ratio.

^aWeighted percentage.

^b*n*_{group} = Unweighted total sample size for noted subgroup group.

^cBivariate models contained only racial/ethnic subgroups in logistic regression models estimating the odds of the noted alcohol use outcome by racial/ethnic subgroup.

^dMultivariable models simultaneously controlled for sex, number of parents in the household, average parental education, religious commitment, average school grades, and past four-week truancy. AOR estimates for control variable missing dummy terms not shown.

^e“Hispanic” includes individuals endorsing one or more of “Cuban American”, “Mexican American or Chicano”, “Puerto Rican”, or “Other Hispanic”.

^f“Native Peoples” includes individuals endorsing “American Indian or Alaskan Native” and/or “Native Hawaiian or Other Pacific Islander”.

^g“Other multiracial” includes individuals endorsing any dual racial/ethnic subgroups other than the three dual-endorsement groups shown, as well as all individuals endorsing three or more of the following racial/ethnic subgroups: White, Hispanic, African American, Asian American, Native Peoples.

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Table 3.

Estimates of Past 2-week 5+ Drinking among U.S. High School Seniors by Specific Racial/Ethnic Subgroup, 2005–2016

Racial/Ethnic Subgroup	%	(95% CI)	n_{group}^b	Bivariate Associations ^c			Multivariable Associations ^d		
				OR	(95% CI)	<i>p</i>	AOR	(95% CI)	<i>p</i>
White	26.2	(25.2, 27.2)	87,757	(ref)			(ref)		
Native Peoples ^e	22.4	(20.2, 24.6)	2,430	0.82	(0.72, 0.93)	<0.001	0.74	(0.64, 0.85)	<0.001
White+Hispanic ^f	22.2	(20.2, 24.3)	2,794	0.81	(0.72, 0.91)	<0.001	0.74	(0.66, 0.84)	<0.001
White+Native Peoples	22.1	(19.6, 24.6)	1,612	0.80	(0.69, 0.93)	<0.001	0.78	(0.67, 0.90)	0.001
White+African American	21.2	(18.7, 23.8)	1,469	0.76	(0.65, 0.89)	<0.001	0.68	(0.58, 0.79)	<0.001
Hispanic	20.8	(19.9, 21.8)	21,958	0.74	(0.70, 0.80)	<0.001	0.69	(0.65, 0.75)	<0.001
Other multiracial ^g	17.4	(16.0, 18.8)	5,269	0.60	(0.54, 0.66)	<0.001	0.56	(0.50, 0.62)	<0.001
Asian American	12.0	(11.0, 13.1)	6,403	0.35	(0.32, 0.38)	<0.001	0.39	(0.35, 0.43)	<0.001
African American	10.9	(10.2, 11.7)	17,082	0.39	(0.35, 0.43)	<0.001	0.36	(0.33, 0.39)	<0.001
Sex (referent = female)									
Male							1.46	(1.41, 1.53)	<0.001
Two-parent family (referent = no)									
Yes							0.94	(0.91, 0.97)	0.001
At least one parent has a college degree (referent = no)									
Yes							1.13	(1.09, 1.18)	<0.001
Religious commitment (referent = high)									
Low							2.02	(1.87, 2.18)	<0.001
Medium							2.01	(1.87, 2.17)	<0.001
California ^h							1.64	(1.43, 1.89)	<0.001
Average school grades (referent = B- or lower)									
B or higher							0.70	(0.67, 0.73)	<0.001
Any past 4-week skipping school (referent = no)									
Yes							2.64	(2.54, 2.74)	<0.001

Notes: Total model $n = 146,774$. Data are presented by descending prevalence value. OR=odds ratio; CI = confidence interval; AOR = adjusted odds ratio.

^a Weighted percentage.

^b n_{group} = Unweighted total sample size for noted subgroup group.

^c Bivariate models contained only racial/ethnic subgroups in logistic regression models estimating the odds of the noted alcohol use outcome by racial/ethnic subgroup.

^d Multivariable models simultaneously controlled for sex, number of parents in the household, average parental education, religious commitment, average school grades, and past four-week truancy. AOR estimates for control variable missing dummy terms not shown.

^e "Native Peoples" includes individuals endorsing "American Indian or Alaskan Native" and/or "Native Hawaiian or Other Pacific Islander".

^f "Hispanic" includes individuals endorsing one or more of "Cuban American", "Mexican American or Chicano", "Puerto Rican", or "Other Hispanic".

^g“Other multiracial” includes individuals endorsing any dual racial/ethnic subgroups other than the three dual-endorsement groups shown, as well as all individuals endorsing three or more of the following racial/ethnic subgroups: White, Hispanic, African American, Asian American, Native Peoples.

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Table 4.

Estimates of Past 2-week 10+ Drinking among U.S. High School Seniors by Specific Racial/Ethnic Subgroup, 2005–2016

Racial/Ethnic Subgroup	%	(95% CI)	n_{group}^b	Bivariate Associations ^c			Multivariable Associations ^d		
				OR	(95% CI)	<i>p</i>	AOR	95% CI	<i>p</i>
White+Native Peoples ^e	16.7	(11.7, 21.7)	311	1.54	(1.08, 2.20)	0.017	1.52	(1.06, 2.18)	0.023
Native Peoples	12.9	(9.6, 16.3)	492	1.14	(0.84, 1.55)	0.390	1.02	(0.75, 1.39)	0.891
White	11.5	(10.8, 12.2)	17,484	(ref)			(ref)		
White+Hispanic ^f	8.1	(5.2, 11.0)	577	0.68	(0.46, 1.01)	0.054	0.66	(0.44, 0.99)	0.046
Hispanic	8.0	(7.0, 9.0)	4,435	0.67	(0.58, 0.77)	<0.001	0.64	(0.54, 0.75)	<0.001
Other multiracial ^g	7.1	(5.4, 8.8)	1082	0.59	(0.45, 0.77)	<0.001	0.56	(0.42, 0.75)	<0.001
White+African American	6.4	(3.3, 9.4)	314	0.52	(0.32, 0.87)	0.013	0.48	(0.29, 0.79)	0.005
African American	4.4	(3.5, 5.3)	3,417	0.35	(0.28, 0.44)	<0.001	0.34	(0.27, 0.43)	<0.001
Asian American	3.2	(2.1, 4.3)	1,316	0.26	(0.18, 0.36)	<0.001	0.28	(0.20, 0.40)	<0.001
Sex (referent = female)									
Male							2.76	(2.47, 3.07)	<0.001
Two-parent family (referent = no)									
Yes							0.86	(0.77, 0.95)	0.004
At least one parent has a college degree (referent = no)									
Yes							1.03	(0.93, 1.15)	0.554
Religious commitment (referent = high)									
Low							1.74	(1.51, 2.02)	<0.001
Medium							1.81	(1.55, 2.13)	<0.001
California ^h							1.12	(0.90, 1.40)	0.317
Average school grades (referent = B- or lower)									
B or higher							0.77	(0.68, 0.87)	<0.001
Any past 4-week skipping school (referent = no)									
Yes							2.64	(2.39, 2.92)	<0.001

Notes: Total model $n = 29,428$. Data are presented by descending prevalence value. OR=odds ratio; CI = confidence interval; AOR = adjusted odds ratio.

^aWeighted percentage.

^b n_{group} = Unweighted total sample size for noted subgroup group.

^cBivariate models contained only racial/ethnic subgroups in logistic regression models estimating the odds of the noted alcohol use outcome by racial/ethnic subgroup.

^dMultivariable models simultaneously controlled for sex, number of parents in the household, average parental education, religious commitment, average school grades, and past four-week truancy. AOR estimates for control variable missing dummy terms not shown.

^e“Native Peoples” includes individuals endorsing “American Indian or Alaskan Native” and/or “Native Hawaiian or Other Pacific Islander”.

^f“Hispanic” includes individuals endorsing one or more of “Cuban American”, “Mexican American or Chicano”, “Puerto Rican”, or “Other Hispanic”.

^g“Other multiracial” includes individuals endorsing any dual racial/ethnic subgroups other than the three dual-endorsement groups shown, as well as all individuals endorsing three or more of the following racial/ethnic subgroups: White, Hispanic, African American, Asian American, Native Peoples.

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Table 5.

Estimated Prevalence of Felt Need to Reduce/Stop Alcohol Use among Past 12-month Drinkers by Racial/Ethnic Subgroup: U.S. High School Seniors, 2005–2016

Racial/Ethnic Subgroup	% ^a	(95% CI)	<i>n</i> _{group} ^b	Bivariate Associations ^c			Multivariable Associations ^d		
				OR	(95% CI)	<i>p</i>	AOR	(95% CI)	<i>p</i>
Native Peoples ^e	47.3	(39.1, 55.5)	214	2.50	(1.79, 3.49)	<0.001	2.41	(1.72, 3.38)	<0.001
African American	38.4	(35.1, 41.7)	1,227	1.74	(1.49, 2.02)	<0.001	1.44	(1.23, 1.68)	<0.001
Hispanic ^f	35.5	(32.8, 38.1)	2,001	1.53	(1.35, 1.74)	<0.001	1.44	(1.26, 1.65)	<0.001
Asian American	34.7	(27.7, 37.8)	430	1.36	(1.07, 1.73)	0.013	1.39	(1.09, 1.78)	0.009
White+African American	33.5	(24.4, 42.6)	130	1.41	(0.93, 2.12)	0.102	1.32	(0.88, 1.99)	0.176
White+Native Peoples	31.7	(24.0, 39.50)	188	1.30	(0.91, 1.85)	0.153	1.26	(0.88, 1.81)	0.198
White+Hispanic	31.2	(24.4, 37.9)	276	1.26	(0.92, 1.74)	0.153	1.24	(0.90, 1.72)	0.188
Other multiracial ^g	31.0	(26.2, 35.9)	476	1.26	(1.00, 1.58)	0.055	1.17	(0.92, 1.48)	0.194
White	26.4	(25.3, 27.5)	9,697	(ref)			(ref)		
Sex (referent = female)									
Male							0.97	(0.89, 1.05)	0.424
Two-parent family (referent = no)									
Yes							0.83	(0.76, 0.91)	<0.001
At least one parent has a college degree (referent = no)									
Yes							0.98	(0.89, 1.07)	0.592
Religious commitment (referent = high)									
Low							0.63	(0.56, 0.71)	<0.001
Medium							0.81	(0.71, 0.91)	0.001
California ^h							0.73	(0.61, 0.88)	0.001
Average school grades (referent = B- or lower)									
B or higher							0.91	(0.83, 1.00)	0.051
Any past 4-week skipping school (referent = no)									
Yes							1.09	(1.00, 1.20)	0.062

Notes: Total model *n* = 14,639. Data in this table are reported for only those individuals who reported any past 12-month alcohol use. Data are presented by descending prevalence value. OR=odds ratio; CI = confidence interval; AOR = adjusted odds ratio.

^aWeighted percentage.

^b*n*_{group} = Unweighted total sample size for noted subgroup group.

^cBivariate models contained only racial/ethnic subgroups in logistic regression models estimating the odds of the noted alcohol use outcome by racial/ethnic subgroup.

^dMultivariable models simultaneously controlled for sex, number of parents in the household, average parental education, religious commitment, average school grades, and past four-week truancy. AOR estimates for control variable missing dummy terms not shown.

^e“Native Peoples” includes individuals endorsing “American Indian or Alaskan Native” and/or “Native Hawaiian or Other Pacific Islander”.

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^g“Other multiracial” includes individuals endorsing any dual racial/ethnic subgroups other than the three dual-endorsement groups shown, as well as all individuals endorsing three or more of the following racial/ethnic subgroups: White, Hispanic, African American, Asian American, Native Peoples.

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