EPIDEMIOLOGY

Investigating Ethnic Differences in Adolescent Alcohol Use and Peer Norms Using Semi-Continuous Latent Growth Models

Scott R. Weaver1,*, JeeWon Cheong2, David P. MacKinnon3 and Mary Ann Pentz4

1Institute of Public Health, Georgia State University, PO Box 3995, Atlanta, GA 30302-3995, USA, 2Department of Psychology, University of Pittsburgh, Pittsburgh, PA, USA, 3Department of Psychology, Arizona State University, Tempe, AZ, USA and 4Department of Preventive Medicine, Keck School of Medicine, University of Southern California, Los Angels, CA, USA
*Corresponding author. Tel: +1-404-413-1349; Fax: +1-404-413-1140; E-mail: srweaver@gsu.edu

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Abstract — Aims: To investigate whether ethnic differences in vulnerability to peer norms supportive of alcohol use is a viable, partial explanation for the ethnic differences in reported prevalence and amount of alcohol use during high school. Methods: Survey data from a sample of 680 adolescents from Project STAR (Students Taught Awareness and Resistance) of the Midwestern Prevention Project were used. Hypotheses were tested using sequential, semi-continuous growth curve models. Results: Relative to Black adolescents, White adolescents reported greater peer alcohol use during middle school and were much more likely to consume alcohol during high school. General peer norms in seventh grade and middle school growth in alcohol use norms across close friends was predictive of a greater propensity to consume alcohol in ninth grade among White adolescents. Conclusion: Lower peer norms for alcohol use among Black adolescents might better account for differences between Black and White adolescents than the possibility that White adolescents are more vulnerable to peer norms.

The National Institute of Alcohol Abuse and Alcoholism (NIAAA, 2003) has identified underage alcohol consumption by adolescents as a major public health challenge. Major public concern stems from the multiple social and health risks associated with underage consumption of alcohol (NIAAA, 1997, 2003). Furthermore, earlier age of onset during adolescence is associated with increased odds of developing a lifetime diagnosis of alcohol dependence or abuse disorder (Grant and Dawson, 1997), thereby placing early initiators at an increased risk for a variety of health and social problems.

Among the research supporting the widespread prevalence of adolescent alcohol use are findings that some subpopulations are less likely to drink than others. In particular, numerous community and national studies have documented that fewer Black adolescents than White adolescents report consuming alcohol (Newcomb and Bentler, 1986; Maddahian et al., 1988; Gillmore et al., 1990; Bachman et al., 1991; Johnston et al., 2006). According to recent MTF study estimates, among Black adolescents, 15% of 8th graders, 23% of 10th graders and 29% of 12th graders report consuming alcohol within the past 30 days (Johnston et al., 2006). This compares with 18, 37 and 52% among White 8th, 10th and 12th graders, respectively.

An important question for prevention scientists and policymakers is: what are the explanatory processes or factors that account for these differences. One approach to addressing this question is to focus research on whether there are ethnic differences in levels of risk factors or promotive factors related to alcohol use (Marsiglia et al., 2001). For example, Wallace and Bachman (1991) explored whether Black/White differences on background (e.g. parental education) and lifestyle (e.g. religiosity) factors could account for differences in heavy alcohol use. Even after controlling for these factors, Blacks continued to exhibit fewer episodes of heavy drinking. As such, this approach has been limited in its ability to account completely for ethnic differences. Moreover, it assumes that the risk or promotive factors are equally salient for both groups, despite ample evidence to the contrary. Notably, extant research suggests that the effects of common predictors of substance use are often weaker for Black adolescents relative to White adolescents (Wallace and Bachman, 1991; Biafora et al., 1994; Gottfredson and Koper, 1996; Vaccaro and Wills, 1998; Ellickson and Morton, 1999; Wallace and Muroff, 2002; Brown et al., 2004). Exploring ethnic differences in relationships between predictors for alcohol use and subsequent use is a potentially useful framework for studying why Black adolescents are less likely to drink alcohol relative to their White counterparts despite the former experiencing a greater socio-demographic risk.

PEER NORMS TOWARD SUBSTANCE USE

From the perspective of the Theory of Planned Behavior (Madden et al., 1992), subjective norms toward substance use, along with attitudes and perceived behavioral control, influence substance use behavior indirectly through their influence on behavioral intentions to use substances. Within a Social Learning Theory framework (Bandura, 1989), substance use behaviors are influenced by association with those persons who use drugs through modeling and vicarious learning processes. Such associations not only provide greater access to drugs but also feed information regarding their use (informational social influence; Unger et al., 2001). These factors have been consistently found to predict adolescent substance use (Hansen et al., 1987; Hawkins, 1992; Iannotti and Bush, 1992; Epstein et al., 1995; Kumar et al., 2002). Peer norms toward substance use during early adolescence, when peers are becoming increasingly influential on youth’s attitudes and behaviors, may affect developmental trajectories for substance use during middle and later adolescence (Duan et al., 2009).

Although studies have generally found that peers influence substance use for both Black and White adolescents (Gillmore et al., 1990), these relationships may be weaker...
and less consistent for Black adolescents. Wallace (1999) theorized that because Black youth are less peer-oriented and more parent-oriented, they would be less susceptible to peer norms supportive of substance use. Studies by Unger et al. (2001) and Newcomb and Bentler (1986) found that informational and normative social influences were more weakly related to adolescent smoking for Black adolescents. Their findings suggest that Black/White differences in susceptibility to peer influences on substance use, alcohol use in particular, might partially explain their discrepancies in rates of adolescent use.

PRESENT STUDY

The present study seeks to extend upon the existing literature by exploring the longitudinal relationships between peer norms toward alcohol use during middle school and subsequent change in alcohol use during high school among Black and White adolescents. A central aim of this study is to investigate whether ethnic differences in peer norms as well as vulnerability to peer norms supportive of alcohol use is a viable, partial explanation for the ethnic differences in reported prevalence and amount of alcohol use during high school. More specifically, this study will investigate whether Black and White adolescents differ in: (a) peer norms toward alcohol use during middle school, (b) both prevalence of alcohol use and amount of alcohol consumption during high school and (c) the relationships between peer norms during middle school and subsequent alcohol use during high school. We hypothesize that, relative to White adolescents, Black adolescents will report: (a) lower perceived general peer alcohol use and fewer close friends using alcohol, (b) lower prevalence rates for alcohol use during high school, (c) less consumption among those whom already drink and (d) weaker relationships between peer norms and alcohol use/consumption. Our expectation of a longitudinal association between changes in peer norms and changes in alcohol use is informed by the Theory of Planned Behavior (Madden et al., 1992) and Social Learning Theory (Bandura, 1989), whereas our expectation that these associations will be weaker for Black youth than for White youth is informed predominantly by the work of Unger et al. (2001) and Wallace (1999). Similar to the strategy of Unger et al. (2001), we distinguish between the influence of perceived general peer norms (GPN; i.e. perceived prevalence of peer use) and alcohol use norms among close friends (ANF), through which informational peer influence can occur.

METHOD

Participants

Participants for this study were obtained from a panel sample of Project STAR (Students Taught Awareness and Resistance) of the Midwestern Prevention Project (Pentz et al., 1989), a randomized prevention trial designed to investigate the effectiveness of a multi-component, school and community-based drug prevention program implemented in the Kansas City metropolitan area. Beginning with their first year of middle or junior high school in the fall of 1984, the study followed students for seven waves of data collection spanning a period of 6 years. The first three waves were separated by half-year intervals and were then followed by four yearly intervals. Only those participants from schools assigned to the control condition were included in the present study. Additionally, analyses were restricted only to students (N = 680) who self-identified their race as either White (n = 550; 47% female) or Black (n = 130; 54% female).

Measures

For the present study, perceived GPN was captured by an item that assessed students’ perceptions of peer alcohol use. Students were asked to indicate the percentage of their peers that they believed were drinking alcohol (i.e. ‘Out of every 100 students your age, how many do you think drink alcohol?’). Responses were recorded on a 11-point scale ranging, in 10% increments, from 1 (0%) to 11 (~100%). Responses to this item from the seventh through eighth grades were used. ANF was measured by an item reflecting the number of close friends who drink alcohol. Close friends who drink alcohol are potential sources of peer pressure to drink and of information on how to access and consume alcohol. Students provided their responses on a 7-point scale ranging from 1 (none) to 7 (>10). Responses to this item from the seventh through eighth grades were used. Alcohol use was measured by an item that asked students how many alcohol drinks that they consumed during the past month. Responses ranged from 0 (none) to 6 (>20). Students’ responses to this item during high school (i.e. 9th through 12th grade) were used. See Table 1 for descriptive statistics.

Data analysis overview

Model estimation was carried out using Mplus software (v. 4.1; Muthén and Muthén, 2006) using a robust, full information maximum likelihood estimator. We modeled change across the repeated measures of peer norms and alcohol use using latent growth curve models (Meredith and Tisak, 1990; Willett and Sayer, 1994) within a structural equation modeling framework. For both peer norm processes, a conventional linear latent growth model was specified to capture change in peer norms across the three time points occurring during middle school. We modeled linear change in past month alcohol use across the high school grades using a semi-continuous latent growth model, informed by the Theory of Planned Behavior (Madden et al., 1992) and Social Learning Theory (Bandura, 1989), whereas our expectation that these associations will be weaker for Black youth than for White youth is informed predominantly by the work of Unger et al. (2001) and Wallace (1999). Similar to the strategy of Unger et al. (2001), we distinguish between the influence of perceived general peer norms (GPN; i.e. perceived prevalence of peer use) and alcohol use norms among close friends (ANF), through which informational peer influence can occur.

| Table 1. Descriptive statistics for GPN, ANF and alcohol use |
|---------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
|                                | Black   | White   |
|                                | M       | SD      | P (use) | M       | SD      | P (use) |
| GPN—Grade 7                   | 4.79    | 2.77    |         | 4.90    | 2.66    |         |
| GPN—Grade 7.5                 | 5.06    | 2.95    |         | 5.29    | 2.67    |         |
| GPN—Grade 8                   | 5.25    | 2.57    |         | 6.14    | 2.56    |         |
| ANF—Grade 7                   | 1.56    | 1.06    |         | 1.97    | 1.53    |         |
| ANF—Grade 7.5                 | 1.59    | 1.16    |         | 2.21    | 1.56    |         |
| ANF—Grade 8                   | 1.75    | 1.27    |         | 2.69    | 1.75    |         |
| Alcohol—Grade 9               | 1.96    | 1.02    | 0.25    | 2.79    | 1.42    | 0.65    |
| Alcohol—Grade 10              | 2.28    | 1.23    | 0.34    | 3.35    | 1.40    | 0.68    |
| Alcohol—Grade 11              | 2.70    | 1.27    | 0.32    | 3.69    | 1.41    | 0.73    |
| Alcohol—Grade 12              | 3.44    | 1.22    | 0.31    | 3.84    | 1.50    | 0.70    |

* M and SD estimates pertain to amount of reported past month alcohol consumption given some use.
curve model (Fig. 1; Olsen and Schafer, 2001). In this model, parameter estimates are obtained simultaneously for two correlated growth processes: (a) propensity to use alcohol and (b) amount of alcohol use. The propensity to use process is the growth trajectory of repeated binary alcohol use (any use vs. no use) variables. This part of the growth model is estimated as a random-effects logistic growth model. Intercept growth factor mean and variance estimates capture the mean level and inter-individual variability in propensity to use alcohol at ninth grade. The slope factor captures mean level and inter-individual variability in change of the propensity to use alcohol during high school. The amount of use process is the growth trajectory for the amount of past month alcohol use among those with a non-zero propensity to use alcohol at ninth grade. The slope factor captures mean level and inter-individual variability in amount of past month alcohol use at ninth grade. The slope growth factor captures linear growth in the amount of alcohol use during high school. The strengths of the semi-continuous model for modeling growth of alcohol use are both theoretical and statistical. Conceptually, the propensity to use process can be considered qualitatively distinct from the amount of use process. This model allows for the realistic possibility that correlates of alcohol use differ from the correlates of the amount of use (Brown et al., 2005). Statistically, the distributional assumptions of conventional latent growth models are often not met when modeling substance use. The semi-continuous model is often more appropriate for these variables.

RESULTS

Single-construct latent growth curve models
Alcohol use
Preliminary analyses were conducted to ascertain the correct growth model specification. $\chi^2$ tests of model fit for the binary outcomes were non-significant, supporting a linear growth specification for the propensity to use alcohol process. With respect to the amount of use process, results indicated that the linear specification for Black students was appropriate, whereas among White students, a model where the last time score was freely estimated fit the data better [$\chi^2(1) = 9.85; P = 0.002$], indicating smaller growth from 11th to 12th grade compared with the previous rate of growth.

We next tested between-group invariance constraints on mean and variance growth parameters (Table 2). Examining the propensity to use process, White students exhibited greater log odds of alcohol use at ninth grade [$\chi^2(1) = 33.34; P < 0.001$]. Growth rates in the propensity to use alcohol during high school were statistically equal for both groups [$\chi^2(1) = 0.15; P = 0.71$]. Turning to the amount of use process, White students with a non-zero propensity to use alcohol during ninth grade were observed to drink greater amounts of alcohol than were Black students [$\chi^2(1) = 7.23; P < 0.001$]. Average growth in the amount of alcohol use was significant and did not differ between Black and White students [$\chi^2(1) = 0.21; P < 0.001$]. Interestingly, higher initial amounts of use corresponded with smaller growth in use for Black students. Estimated growth trajectories for both processes are presented in Fig. 2.

Peer norms
Results suggested that a linear growth model for GPN fit the data well (Table 2). Initial levels were statistically equal between both groups [$\chi^2(1) = 0.03; P = 0.86$]. Among White students, an average increase in GPN during middle school was observed, whereas the estimated mean growth among Black students was significantly weaker [$\chi^2(1) = 5.95; P = 0.01$] and non-significant. Students who reported higher perceived peer use of alcohol in fall of seventh grade
exhibited less growth in their perceptions of peer use during middle school.

A linear growth model for ANF also fit the data well (Table 2). White students, on average, exhibited greater initial levels of reported ANF than did Black students ($\chi^2(1) = 4.04; \; P = 0.04$). Among White students, an average increase in ANF during middle school was observed. In contrast, mean growth was significantly less among Black students than among White students ($\chi^2(1) = 16.11; \; P < 0.001$) and non-significant.

### Sequential process, multiple group latent growth curve models

**GPN and alcohol use**

In this model, alcohol propensity and amount of use growth factors were regressed on the growth factors for GPN. Structural coefficients for this model and associated tests of group differences are provided in Table 3. White seventh grade students who perceive alcohol use to be more normative among their peers were more likely to drink alcohol when in ninth grade and consume greater quantities of alcohol, but, unexpectedly, exhibited less growth in amount of use. With respect to initial GPN levels, the only significant relation to emerge for Black students was with the initial amount of alcohol use: higher norm perception in seventh grade was positively related to alcohol consumption levels among drinkers in ninth grade, but neither with propensity to drinking in ninth grade nor growth in alcohol use. For neither group was middle school growth in GPN related to alcohol use during high school. Although different patterns of significant results emerged between White and Black students, none of the coefficients were statistically different between these groups.

**ANF and alcohol use**

Among both White and Black students, results suggested that those students with more-alcohol-using close friends are more likely to use and to consume greater amounts of alcohol at ninth grade. Contrary to prediction, the pathway linking initial ANF with initial propensity to use alcohol was significantly stronger for Black students ($\chi^2(1) = 6.28; \; P = 0.01$).
TABLE 3. Structural parameter estimates for the multiple group, sequential process growth models

<table>
<thead>
<tr>
<th></th>
<th>Black students</th>
<th>White students</th>
<th>Black vs. White students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Peer Norms (GPN) and Alcohol Use (Alc)</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>GPN intercept → Alc propensity intercept</td>
<td>−0.03 (−0.40 to 0.35)</td>
<td>0.32* (0.08 to 0.55)</td>
<td>−0.34 (−0.78 to 0.10)</td>
</tr>
<tr>
<td>GPN intercept → Alc propensity growth</td>
<td>0.07 (−0.08 to 0.21)</td>
<td>0.01 (−0.19 to 0.21)</td>
<td>0.06 (−0.20 to 0.32)</td>
</tr>
<tr>
<td>GPN growth → Alc propensity intercept</td>
<td>0.05 (−0.43 to 0.34)</td>
<td>0.24 (−0.50 to 0.98)</td>
<td>−0.29 (−1.08 to 0.51)</td>
</tr>
<tr>
<td>GPN growth → Alc propensity growth</td>
<td>0.09 (−0.04 to 0.23)</td>
<td>0.08 (−1.24 to 1.40)</td>
<td>0.01 (−1.28 to 1.30)</td>
</tr>
<tr>
<td>GPN intercept → amount Alc use intercept</td>
<td>0.37* (0.05 to 0.69)</td>
<td>0.25* (0.13 to 0.38)</td>
<td>0.12 (−0.24 to 0.47)</td>
</tr>
<tr>
<td>GPN intercept → amount Alc use growth</td>
<td>−0.08 (−0.22 to 0.06)</td>
<td>−0.09* (−0.16 to −0.01)</td>
<td>0.01 (−0.16 to 0.17)</td>
</tr>
<tr>
<td>GPN growth → amount Alc use intercept</td>
<td>−0.02 (−0.43 to 0.40)</td>
<td>0.11 (−0.68 to 0.90)</td>
<td>−0.13 (−0.81 to 0.56)</td>
</tr>
<tr>
<td>GPN growth → amount Alc use growth</td>
<td>0.10 (−0.07 to 0.28)</td>
<td>−0.04 (−0.37 to 0.29)</td>
<td>0.15 (−0.13 to 0.42)</td>
</tr>
<tr>
<td><strong>Alcohol Use Norms Among Close Friends (ANF) and Alcohol Use (Alc)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANF intercept → Alc propensity intercept</td>
<td>1.60* (0.75 to 2.44)</td>
<td>0.66* (0.25 to 1.08)</td>
<td>0.93* (0.01 to 1.87)</td>
</tr>
<tr>
<td>ANF intercept → Alc propensity growth</td>
<td>0.07 (−0.24 to 0.39)</td>
<td>−0.12 (−0.40 to 0.16)</td>
<td>0.19 (−0.23 to 0.61)</td>
</tr>
<tr>
<td>ANF growth → Alc propensity intercept</td>
<td>0.55 (−0.15 to 1.24)</td>
<td>0.82* (0.05 to 1.59)</td>
<td>−0.27 (−1.36 to 0.81)</td>
</tr>
<tr>
<td>ANF growth → Alc propensity growth</td>
<td>0.07 (−0.22 to 0.36)</td>
<td>0.11 (−0.37 to 0.59)</td>
<td>−0.04 (−0.60 to 0.52)</td>
</tr>
<tr>
<td>ANF intercept → amount Alc use intercept</td>
<td>0.53* (0.13 to 0.94)</td>
<td>0.62* (0.42 to 0.82)</td>
<td>−0.09 (−0.54 to 0.36)</td>
</tr>
<tr>
<td>ANF intercept → amount Alc use growth</td>
<td>0.04 (−0.20 to 0.27)</td>
<td>−0.11 (−0.22 to 0.01)</td>
<td>0.15 (−0.12 to 0.41)</td>
</tr>
<tr>
<td>ANF growth → amount Alc use intercept</td>
<td>0.28† (−0.001 to 0.55)</td>
<td>0.41* (0.09 to 0.72)</td>
<td>−0.13 (−0.56 to 0.29)</td>
</tr>
<tr>
<td>ANF growth → amount Alc use growth</td>
<td>−0.02 (−0.21 to 0.16)</td>
<td>−0.13 (−0.30 to 0.04)</td>
<td>0.11 (−0.15 to 0.36)</td>
</tr>
</tbody>
</table>

95% confidence intervals are provided in parentheses.
†P > 0.10.
*P > 0.05.

Growth in ANF during middle school was predictive of both greater propensity to use alcohol and greater amount of alcohol consumption during ninth grade for White students, supporting our hypotheses that middle school students who experience higher rates of growth in the number of their close friends who drink alcohol are themselves at an increased risk for drinking alcohol in greater quantities in ninth grade. None of the relationships between growth in ANF and alcohol constructs were statistically significant for Black students.

**DISCUSSION**

The present study sought to provide a better understanding of Black/White differences in growth trajectories for alcohol use. Consistent with past research (Johnston et al., 2006), Black students were less likely to drink alcohol and consumed less alcohol than their White counterparts. These differences appear to be driven primarily by the initial differences that are present upon entry into high school as the growth rates for alcohol use or amount of consumption throughout high school were not different between these two ethnic groups. Also consistent with our hypotheses, Black students reported fewer close friends who drank alcohol during seventh grade and exhibited a smaller increase in such friends during middle school. Although Black and White students had relatively equal perceptions of the percentage of alcohol consuming peers (GPN) during seventh grade, GPN increased at a faster rate for White students. Replicating findings from other studies (Page et al., 2002), both groups seemed to overestimate the actual percentage of peers who drink alcohol based on national estimates (Johnston et al., 2006). To the extent that racial segregation exists for these adolescents, Black and White adolescents may reference different peer groups that might be defined, predominantly, along racial/ethnic lines. Future research is needed to test, for example, whether Blacks attending schools with a greater percentage of White adolescents report higher GPN.

This study provides mixed evidence for our hypotheses that peer norms for alcohol use are not equally salient predictors of alcohol use for Black and White adolescents. The only statistical difference observed between Black and White students was the relation between seventh grade ANF and ninth grade propensity to drink, which, contrary to our expectation, was stronger for Black adolescents. Because having close friends who drink alcohol during seventh grade is less normative for Black adolescents relative to Whites, Black seventh graders who have more close friends who drink may constitute a particularly at-risk group for later alcohol use. Although only one relationship was statistically different for Black and White students, patterns of significance differed between these groups where some relations for peer norms and alcohol use were significant only among White adolescents. Statistically, our findings are generally inconsistent with the theoretical prediction that associations between peer norms and alcohol use would be weaker for Black adolescents made by Wallace (1999) and with the empirical findings by Newcomb and Bentler (1986) and by Unger et al. (2001). Notably, these studies included larger samples but were not longitudinal, and the study by Unger et al. (2001) focused on adolescent smoking. Perhaps the effects of peer norms on alcohol use, as well as Black/White differences in these effects, are weaker over wider time intervals.

The strengths of this study notwithstanding, results of this study should be interpreted with some caution given its limitations. First, although the longitudinal design is a strength, this study was correlational (i.e. not experimental), thereby limiting causal inferences. Secondly, all data were based on adolescents’ self-reports, which may be subject to inaccuracies—although researchers using self-report, substance use measures have found them to be valid (Newcomb and Bentler, 1986; Ellickson and Morton, 1999). A third limitation is that measurement of our key constructs was limited to single-item measures. However, we are minimally
concerned by this given that our constructs are sufficiently narrow in scope as to be adequately captured by a single item, though we encourage future research to examine the sensitivity of this study’s findings to different operationalizations of peer norms and alcohol use, as well as to different reliability estimates. Additionally, latent growth models account for time-specific measurement error by incorporating error into the residuals. Fourthly, the modest sample size for the Black group might have resulted in insufficient statistical power to detect group differences and was insufficient to test whether gender moderates any of the pathways.

Using a cross-ethnic comparative framework to better understand Black/White differences in adolescent alcohol use is valuable for several reasons (Barrera et al., 1999). First, it facilitates tests of the cross-cultural universality of theoretical relationships. This study provides mixed support for the notion that peer determinants of adolescent alcohol use for White adolescents are not equally salient for Black adolescents. Secondly, comparative studies can inform policy decisions for resource allocation and prevention targets. Some policy-makers might conclude from this and past studies that alcohol consumption among Black high school students is less problematic relative to their White counterparts and, therefore, requires less attention and resources. However, we believe that this conclusion would be a mistake given that: (a) a substantial portion of Black adolescents do engage in underage drinking, (b) the difference in alcohol use prevalence rates between Black and White groups narrows in young adulthood and (c) Blacks may be more vulnerable to the consequences of alcohol use (e.g. cirrhosis; NIAAA, 2002). This latter point has especially important public health implications for understanding alcohol-related health disparities. The commonly observed aggregation and interaction of disease in vulnerable and under-served populations, when linked to ‘excess burden of disease in a population’, has been termed syndemic by public health researchers (Singer and Clair, 2003). Black youth engaged in underage alcohol consumption represent a non-normative subpopulation of Black youth that might experience heightened exposure and enhanced vulnerability to risk factors for alcohol use and/or the relative absence of protective factors relative to their non-using Black counterparts. Given the well-established literature documenting the environmental and socio-economic disparities between Blacks and Whites, it should not be surprising then that this subpopulation of Black youth would experience more severe health and other consequences from their illicit alcohol use. Wallace (1999) has developed a conceptual framework, premised on the notion that American society is a racialized social system, that might be particularly useful in guiding future such research. Thirdly, it can inform preventive intervention development in whether to be cultural specific or more universal. Our results suggest that preventive interventions that contain social norms education component could effectively reduce underage alcohol consumption for youth in both ethnic groups. Effect sizes may, however, differ between Black and White adolescents and depend on timing and whether the focus is on GPN or ANF. Black adolescents may be on a delayed path to alcohol use development relative to White adolescents, including a lagged path of peer norm influences on alcohol use, perhaps reflecting cultural differences in developmental norms and expectations for substance use. Therefore, in addition to universal social norms-based prevention in middle school, Black adolescents might benefit from additional norms-based prevention later on in middle to later high school, when these influences may be increasing. The notion of developmental sequencing of prevention intervention components may have particular relevance for taking into consideration ethnic and cultural differences in substance use trajectories. Future research should study the socio-cultural mechanisms for which dynamic ethnic/racial categories, such as ‘Black’ and ‘White,’ often serve as a proxy. It is among these mechanisms that we will likely find our strongest explanations for developmental differences in underage drinking between Black and White youth, and most improve our preventive interventions for use with Black youth.

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