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Racial Differences in Parenting Style Typologies and Heavy Episodic Drinking Trajectories

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Abstract

Objective—This study examines racial differences between Caucasians and African Americans in the association of parenting style typologies with changes in heavy episodic drinking from adolescence to young adulthood.

Methods—The analytic sample consists of 9,942 adolescents drawn from the National Longitudinal Study of Adolescent Health, which followed respondents from ages 12 to 31 years. Confirmatory factor analysis and factor mixture modeling are used to classify parenting style typologies based on measures of parental acceptance and control. HED trajectories are evaluated using a zero-inflated Poisson multigroup latent growth curve modeling approach.

Results—The mixture model identified four heterogeneous groups that differed based on the two latent variables (parental acceptance and control): balanced (65.8% of the sample), authoritarian (12.2%), permissive (19.4%), and uninvolved/neglectful (2.7%). Regardless of race, we found that at age 12 years, children of authoritarian parents have a higher probability of not engaging in HED than children of parents with balanced, permissive, or neglectful parenting styles. However, among African American youth who reported HED at age 12, authoritarian parenting was associated with greater level of HED at age 12 but a less steep increase in level of HED as age increased yearly as compared with balanced parenting. For Caucasian adolescents, uninvolved, permissive, and authoritarian parenting were not associated with a greater level of HED as age increased yearly as compared with adolescents exposed to balanced parenting.

Conclusion—The influence of parenting styles on HED during adolescence persists into young adulthood and differs by race for youth engaging in HED.

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Keywords

Black; White; youth; parents; binge drinking; alcohol

Racial differences in the prevalence and consequences of adolescent alcohol misuse contribute to persisting racial/ethnic health disparities such as greater mental health problems, particularly depression among African American adolescents (Maag & Irvin, 2005). Other health disparities related to alcohol misuse may not be immediate, but may manifest during different developmental stages and over time. For instance, alcohol misuse may contribute to the greater risk for developing liver disease (Flores, et al. 2008), esophageal cancer, pancreatic disease (Polednak, 2007; Yang, et al. 2008), fetal alcohol syndrome, and fetal alcohol spectrum disorders (Russo, et al. 2004) among African Americans relative to Caucasians. Parents may be especially important in helping to shape development and prevent substance use for African American adolescents who are more parent-oriented than Caucasian adolescents who are more peer-oriented (Wallace & Muroff, 2002). That is, African American adolescents perceive a stronger parent-child relationship, parental control, and family attachment (Giordano, Cernkovich, & Demaris, 1993; Wallace & Muroff, 2002); score higher on parent versus peer-orientation scales such as the 20-item Parent-Peer Orientation (PPO) Likert scale which assesses degree of parent and peer orientation (e.g., “I would rather possess those qualities for which my parents would praise me than those for which my friends and schools would praise me,” “I prefer to grow up to be more like my friends rather than my parents”) (deCindo, Floyd, Wilcox, & McSeveney, 1983; Stinnett, 1965); and perceive less peer pressure and report a lower need for approval from peers than Caucasian adolescents (Giordano, Cernkovich, & Demaris, 1993; Wallace & Muroff, 2002). Thus, the purpose of the current study was to examine racial/ethnic differences in how parenting style contributes to Heavy Episodic Drinking (HED) initiation and changes during the transition from adolescence to adulthood.

Survey findings of past month alcohol use have typically shown that compared to African American adolescents, Caucasian adolescents have earlier onset of alcohol use and higher rates of alcohol use including HED (Substance Abuse and Mental Health Services Administration [SAMHSA], 2012). HED, defined as drinking five or more alcoholic drinks on one occasion (Dawson, Grant, Stinson, & Chou, 2004), is typically measured in youth because it is the best indicator of risk for problem drinking during adolescence and emerging adulthood (Thompson, Stockwell, Leadbeater, & Homel, 2014; Winward, Hanson, Bekman, Tapert, & Brown, 2014). SAMHSA (2012) indicate that among persons 12 to 20 years old in 2011, Caucasians had the highest rates of current HED (18.6%), followed by those who identified as biracial or multiracial (15.9%), Hispanic (14%), and American Indian (13.9%). Rates of HED were lowest among African Americans (9.4%) and Asians (9.1%). Even though African Americans report lower alcohol use in adolescence, their prevalence surpasses that of Caucasians in adulthood (i.e., the “*catch-up effect*,” Watt, 2008). Moreover, despite lower alcohol use during adolescence, African American adolescents tend to report a greater number of alcohol-related consequences than Caucasians such as a greater likelihood of substance use disorder in young adulthood (Gill, Wagner, & Trubman, 2004; Mulia et al., 2009). These findings have important implications for society because

adolescent alcohol use costs the US \$62 billion each year in health care costs, lost productivity, property losses, and quality-adjusted life years (Miller, Levy, Spicer, & Taylor, 2006). In particular, these costs include over \$5.4 billion in medical spending, \$7.1 billion in work losses, 7.8 billion in property loss costs and other resources, and \$41.6 billion in quality-adjusted life years (Miller, Levy, Spicer, & Taylor, 2006). Across all age groups, HED represents majority (76%) of the alcohol-related costs to the US (Bouchery et al., 2011). African Americans may be disproportionately affected by some of the social and health consequences of HED due to the higher likelihood of problem drinking in adulthood (Watt, 2008). Understanding some of the factors that may help explain differing patterns of alcohol use initiation and persistence into adulthood among African Americans could help inform more highly tailored and targeted public health prevention efforts.

Indeed, family-based interventions may help to deter substance use among African American youth (Brody et al., 2012; Griffin & Botvin, 2010). Understanding the types of parenting styles that relate to alcohol use could be useful to efforts to refine and tailor family-based substance use preventive interventions. Moreover, parents use various methods to shape their children's development. The most widely applied theory of parenting styles was developed by Baumrind (1971) and later modified by Maccoby and Martin (1983). Baumrind conceptualized parenting styles as based on two underlying dimensions: parental acceptance and parental demand for control. In turn, these two dimensions can be paired in combinations of differing values to describe four classic parental styles: *authoritative* (high acceptance, high control), *authoritarian* (low acceptance, high control), *permissive-indulgent* (high acceptance, low control), and *uninvolved-neglectful* (low acceptance, low control; Maccoby & Martin, 1983). It is important to note that the Baumrind (1971) seminal study relied exclusively on data from Caucasian youth. Subsequent studies have included African American youth (e.g., Baumrind, 1972; Mandara & Murray, 2002) but fewer studies have examined racial differences in the relationship between parenting styles and alcohol use.

Studies that have evaluated the relationship between parenting styles and adolescent alcohol use have produced mixed results. Consistent with research in other fields, considerable evidence in the substance-use literature has suggested that adolescents whose parents had an authoritative parenting style were less likely to initiate alcohol use than adolescents whose parents had an authoritarian, permissive, or neglectful parenting style (e.g., Adalbjarnardottir & Hafsteinsson, 2001; Bahr & Hoffman, 2010). A 2008 integrative literature review study reviewed 15 studies that examined the relationship between parenting styles and alcohol use (i.e., use in the past 30 days, past 12 months, and lifetime/ever use) among samples of racially and ethnically diverse adolescents and concluded that adolescents whose parents used an authoritative parenting style were generally less likely to use alcohol across all levels as compared with adolescents whose parents used an authoritarian, permissive, or neglectful parenting style (Newman, Harrison, Dashiff, & Davies, 2008). Authoritarian and neglectful parenting styles were associated with the greatest risk of substance use, followed by permissive parenting style (Newman, Harrison, Dashiff, & Davies, 2008). In contrast, other studies have shown authoritative parenting style was positively associated with adolescent alcohol use, and that adolescents from authoritative families were more likely to

report alcohol use than were youth from families with other types of parenting styles (e.g., Burk et al., 2011). Other studies have found that an authoritative parenting style was not associated with adolescent alcohol use (e.g., Abar, Carter, & Winsler, 2009). These latter studies on parenting styles and alcohol use contribute to the mixed-results in the knowledge base. Further, these studies have focused almost exclusively on a single race. For example, the Burk sample was composed of 89% Caucasian youth and the Abar, Carter, and Winsler sample was composed of 93% African American youth.

These studies did not examine racial/ethnic differences. Racial and ethnic background, country of residence, immigration status, socioeconomic status, and other factors influence the manner in which parents parent their children. Caucasian families are usually described as individualistic while African American families have been described as individualistic and collectivistic (Oyserman, Coon, & Kimmelmeier, 2002), though variations exist based on factors such as socioeconomic status (Klebanov, Brooks-Gunn, & Duncan, 1994). Individualism and collectivism are salient concepts as they influence the goals parents have for their children, parents' views about parenting, and the words parents use to describe their parenting values and experiences (Chao, 1994). For example, someone who endorses an individualistic viewpoint may view an authoritarian parenting style as overly strict and restrictive while someone who endorses a collectivistic viewpoint may consider authoritarian parenting style as appropriate parental concern (Chao, 1994). Moreover, normative beliefs about parenting differ by culture - a particular parenting approach (e.g., lower warmth, yet controlling) that is viewed as normative in one culture may not be normative in the other (Garcia & Garcia, 2009; Radziszewska, Richardson, Dent, & Flay, 1996; Reitman, Rhode, Hupp, & Altobello, 2002). The early literature on parenting supports this. For example, research has suggested that an authoritarian parenting style was associated with positive youth outcomes (i.e., cognitive competence, social competence, and lower internalizing problems) for African American youth but not Caucasian youth (e.g., Brody & Flor, 1998). Baumrind's (1972) seminal study examined racial differences in parenting styles among African American and Caucasian parents, and assessed the effects of parenting styles on preschool children's behavior. Baumrind's comparison of children whose parents used an authoritarian style showed that, relative to the Caucasian children, the African American children had better outcomes in that they were more likely to be independent. Thus, scoring high on authoritarian parenting style may have different implications for African American families than Caucasian families.

The purpose of the present study was to explore HED in African Americans compared to Caucasians and the extent to which different parenting styles relate to HED initiation and changes during the transition from adolescence to adulthood. We hypothesized that the effect of parenting styles on HED trajectories would differ between African Americans and Caucasians controlling for gender, socio-economic status, household structure, access to alcohol in the home, and peer drinking. The study takes advantage of a large racially mixed population-based cohort of adolescents who were followed into adulthood.

Method

Data Source and Study Sample

The sample was drawn from 20,774 adolescents in the National Longitudinal Study of Adolescent Health (Add Health) database. Add Health is an ongoing, longitudinal study with a nationally representative sample of U.S. adolescents. Add Health participants have been followed from adolescence into adulthood via four waves of data collection. The Add Health study selected 80 U.S. high schools and 52 middle schools for study inclusion. These schools were selected through a stratified random sampling process that yielded a sample of schools that was representative of U.S. schools with respect to region, urbanicity, race/ethnicity, school type, and size. Some racial/ethnic groups were oversampled (e.g., middle-class African Americans). Wave 1 data were collected from 1994 to 1995, Wave 2 in 1996, Wave 3 from 2001 to 2002, and Wave 4 from 2007 to 2008. At Wave 1, the mean age of the participants was 15.65 years ($SD = 1.75$) years; at Wave 2, the mean age was 16.22 years ($SD = 1.64$); at Wave 3, the mean age was 22.96 years ($SD = 1.77$); and at Wave 4, participant's mean age was 28.9 years ($SD = 1.76$). Inclusion criteria for the present study limited the sample to adolescents who (a) self-identified as African American or Caucasian; (b) had been interviewed at both Wave 1 and Wave 4, at a minimum; and (c) had sampling weights available. A limited number of participants from the longitudinal cohort met the minimum criteria for study inclusion. The sample was further reduced because of missing covariate data, particularly the data on parental education level. As a result, the analytic sample was reduced to 9,942 adolescents. Table 1 presents descriptive statistics for the analytic sample. Details of the Add Health study can be found elsewhere (e.g., Harris et al., 2009).

Measures

HED—At all four waves of data collection, participants self-reported their alcohol drinking status. HED was assessed with the following question: “Over the past 12 months, on how many days did you drink five or more drinks in a row?” Response options were never (scored as 0), 1 or 2 days in the past 12 months (= 1), once a month or less (= 2), 2 or 3 days a month (= 3), 1 or 2 days a week (= 4), 3 to 5 days a week (= 5), and every day or almost every day (= 6). Self-report measures of drinking show adequate reliability and validity when assessments are structured to minimize response bias (Del Boca & Darkes, 2003). To minimize response bias, Add Health employed computer aided self-interviewing (CASI) to assess substance use behaviors. There is substantial research to indicate the validity of adolescent self-reports of drug use (Denis et al., 2012; Hornik & Orwin, 2012; Harrison & Hughes, 1997; Patrick et al., 1994; Richter & Johnson, 2001; Smith, McCarthy, & Goldman, 1995; Yang et al., 2006). A number of national agencies (e.g., NIAA, SAMHSA) define binge drinking as 5 or more drinks in a row and it is also common to measure HED by asking respondents to consider HED over the past 12 months (e.g., Carlson, Johnson, & Jacobs, 2010). HED was selected as the current study's dependent variable because it defines problematic drinking throughout development better than other drinking variables such as regular drinking (Thompson, Stockwell, Leadbeater, & Homel, 2014; Winward, Hanson, Bekman, Tapert, & Brown, 2014).

Parenting style—The Wave I survey used seven questions to assess the youth’s perceptions of familial and parental acceptance: (1) “How much do you feel that your family understands you?;” (2) “How much do you feel that you and your family have fun together?;” (3) “How much do you feel your parents care about you?;” (4) “How much do you feel your family pays attention to you?;” (5) “How much do you feel you want to leave home?;” (6) “How close do you feel to your mother?;” and (7) “How close do you feel to your father?” All seven questions used the same response options that ranged from *not at all* (scored as 1) to *very much* (scored as 5). Question 5 (i.e., desire to leave home) was reverse coded. In addition, the Wave 1 interview assessed youth’s perceived parental control or monitoring using seven dichotomous *yes/no* questions: “Do your parents let you make your own decisions about...” (1) “the people you hang around with;” (2) “the time you must be home on the weekend;” (3) “what you wear;” (4) “how much TV you watch;” (5) “which TV program you watch;” (6) “time you go to bed on the weeknights;” and (7) “what you eat?” Responses to these questions were coded 0 for no and 1 for yes. These questions of parental acceptance and control have been used in other studies measuring these four constructs of parenting style (e.g., Cox, 2006; Fuemmeler et al., 2012).

Race/ethnicity—Respondents self-reported their race/ethnicity. The present study included respondents who self-identified as either non-Hispanic Caucasian or non-Hispanic African American.

Control variables—We controlled for variables that have been previously found to be associated with adolescent HED. These covariates included gender (*male or female*); parental/ caregiver educational attainment (*less than high school, high school or equivalent, some college, and college degree or beyond*); household structure (coded as a dichotomous variable and assessed whether the respondent lived in a *one- or two-parent* home during the Wave 1 interview); access to alcohol in the home (“*Is alcohol easily available to you in your home?*”); and peer alcohol use (“*Of your 3 best friends, how many drink alcohol at least once a month?*”).

Analytic Strategy

Data were analyzed by applying a cohort sequential design, and analyses were conducted using Mplus version 7. All analyses incorporated stratification and survey weights. Survey weights were incorporated to compensate for differences in selection probabilities of cases within sampling units, differential nonresponse rates, or chance fluctuation of the sample from the population. Missing data were handled with maximum likelihood estimation.

Mixture factor analysis of parenting styles—A mixture confirmatory factor analysis was conducted to examine the measurement of two parenting dimensions: acceptance and control, as has been previously conducted using Add Health data (e.g., Fuemmeler et al., 2012).

The mixture model identified four heterogeneous groups that differed based on the two latent variables, parental acceptance and control, which typically range within two standard deviations of a normal distribution with a mean of zero. Based on the levels of the two latent

dimensions, four parenting style groups were identified and labeled as balanced, authoritarian, permissive, and uninvolved/neglectful. The group membership was coded into three dummy variables, with balanced parenting used as the reference group. The dummy variables were the main independent variables.

Latent growth modeling of changes in HED—Because most adolescents abstain from HED, variables for HED usually have excessive zeros exhibiting overdispersion. Consequently, modeling adolescent HED use is a challenging task. One solution is to use zero-inflated Poisson (ZIP) modeling that allows the researcher to simultaneously estimate the zero (probability of abstaining from HED) and count (level of HED) components of the outcome variable (Greene, 1994; Lambert, 1992).

Given this benefit of ZIP, we applied latent growth modeling (LGM) with ZIP regressions to model changes in HED among youth over time (i.e., Wave I, minimum age 12 years, through Wave IV, maximum age 31 years). The cohort-sequential design allowed the data to be restructured on age rather than data wave (Bollen & Curran, 2006). Over the four waves of Add Health data, respondents contributed to up to four observations of HED. Because of age overlap, information exists on a possible 20 ages, enabling us to model HED trajectories from ages 12 to 31 years. Although this approach resulted in a substantial amount of missing data, Mplus uses the direct maximum likelihood estimation, which overcomes potential biases due to missing data (Bollen & Curran, 2006).

The LGM was conducted in two steps. First, the growth model was estimated without the covariates (i.e., unconditional model). Various change patterns were explored; this article reports the model that best fit the data in terms of Bayesian information criteria. Second, the covariates were incorporated into the growth model to examine their effects on the change rate in the numbers of drinks consumed (i.e., conditional model). In these ZIP models, the coefficients for the count part reflected effects on the level of HED, whereas the coefficients for the inflation part reflected effects on the probability of not engaging in HED. Coefficients for the intercepts indicated effects of covariates at the initial time point (age 12 years), whereas coefficients for the slopes indicated effects on changes as age increased yearly. In the inflated part, a positive effect of a covariate on the slope implies higher levels of the covariate would lead to a higher probability of remaining in the zero category (i.e., a higher probability of abstaining from HED). Whereas, a negative effect implies higher levels of a covariate would lead to a lower probability of staying in the zero category (i.e., a lower probability of abstaining in HED). The count part describes the effects of the covariates only in the subsample that engaged in HED. Higher levels of covariates predict a higher level of HED.

Multigroup model of moderating effects of race—In LGM, a multigroup framework can be useful for evaluating the moderating effects of group membership (Bollen & Curran, 2006). The current study used a multigroup approach in the LGM analyses to compare African American and Caucasian adolescents. Initial analyses assessed significant group differences in the means of the intercept and slope factors of the unconditional LGM of HED. The next round of analyses tested for significant group differences in the conditional LGM of HED. The statistical significance of the moderating effect of race was assessed by

testing equality of parameters (intercept slope for the first analysis and parenting style variable for the second analysis) across the different groups using a series of nested models with constraints and Wald tests.

Results

Descriptive Statistics

Table 1 presents descriptive statistics for the analytic sample and percentages of parenting styles by race. At Wave 1, approximately half (53.6%) of the analytic sample was female. The analytic sample was composed of non-Hispanic Caucasians (70.7%) and non-Hispanic African Americans (29.3%). A majority of respondents (67%) lived in a two-parent household. Approximately 25% of the primary caregivers had a college degree or more postsecondary education. Table 2 presents the response categories of the HED outcome variable and the corresponding percentages by race.

Measurement of Parenting Constructs

The parenting constructs of acceptance and control were measured well with the selected indicators. The factor loadings, indicator contents, and reliability are listed in Table 3. Table 3 also lists key phrases of questions used to measure parental acceptance and control. Symbols of structural equation modeling are used hereafter. Factor loadings ranged from .49 to .86 and reliabilities ranged from .85 to .90. The two constructs were correlated at $\phi = -.15$ ($p < .01$) in the Caucasian respondents and at $\phi = -.19$ ($p < .01$) in the African American respondents suggesting that these are very distinct constructs. The latent means of the two constructs indicated that parents of Caucasian respondents were lower in both acceptance ($\alpha = -.19$, $p < .01$) and control ($\alpha = -.15$, $p < .05$) than African American parents. Latent means are derived through confirmatory factor analysis. In multiple group analysis, one group, the reference group, has a zero mean in the latent variable. Reliability for parental acceptance was .89 and .90 for Caucasians and African Americans, respectively. Reliability for parental control was .85 and .89 for Caucasians and African Americans, respectively.

Parenting Types

Mixture modeling was conducted to identify four subgroups of parenting style based on dimensions of acceptance and control (i.e., balanced, authoritarian, permissive, and uninvolved) that have been widely reported in the literature. Balanced parents (representing the parents of 65.8% of the sample) had scores on acceptance and control that were standardized to have zero means for both of these dimensions. Authoritarian parents (12.2%) were lower on acceptance (-2.39) and slightly higher on control (.31). Permissive parents (19.4%) were higher on acceptance (2.58) and slightly higher on control (.44). Uninvolved parents (2.7%) were lower on acceptance (-2.91) and lower on control (-2.05). Using balanced parenting as the reference group, three dummy-coded variables (authoritarian, permissive, and uninvolved) were recreated to examine their effects on the intercept and slope factors of the growth models.

LGM Changes in HED

Figure 1 presents a graph of the unconditioned change trajectories for Caucasians and African Americans. Specifically, Figure 1 shows the mean HED score over developmental age and the estimated trajectory of mean HED score over developmental age. As shown, the mean counts of HED increased along with age in both the Caucasian and African American respondents. The inflated and count intercept factors had means of $\alpha_{ii} = .00$ and $\alpha_{ci} = .98$ (respectively), $p < .01$ for Caucasian respondents and $\alpha_{ii} = .00$ and $\alpha_{ci} = 1.13$, $p < .01$ for African American respondents. The variances of these two intercept factors were significantly different from zero in both the Caucasian subsample ($\psi_{ii} = 14.69$ and $\psi_{ci} = .13$, $p < .01$) and African American subsample ($\psi_{ii} = 14.69$ and $\psi_{ci} = .13$, $p < .01$), implying that individuals had different starting values. These variances are identical because of the known-class mixture modeling that assumed equal variances between groups.

The inflated and count slope factors had means of $\alpha_{is} = -.79$, $p < .01$ and $\alpha_{cs} = -.04$, $p < .01$ for Caucasian respondents, and $\alpha_{is} = -.13$, $p < .01$ and $\alpha_{cs} = -.05$, $p < .01$ for African American respondents. The estimated changes based on combined inflated and count slopes are depicted in Figure 1, which shows upward increase from early adolescence to adulthood that then levels off. The Caucasian respondents' incidence of HED increased at a faster rate than the African American respondents throughout the 20-year age range of this study (i.e., 12 to 31 years old), as suggested by the Wald test of group difference in the count slope ($\chi^2_{\text{Wald}} = 145.67$, $df = 2$, $p < .01$). The variances of these two slope factors were significantly different from zero in both the Caucasian subsample ($\psi_{is} = .65$, $\psi_{cs} < .00$, $p < .01$) and African American subsample ($\psi_{is} = .65$, $\psi_{cs} = .00$, $p < .01$), implying that individuals changed differently as age increased yearly.

Effects of Parenting Constructs and Other Covariates

The conditional LGM model examined the association of parenting on HED trajectories by race controlling for the five covariates (i.e., gender, parental education, household structure, access to alcohol in the home, and peer drinking). In Table 4, the inflated part models the probability of zeros, which represent the probability of abstaining from HED. Parameters that differed between the two groups are in bold font in Table 4. Because the tests of parameters equality were based on unstandardized estimates, some standardized estimates listed in Table 4 might be similar between the groups. In addition, the significances of similar parameters might differ because of the difference in the standard errors of such parameters. Figure 2 presents a graph of the HED trajectories (including those who have not engaged in HED) by race for each of the four parenting styles.

Inflated Part

As indicated in Table 4, the coefficients on the intercept of the inflated part suggest that both Caucasian and African American adolescents raised by uninvolved or permissive parents had a lower probability of not engaging in HED at age 12 years than adolescents raised by balanced parents. However, children of authoritarian parents had a higher probability of being abstinent at 12 years old as compared with children of balanced parents, though only significant for African American youth ($\gamma_i = -.09$, $p < .05$). The effects of uninvolved and permissive parenting were statistically weaker among African American respondents than

Caucasian respondents, as indicated by Wald tests of their group difference ($c^2_{\text{Wald}} = 7.29$, $df = 1$, $p < .01$ and $c^2_{\text{Wald}} = 4.41$, $df = 1$, $p < .05$). Differences were found between Caucasian and African American adolescents raised by authoritarian parents and permissive parents regarding the youths' probability of abstinence at age 12 years. Racial differences were also found between African American and Caucasian adolescents raised by authoritarian parents regarding youths' level of HED as age increased yearly.

The positive and statistically significant coefficients for the slopes for adolescents influenced by either uninvolved or permissive parenting indicated that their trajectories for remaining abstinent were less steep than the trajectory of abstinence among youth with balanced parents. The lower probability of abstinence at the intercept and less steep change in HED as age increased yearly among children in these groups compared to children of balanced parents suggests a floor effect.

The coefficients of the inflated part suggest that gender was not associated with not engaging in HED at age 12. However, for Caucasian respondents, males were less likely than females to remain abstinent as age increased yearly ($\gamma_s = -.11$, $p < .01$). No gender differences were found for African American respondents in HED abstinence as age increased yearly. For both Caucasian and African American respondents, higher levels of parental educational attainment increased the probability of abstaining from HED at age 12 ($p < .01$), but reduced the probability of Caucasian adolescents abstaining from HED as age increased yearly ($p < .01$). In addition, the coefficients of the inflated part suggest that, as compared with children from one-parent households, children from two-parent households had higher probabilities of abstaining from HED at age 12 ($p < .01$). However, Caucasian children from two-parent households had a lower probability of not engaging in HED as age increased yearly ($p = .04$). For both Caucasian and African American respondents, access to alcohol at home reduced the probability of not engaging in HED at age 12 and as age increased yearly, though significant for Caucasian respondents only ($\gamma_i = -.05$, $p < .05$; $\gamma_s = -.05$, $p < .05$).

Count Part

Results of the analyses showed racial group differences in the effects of permissive and authoritarian parenting on level of HED. Specifically, permissive and authoritarian parenting styles among Caucasians were not associated with level of HED at age 12 years (all p values $> .05$). Whereas among African Americans, both permissive and authoritarian parenting styles were associated with greater level of HED at age 12 years as compared with balanced parenting ($\gamma_i = .18$, $p < .01$, $\gamma_i = .54$, $p < .05$, respectively). For Caucasian adolescents, uninvolved, permissive, and authoritarian parenting were not associated with a greater level of HED as age increased yearly as compared with adolescents exposed to balanced parenting. For African Americans, authoritarian parenting was associated with a less steep increase in HED as age increased yearly as compared with balanced parenting ($\gamma_s = -.43$, $p < .01$).

The coefficients of the count part suggest that at age 12 years, male respondents showed a greater level of HED than females among Caucasian ($\gamma_i = .34$, $p < .01$) and African American ($\gamma_i = .36$, $p < .05$) adolescents. Moreover, the coefficients of the count part

suggested that adolescents' access to alcohol at home was associated with the level of HED at age 12 years for African American respondents ($\gamma_i = .22, p < .05$) but not their Caucasian counterparts ($\gamma_i = -.07, p > .05$). However, access to alcohol at home was associated with an increase in level of HED as age increased yearly for Caucasian respondents ($\gamma_s = .15, p < .01$) but not African American respondents ($\gamma_s = -.08, p > .05$). Parental education was associated with a higher level of HED at age 12 but a lower level of HED as age increased yearly for Caucasian respondents ($\gamma_i = -.13, p < .05, \gamma_s = .11, p < .05$, respectively) but not African American respondents. Household structure was not associated with HED for either the Caucasian or African American subsamples.

Discussion

Parenting style has been identified as an important risk factor for adolescents' involvement in HED. This study expands the current literature by addressing two important knowledge gaps around the influence of parenting styles on the prevalence of HED in adolescents. The first question addressed is whether the parenting styles used during adolescence influences the prevalence and level of HED as adolescents age into young adults. The second question centers on whether the relationship of parenting styles to HED trajectories differ by race. Our findings suggest the style of parenting—as measured by parental acceptance and control—is associated with adolescents engaging in HED at age 12 years as well as engaging in HED longitudinally from preadolescence to young adulthood (ages 12 to 31 years). Our findings further suggest that the relationship between parenting style and HED differs by race.

As expected, we found that regardless of race, children of uninvolved and permissive parents were more likely to report HED at age 12 years than were children of balanced parents. This finding is consistent with most of the literature that has suggested that children of uninvolved or permissive parents were more likely to report alcohol use than were children of balanced and authoritarian parents (e.g., Adalbjarnardottir & Hafsteinsson, 2001; Benchaya, Bisch, Moreira, Ferigolo, & Barros, 2011). Contrary to our expectations, we found that for both racial subgroups (i.e., African American, Caucasian), children of authoritarian parents had a higher probability of abstaining from HED at age 12 years than were children of balanced parents, though only significant for African American youth. These effects held even after we controlled for gender, parental education, household structure, access to alcohol at home, and peer drinking. Although we did not expect authoritarian parenting to be more protective than balanced parenting, this finding is consistent with findings reported in other studies that found children of authoritarian parents had a greater likelihood of better outcomes as compared with children of balanced/authoritative parents (e.g., Rudy & Grusec, 2006). This finding on the protective nature of authoritarian parenting is noteworthy because it is contrary to most of the findings on parenting style and adolescent alcohol use. Thus, our finding raises a question for further exploration: Is a parenting style that tends to be stricter and less flexible (e.g., authoritarian parenting) the most effective parenting style in helping to prevent adolescent problematic drinking, such as HED and binge drinking? It is plausible that a balanced parenting style, containing warmth and reasoning traits, is more effective for preventing experimental and recreational drinking (i.e., drinking behaviors that are often consider normative for

adolescents). Authoritarian parenting, with strict discipline and supervision traits, may be more effective for more excessive and problematic drinking such as HED and binge drinking. Authoritarian parenting traits have been shown to have stronger protective effects against more risky behaviors such as delinquent behaviors and substance use (Pettit, Laird, Dodge, Bates, & Crisis, 2001; Stice & Barrera, 1995). Future research should investigate the conditions under which various parenting styles influence a range of drinking levels.

Further, although we found similarities between racial groups in the relationship of parenting style and not engaging in HED among adolescents, differences between the racial subgroups emerged when we considered only those youth who reported HED. For example, although permissive and authoritarian parenting styles were not significantly associated with level of HED at age 12 years for Caucasian children, these parenting styles were associated with greater level of HED at age 12 years for African American children as compared with balanced parenting. Hence, although authoritarian parenting was protective for African American children with respect to not engaging in HED at age 12 years, authoritarian parenting was a risk factor for greater level of HED at age 12 years among African American youth who reported HED. This finding reflects the way in which parenting styles during early adolescence can influence children's behavior at different stages of their development. Having parents who use a strict and highly controlling parent style when children are young can potentially protect children from engaging in HED as well as other problem behaviors. However, once children engage in HED, the strict parenting style might prompt these children to rebel against parental authority by continuing to engage in HED and affiliating with peers who engage in risky behaviors, which could also lead to greater levels of HED and other risky behaviors. Authoritarian parenting as a risk factor for youth who are already engaging in HED may be especially likely for youth who have weak bonds with their parents and other adult figures.

We also found that, although authoritarian parenting was associated with a greater level of HED at age 12 years among African American youth compared to the balanced parenting style, the slope was negative. As shown in Figure 2, African American youth with authoritarian parents decreased their level of HED as age increased yearly relative to African American youth with a balanced parenting style who had lower levels of HED at age 12, but increasing HED as age increased yearly. For Caucasians, there was no statistically significant difference in level of HED at age 12 or as age increased yearly between those with authoritarian parents relative to those with a balanced parenting style; adolescence with parents who had these two parenting styles showed similar HED trajectories. A potential explanation might be related to cultural norms or expectations that were not included in our model. Lansford et al. (2005) found that perceived cultural normativeness and acceptance of a discipline strategy can moderate the association between experiencing stricter parental discipline and children's aggression. That is, given that an authoritarian parenting style might be more normative in the African American community than the Caucasian community (Brody & Flor, 1998), authoritarian parenting style might have a more positive effect on outcomes for African American youth than for Caucasian youth as previous studies have found (e.g., Reitman et al., 2002). Future studies should consider the importance of family SES, household structure, cultural norms, and perceived racism and discrimination in explaining this study's findings. Studies should also consider the role of broader factors such

as neighborhood disorganization (e.g., gang activity, drug use) in understanding the predictors of parenting style and their role in influencing adolescent HED.

Interesting racial differences in HED prevalence emerged related to two covariates: parental education and access to alcohol at home. The vast majority of the literature has suggested higher SES was associated with higher levels of alcohol use (e.g., Aseltine & Gore, 2000); our findings suggest the opposite. In terms of HED initiation, a household's higher SES served as a protective factor for both African American and Caucasian youth. However, Caucasian children whose parents had higher levels of education showed greater changes in the probability of not engaging in HED as age increased yearly than Caucasian children whose parents had lower levels of education. Conversely, for African American children, the level of parental education did not influence changes in the children's probability of not engaging in HED as age increased yearly. For Caucasian children who were engaging in HED, parents with higher education was associated with greater level of HED at age 12 but less HED as age increased yearly. These findings suggest that higher levels of parental education is a protective factor for not engaging in HED among Caucasian adolescents but a risk factor for Caucasian youth who are already engaging in HED. We also found that access to alcohol at home was associated with greater levels of HED at age 12 years for African American children but not Caucasian children. Conversely, access to alcohol at home was associated with an increase in level of HED as age increased yearly for Caucasians but not African Americans. African American youth had little room to expand their HED over time. These findings partially support the scant literature on home alcohol availability that has suggested an association exists between access to alcohol and early initiation of alcohol use and later drinking problems (Jackson, Henriksen, & Dickinson, 1999; Komro, Maldonado-Molina, Tobler, Bonds, & Muller, 2007). Intervention efforts should encourage parents to restrict their children's access to alcohol, discuss their expectations regarding alcohol use with their children, and assess compliance. Future research should explore racial/ethnic differences in the relationship between children's perceived and actual access to alcohol at home and HED trajectories over time.

This study is limited in some ways. First, we did not assess parenting style as a time-varying variable because the primary goal of the current study was to examine the effects of parenting during adolescence on later development. Although we measured parenting style only at Wave 1, the literature suggests that parenting style is relatively stable over time despite significant changes in marital status and household structure (Barber, Maughan, & Olsen, 2005; McNally, Eisenberg, & Harris, 1991). Second, our measurement of parenting style differed slightly from historical measures of parenting style such that some of our parental acceptance items referenced both parents and family. The difference in measurement could have led to some measurement error. Third, research has shown that college students tend to report heavy drinking and HED more often than their peers who do not attend college (e.g., Dawson, Grant, Stinson, & Chou, 2004). We were unable to fully control for college matriculation in our analyses because of the temporal sequence of the data and developmental nature of analyses. College matriculation could not be treated as a time-varying covariate in the model because it was not possible for participants to be in college during the initial waves of data collection when they were adolescents. To estimate what effect college matriculation could have, we examined the associations between college

matriculation and HED at the later waves of data collection (i.e., Waves III and Wave IV). We found that for both African-American and Caucasians the mean HED score of respondents who attended college was higher than the mean HED score for those who did not attend college. The difference between the means was significantly different that zero (data not shown); however, when examining the magnitude of this difference, the size was extremely small (Cohen's $d = -0.16$ for Caucasians and 0.11 for African Americans for wave III and Cohen's $d = -0.03$ for Caucasians and 0.08 for African Americans for wave IV). Thus, the results presented in the current study are not adjusted for college matriculation; however, it is unlikely that this variable significantly alters the relationship between parenting style and HED trajectories. Fourth, access to alcohol was assessed with a single question, "Is alcohol easily available to you in your home?" We consider this question a limitation of our study as there may be variation in the way adolescents interpreted this question depending upon parenting style and other socialization factors. Fifth, although our results are from a prospective longitudinal study, determining causation was beyond the scope of this study. To determine causal links, we would need a randomized controlled trial that would allow us to evaluate methods for changing parenting practices and assess adolescents' changes in HED over time. Sixth, although our analyses included a number of covariates, many confounding variables (measured and unmeasured) were not assessed in this study. Seventh, we did not examine the mechanisms that might explain the relationship between parenting styles and HED trajectories. Future studies should assess potential mediators (e.g., affiliation with deviant peers) in the relationship of parenting style with HED trajectories. A last limitation is that this study relied on adolescents' self-reports of parenting style. However, it appears that an adolescent's perceptions of his/her parenting behavior is more relevant to development outcomes than their parents' perceptions of their own parenting behaviors (Gray & Steinberg, 1999).

Despite these limitations, this study has a number of strengths. We used confirmatory factor analysis and factor mixture modeling to classify parenting style typologies. We also used a ZIP growth curve modeling approach to test the study's multivariate hypotheses. These methods are more powerful than ordinary least square methods for examining associations between risk factors and changes in outcomes. In addition, we used a database with a large nationally representative sample. We also controlled for a number of potential confounding variables. Further, to our knowledge, this is the first study to examine racial differences in the relationship between parenting style and HED trajectories from adolescence to young adulthood. Additionally, as compared with other studies that have evaluated racial differences in parenting styles and adolescent alcohol-use trajectories, our analytic sample was followed across a longer period (19 years) and further into the lifespan (from 12 years to 31 years old). For example, Adalbjarnardottir and Hafsteinsson (2001) followed youth for only 4 years during adolescence (ages 14 to 18 years). Examining the etiology of HED trajectories into young adulthood is particularly important because the emerging adulthood period (18 to 25 years old) has been identified as one of the most vulnerable periods for HED (Tucker, Ellickson, Orlando, Martino, & Klein, 2005). Given this critical period of development, more research is needed that examines the lasting effects of the adolescent years on health behavior throughout development and changes in such behaviors over time.

This study provides evidence that parenting is an important factor that contributes either positively or negatively to HED among adolescents and young adults. Our findings provide further evidence that an adolescent's perception of parenting styles can have persistent effects on the likelihood that an adolescent will engage in HED across adolescence into young adulthood. Findings suggest that substance-use prevention efforts should continue to emphasize making improvements in parental monitoring, supervision, discipline, and warmth. Finally, given the number of differences found across racial groups on the relationship of parenting style and HED, our findings suggest that efforts to prevent HED should be tailored to youths' cultural backgrounds.

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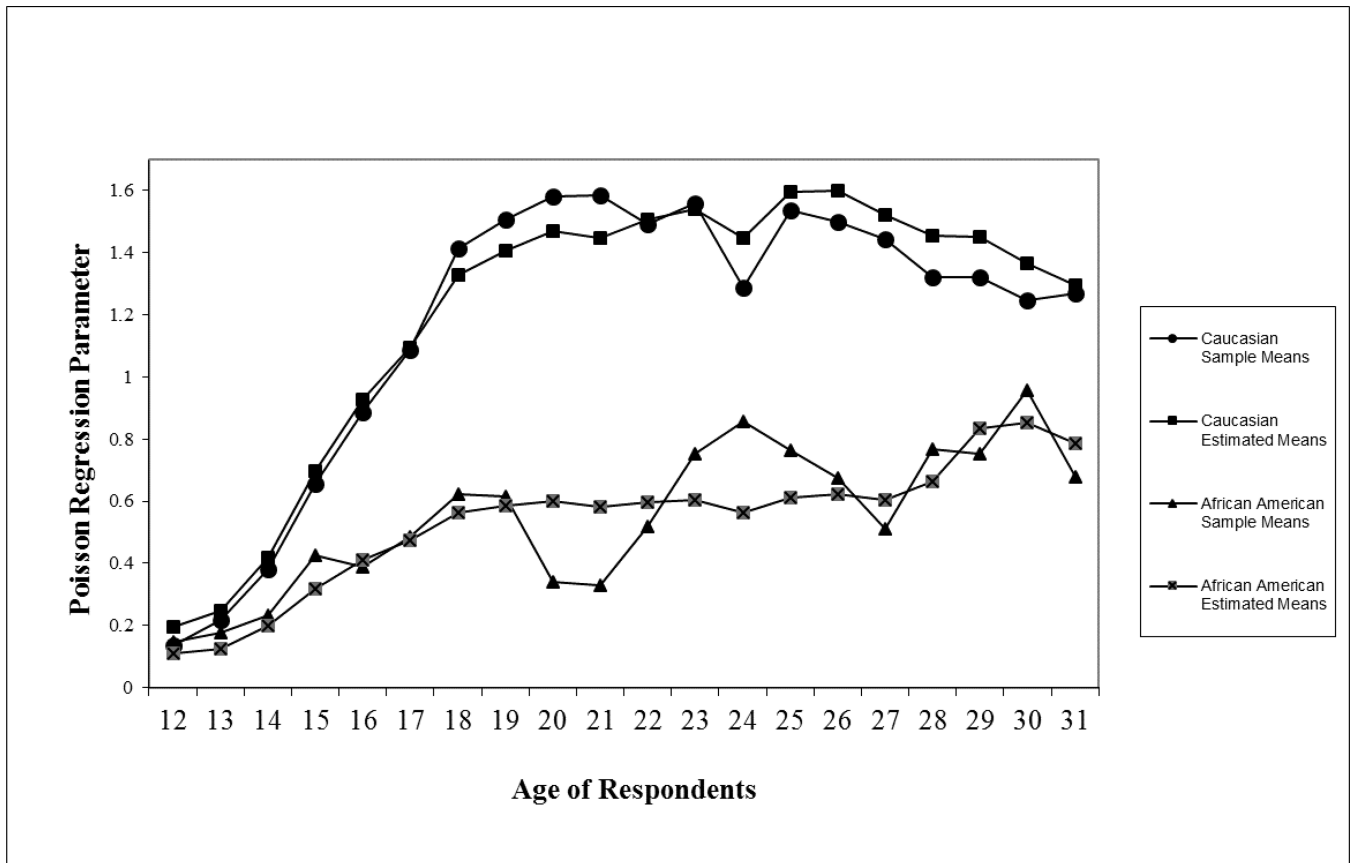


Figure 1.

Sample and Estimated Mean HED Over Age

Note: HED refers to drinking five or more alcoholic drinks on one occasion. HED was assessed with the following question: “Over the past 12 months, on how many days did you drink five or more drinks in a row?” Response options were *never* (scored as 1), *1 or 2 days in the past 12 months* (= 2), *once a month or less* (= 3), *2 or 3 days a month* (= 4), *1 or 2 days a week* (= 5), *3 to 5 days a week* (= 6), and *every day or almost every day* (= 7).

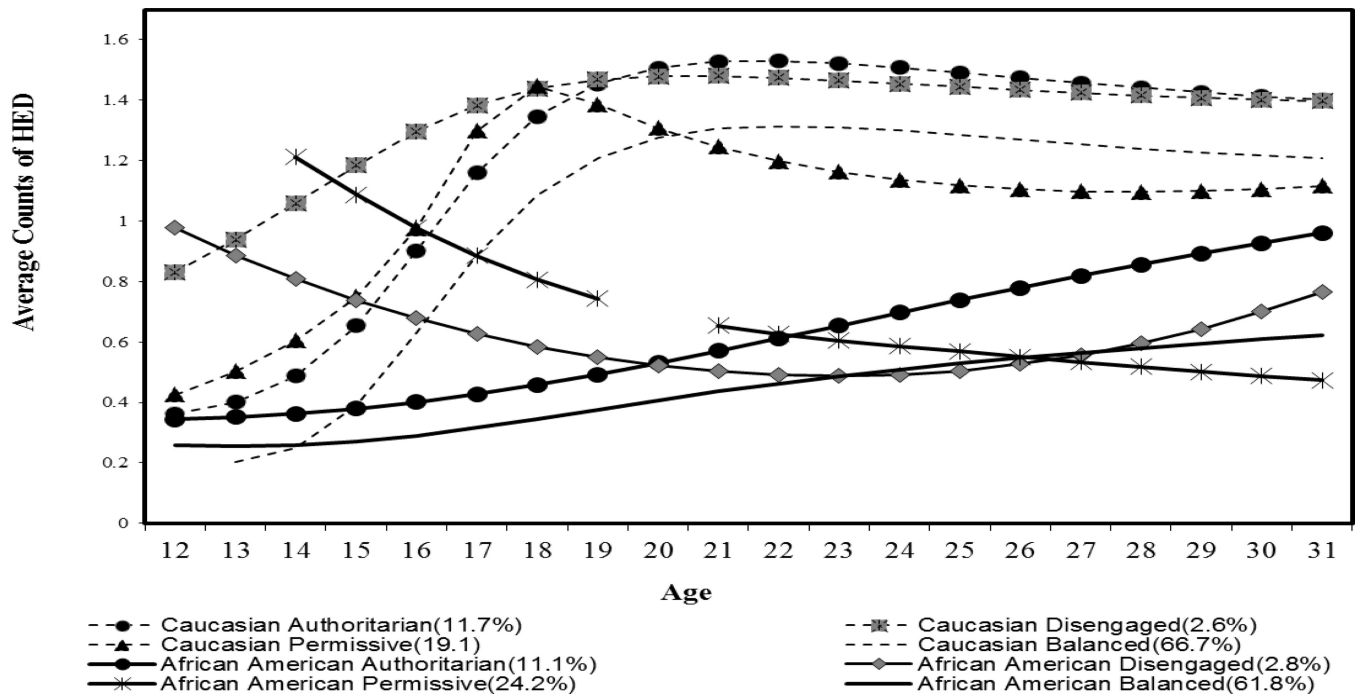


Figure 2.
HED Trajectories by Race for Each Parenting Style

Note: HED refers to drinking five or more alcoholic drinks on one occasion. HED was assessed with the following question: “Over the past 12 months, on how many days did you drink five or more drinks in a row?” Response options were *never* (scored as 0), *1 or 2 days in the past 12 months* (= 1), *once a month or less* (= 2), *2 or 3 days a month* (= 3), *1 or 2 days a week* (= 4), *3 to 5 days a week* (= 5), and *every day or almost every day* (= 6). The missing part of the African American permissive line represents missing data at age 20.

Table 1

Descriptive statistics for the analytic sample.

	Caucasians (CI)	African American (CI)
Parenting Styles		
Balanced parenting (N, %)	4688 (66.7%)	1800 (61.8%)
Authoritarian parenting (N, %)	822 (11.7%)	323 (11.1%)
Permissive parenting (N, %)	1343 (19.1%)	705 (24.2%)
Uninvolved/disengaged parenting (N, %)	183 (2.6%)	82 (2.8%)
Gender		
Male (% , CI)	50.7 (49.0, 52.4)	50.1 (47.4, 52.8)
Female (% , CI)	49.3(47.6, 51.0)	49.9 (47.2, 52.6)
Parental Education		
Less than High School (% , CI)	1.4 (1.0, 2.1)	4.4 (3.1, 6.0)
High School or Equivalent (% , CI)	8.8 (7.3, 10.7)	17.4 (13.5, 22.1)
Some College (% , CI)	65.4 (62.4, 68.4)	61.3 (56.6, 65.7)
College Degree or Beyond (% , CI)	24.3 (21.0, 28.0)	17.1 (12.6, 22.7)
Two Parent Home (% , CI)	79.4 (77.5, 81.3)	49.7 (45.7, 53.8)
Number of peers reported drinking		
None (% , CI)	42.6 (39.1, 46.1)	49.5 (43.5, 55.5)
One (% , CI)	20.5 (19.4, 21.6)	21.7 (19.4, 24.0)
Two (% , CI)	14.3 (12.7, 16.0)	13.3 (10.6, 16.0)
Three (% , CI)	22.6 (20.2, 24.9)	15.5 (11.8, 19.1)
Access to alcohol in the home (% , CI)	31.1 (28.7, 33.5)	21.0 (18.4, 23.8)
Respondent educational attainment		
High School (% , CI)	24.2 (21.5, 27.2)	34.2 (28.3, 40.5)
Some College/Vocation (% , CI)	42.4 (40.1, 44.7)	44.2 (40.9, 47.6)
College Degree or Beyond (% , CI)	33.4 (29.6, 37.4)	21.7 (16.8, 27.4)

Note: CI = 95% Confidence Interval

Table 2

HED by Race.

Group	Response Category	Wave 1	Wave 2	Wave 3	Wave 4
Caucasians	Never	5251 (74.7%)	4738 (67.4%)	2882 (41.0%)	2994 (42.6%)
	1 or 2 days in past 12 months	661 (9.4%)	752 (10.7%)	1181 (16.8%)	1364 (19.4%)
	3–12 days in past 12 months	429 (6.1%)	548 (7.8%)	921 (13.1%)	949 (13.5%)
	2–3 days a month	302 (4.3%)	401 (5.7%)	787 (11.2%)	759 (10.8%)
	1–2 days a week	253 (3.6%)	358 (5.1%)	893 (12.7%)	661 (9.4%)
	3–5 days a week	91 (1.3%)	148 (2.1%)	316 (4.5%)	239 (3.4%)
	Almost everyday	35 (.5%)	84 (1.2%)	49 (.7%)	63 (.9%)
African American	Never	2456 (84.3%)	2532 (86.9%)	2234 (76.7%)	2048 (70.3%)
	1 or 2 days in past 12 months	151 (5.2%)	137 (4.7%)	279 (9.6%)	318 (10.9%)
	3–12 days in past 12 months	84 (2.9%)	55 (1.9%)	93 (3.2%)	186 (6.4%)
	2–3 days a month	58 (2.0%)	55 (1.9%)	119 (4.1%)	160 (5.5%)
	1–2 days a week	43 (1.5%)	58 (2.0%)	119 (4.1%)	125 (4.3%)
	3–5 days a week	78 (2.7%)	47 (1.6%)	37 (1.3%)	55 (1.9%)
	Almost everyday	43 (1.5%)	26 (.9%)	32 (1.1%)	20 (.7%)

Table 3

Factor Structure of the Parenting Constructs.

	Caucasian	African American
Acceptance		
Feel people in your family understand you	.74	.74
Feel you want to leave home	.53	.54
Feel you and your family have fun together	.81	.84
Feel that your family pays attention to you	.82	.86
Feel your parents care about you	.73	.75
Feel close to your mother	.73	.69
Feel close to your father	.70	.75
	Reliability =.89	Reliability =.90
Control		
Parents let you make your own decisions about:		
- the time you must be home on weekend nights	.49	.49
- the people you hang around with	.62	.77
- what you wear	.78	.84
-amount of television you watch	.77	.83
-which television programs you watch	.73	.77
-what time you go to bed on week nights	.63	.64
- what you eat	.66	.71
	Reliability =.85	Reliability =.89

Table 4
Standardized Effects of Covariates on Intercept and Slope Factors of the Zip Growth Model (95% Confidence Interval).

Groups Covariates	White				Black			
	Zero-inflated Part		Count Part		Zero-inflated Part		Count Part	
	Intercept	Slope	Intercept	Slope	Intercept	Slope	Intercept	Slope
Uninvolved (0-1)	-.11** (-.16,-.05) <i>p</i> < .01	.11** (.06,.15) <i>p</i> < .01	-.04 (-.15,.06)	.06 (-.03,.14)	-.13** (-.22,-.03) <i>p</i> < .01	.10* (.02,.19) <i>p</i> = .02	.10 (-.14,.34)	-.13 (.38,.11)
Permissive (0-1)	-.05* (-.11,.00) <i>p</i> = .05	.07* (.01,.12) <i>p</i> = .02	-.05 (-.15,.06)	.07 (-.02,.16)	-.03 (-.12,.06)	.06 (-.04,.16)	.18* (.04,.31) <i>p</i> = .01	-.15 (-.35,.05)
Authoritarian (0-1)	.05 (.00,.10)	.00 (-.06,.07)	.11 (-.04,.26)	-.10 (-.22,.02)	.09* (.01,.17) <i>p</i> = .03	.08 (-.01,.18)	.54** (.27,.80) <i>p</i> < .01	-.43** (-.66,-.20) <i>p</i> < .01
Child Gender (0-1)	.05 (-.01,.11)	-.11** (-.17,-.05) <i>p</i> < .01	.34** (.20,.48) <i>p</i> < .01	.15** (.06,.25) <i>p</i> < .01	-.03 (-.12,.05)	-.07 (-.14,.01)	.36* (.03,.69) <i>p</i> = .03	.03 (-.35,.42)
Parental Education (0-4)	.13** (.08,.18) <i>p</i> < .01	-.23** (-.28,-.18) <i>p</i> < .01	-.13* (-.25,.00) <i>p</i> = .04	.11* (.02,.21) <i>p</i> = .02	.12** (.05,.19) <i>p</i> < .01	-.05 (-.12,.03)	-.12 (-.49,.26)	.11 (-.25,.47)
Family Structure (0-1)	.07** (.02,.12) <i>p</i> < .01	-.07* (-.13,.00) <i>p</i> = .04	.05 (-.08,.17)	-.02 (-.11,.08)	.15** (.06,.25) <i>p</i> < .01	-.08 (-.17,.01)	.11 (-.19,.40)	-.16 (-.43,.12)
Access to Alcohol (0-1)	-.05* (-.10,-.01) <i>p</i> = .02	-.05* (-.11,.00) <i>p</i> = .05	-.07 (-.19,.04)	.15** (.07,.23) <i>p</i> < .01	-.01 (-.09,.07)	-.04 (-.11,.02)	.22* (.03,.40) <i>p</i> = .02	-.08 (-.30,.14)
Peer Alcohol Use (0-3)	-.55** (-.60,-.49) <i>p</i> < .01	.18** (.10,.25) <i>p</i> < .01	.28** (.09,.47) <i>p</i> < .01	.03 (-.08,.13)	-.41** (-.48,-.34) <i>p</i> < .01	.13** (.07,.20) <i>p</i> < .01	.37** (.13,.60) <i>p</i> < .01	-.12 (-.39,.14)

Note: Balanced is the reference group for all analyses. The count part describes covariate effects for only the subsample of respondents who had tried had alcohol.

* *p* < .05,

** *p* < .01 Effects that differ between the two groups are in bold font ($\chi^2_{diff} = 100.72, df_{diff} = 10, p < .01$).