

Racial Differences in the Link between Alcohol Expectancies and Adolescent Drinking

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Abstract

Introduction: Alcohol expectancies are important determinants and predictors of adolescent alcohol use. Research with African Americans has shown that the endorsement of positive alcohol expectancies differs from that of Whites during childhood and predicts different alcohol outcomes during young adulthood. However, limited research has explored racial differences in the relationship between expectancy endorsement and alcohol use in school-aged adolescents. The current study examines the effect of White or African American race on the relationship between positive alcohol expectancies and alcohol use. *Methods:* Participants were 104 adolescents ages 12-18 who identified as either non-Hispanic White or non-Hispanic African American. Participants completed self-report measures of alcohol consumption and positive social alcohol expectancies. *Results:* Preliminary analyses revealed no racial differences in alcohol expectancies or consumption. However, race moderated the relationship between alcohol expectancies and alcohol use such that more positive expectancies predicted alcohol use among White youth, but not African American youth. *Conclusions:* These results suggest that alcohol expectancies, which were thought to be important mediators of the relationship between social and personality factors and adolescent alcohol use may not be as impactful for African Americans. Future research should focus on identifying factors posing unique risk for alcohol consumption in this population.

Keywords

Alcohol expectancies

Racial differences

Adolescent drinking

1. Introduction

Positive alcohol expectancies, defined as beliefs that alcohol use will result in positive personal consequences, are important determinants of the initiation and maintenance of alcohol use among adolescents (Christiansen, Smith, Roehling, & Goldman, 1989; Dunn & Goldman, 2000; Fisher, Miles, Austin, Camargo Jr., & Colditz, 2007; Smith, Goldman, Greenbaum, & Christiansen, 1995). Positive alcohol expectancies have also been shown to prospectively predict drinking quantity (Bauman, Fisher, Bryan, & Chenoweth, 1985; Christiansen et al., 1989), drinking frequency (Christiansen et al., 1989; Tobler, Livingston, & Komro, 2011), and binge drinking (Fisher et al., 2007; Jester et al., 2015) among adolescents (i.e., middle and high school students). Yet, research with diverse child (i.e., elementary school student) samples has demonstrated racial differences in developmental trends of expectancy endorsement. For example, despite reporting lower rates of alcohol use, African American children have been found to endorse more positive alcohol expectancies than White children (Hipwell et al., 2005). This disparity appears to narrow overtime however, as positive alcohol expectancies increase sharply in White children, but only marginally in African American children, from third to fifth grade (Chung, Hipwell, Loeber, White, & Stouthamer-Loeber, 2008; Hipwell et al., 2005).

Although endorsement of alcohol expectancies converges among Whites and African Americans before adolescence, research exploring the relationship between positive alcohol expectancies and alcohol use suggest that the effect of expectancies on use diverges to some degree later in development. For example, among an adolescent sample, Meier, Slutske, Arndt, and Cadoret (2007) found that positive alcohol expectancies for social enhancement were more strongly related to drinking initiation among White adolescents, but more strongly related to drinking frequency and binge drinking among African American adolescents. Among young

adults, Reese and Friend (1994) also found that positive alcohol expectancies for social enhancement were more predictive of frequency and quantity of beer drinking for White college students than their African American counterparts. Finally, a prospective study of older adolescents and young adults found no racial differences in the effect of positive alcohol expectancies on drinking frequency, but found that they predicted the age of onset of regular drinking among Whites, but not African Americans (Chartier, Hesselbrock, & Hesselbrock, 2009).

Overall, although limited, the majority of research examining the moderating effect of race on the relationship between positive alcohol expectancies and alcohol use has been explored among young adult samples (Chartier et al., 2009; Reese & Friend, 1994). Moreover, the one study conducted among an exclusively adolescent sample was mixed based on the outcome variables (i.e., drinking initiation, drinking frequency, binge drinking) and examined expectancies as a pathway from delinquency to alcohol use (Meier et al., 2007). It is critical to examine these relationships during adolescence as alcohol use during this period is associated with later alcohol abuse and related problems (Gruber, DiClemente, Anderson, & Lodico, 1996), including the development of alcohol use disorder in adulthood (DeWit, Adlaf, Offord, & Ogborne, 2000; Grant & Dawson, 1997). Moreover, examination of positive social expectancies throughout this developmental period is important, as children tend to endorse positive expectancies for social enhancement more than other alcohol expectancies (Hipwell et al., 2005), and these expectancies are stronger predictors of adolescent alcohol consumption than others (e.g., negative expectancies; Christiansen et al., 1989; Jester et al., 2015; Settles, Zapolski, & Smith, 2014).

Further, understanding potential racial differences in risk during this developmental period is important, as positive alcohol expectancies are thought mediate the effect of social influences (e.g., peer and familial modeling, attitudes and norms; Scheier & Botvin, 1997; Treloar, Pedersen, & McCarthy, 2015) and personality factors (Settles, Zapolski, & Smith, 2014; Treloar et al., 2015) on adolescent alcohol use. Thus, they provide an important framework for understanding possible etiological differences in the course of alcohol use throughout childhood and adolescence for African Americans and Whites. Moreover, because expectancies are modifiable (Dunn, Lau, & Cruz, 2000; Cruz & Dunn, 2003), gaining a better understanding of the role they play in the etiology of alcohol use could provide insight into the types of interventions that would be most effective for each racial group. Thus, the current study aims to fill these gaps in the literature by examining the interaction of race and positive alcohol expectancies on alcohol use among adolescents. Based on previous findings demonstrating that racial differences in alcohol expectancies disappear before middle school (Hipwell et al., 2005) and evidence of a critical period for expectancy development in third and fourth grade (Miller, Smith, & Goldman, 1990), we examined these effects among middle school and high school students ages 12-18.

2. Methods

2.1 Participants

A convenience sample of adolescents ages 12-18 ($M = 15.44$, $SD = 1.94$) was recruited from six tuition-free after-school programs in an urban, mid-western city. Research staff administered self-report measures of alcohol expectancies and past year alcohol use to participants at their respective afterschool programs. The current study used a subsample of 104

adolescents who identified their race as non-Hispanic African American (62.5%) or non-Hispanic White. The majority of this subsample were male (66.3%).

2.2 Measures

The Memory-Model Based Expectancy Questionnaire (MMBEQ; Dunn & Goldman, 1996) measured positive alcohol expectancies among youth on a 4-point Likert scale. We used the 18-item positive social subscale (e.g., beliefs that drinking makes people, “friendly,” “fun” or “outgoing”), as expectancies regarding social facilitation have been shown to be those most strongly predictive of adolescent alcohol consumption (Christiansen et al., 1989). Accordingly, the positive social subscale was the only scale of the MMBEQ significantly associated with alcohol consumption in our sample ($r_s = .31, p < .001; \alpha = .88$).

The Alcohol Use Disorders Identification Test-Consumption (AUDIT-C; Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998) is a brief screener for alcohol consumption measuring drinking frequency, drinking quantity, and frequency of binge drinking in the past year on a scale of 0-4. Because the data showed slightly lower internal consistency than acceptable ($\alpha = .63$) and scores were positively skewed, AUDIT-C scores were treated as count data.

2.3 Data Analysis

Zero-inflated Poisson (ZIP) regression in SAS 9.4 was used to examine the interaction of race and expectancies on AUDIT-C scores. Poisson regression is used to model count variables, but carries the assumption that the mean and variance of the data are equivalent (Atkins & Gallop, 2007). When studying maladaptive behaviors among adolescents, such as alcohol use, the variance of the data often exceeds the mean (i.e., overdispersion) due to a large number of zero values. ZIP models can serve as an alternative to Poisson models in such cases. These models simultaneously estimate two regression equations: 1) a logistic regression predicting a

subpopulation of adolescent participants who are unable to receive scores other than zero (i.e., abstainers) and 2) a Poisson regression predicting the value of the behavior of interest among the subpopulation of participants who can receive scores of zero and above (i.e., drinkers). Thus, ZIP models allow for the possibility that different variables predict whether or not one drinks and to what extent they drink (Atkins & Gallop, 2007). Although 32.7% of the present sample reported lifetime alcohol use, only 23.1% scored higher than 0 on the AUDIT-C. Thus, we specified a ZIP model to 1) estimate past year use among the entire sample, and 2) model consumption scores among those estimated to be drinkers. Both models were predicted by race, expectancies and their interaction. Based on preliminary analyses, the zero-inflated model adjusted for sex, whereas the AUDIT-C model adjusted for age, sex, and recruitment site.

3. Results

Preliminary analyses revealed differences in lifetime alcohol use by age ($r_{pb} = .22, p = .023$), but not sex or recruitment site. Lifetime use was also unrelated to race ($\chi^2 = .06, ns$) with 33.3% of African American and 30.8% of White adolescents reporting use. However, positive alcohol expectancies ($M = 37.38, SD = 9.21$) were significantly related to lifetime use ($r_{pb} = .26, p = .008$). With respect to AUDIT-C scores ($M = .43, SD = .99$), no differences were observed based on age, sex or race ($U = 972.5, ns$); however, scores significantly differed by recruitment site ($\chi^2 = 12.06, p = .034$). Alcohol expectancies did not differ by race ($t = .70, ns$) or any covariate.

ZIP regression results revealed that race significantly moderated the relationship between adolescent alcohol expectancies and AUDIT-C scores (see Table 1 for regression results). The interaction was such that the effect of positive alcohol expectancies predicted higher AUDIT-C scores among White youth, but not Among African American youth (Figure 1). There was also a

significant main effect of race on AUDIT-C scores. There were no significant predictors of alcohol abstinence in the zero-inflated model indicating no interaction effect of race and expectancies on past year use.

Table 1

Results of zero-inflated Poisson regression predicting alcohol consumption among African American and White adolescents

	<u>Zero-Inflation</u>				<u>AUDIT-C Score</u>			
	<i>b</i>	95% <i>CI</i>		<i>z</i>	<i>b</i>	95% <i>CI</i>		<i>z</i>
Intercept	-8.52	-63.06	46.02	.09	-12.55	-20.67	-4.43	9.18**
Age	1.27	-.43	2.98	2.16	.50	.23	.77	13.04***
Sex	-	-	-	-	.69	-.13	1.51	2.70
Race	1.87	-39.95	43.68	.01	7.31	.10	14.53	3.95*
Expectancies	-.34	-1.22	.54	.57	.12	-.02	.27	2.64
Race X Expectancies	-.09	-1.14	.97	.03	-.20	-.33	-.07	5.69*

Note. The zero-inflation portion of the model is a logistic regression predicting a subpopulation of adolescents who are unable to receive a scores other than zero (i.e., abstainers). The score portion of the model is a Poisson regression predicting AUDIT-C score among the subpopulation of adolescents who can receive scores of zero and above (i.e., drinkers). Recruitment site ($n = 6$) was included in the score model but is not depicted here for simplicity. Sex was coded male = 0, female = 1. Race was coded White = 0, African American = 1.

* $p < .05$, ** $p < .01$, *** $p < .001$

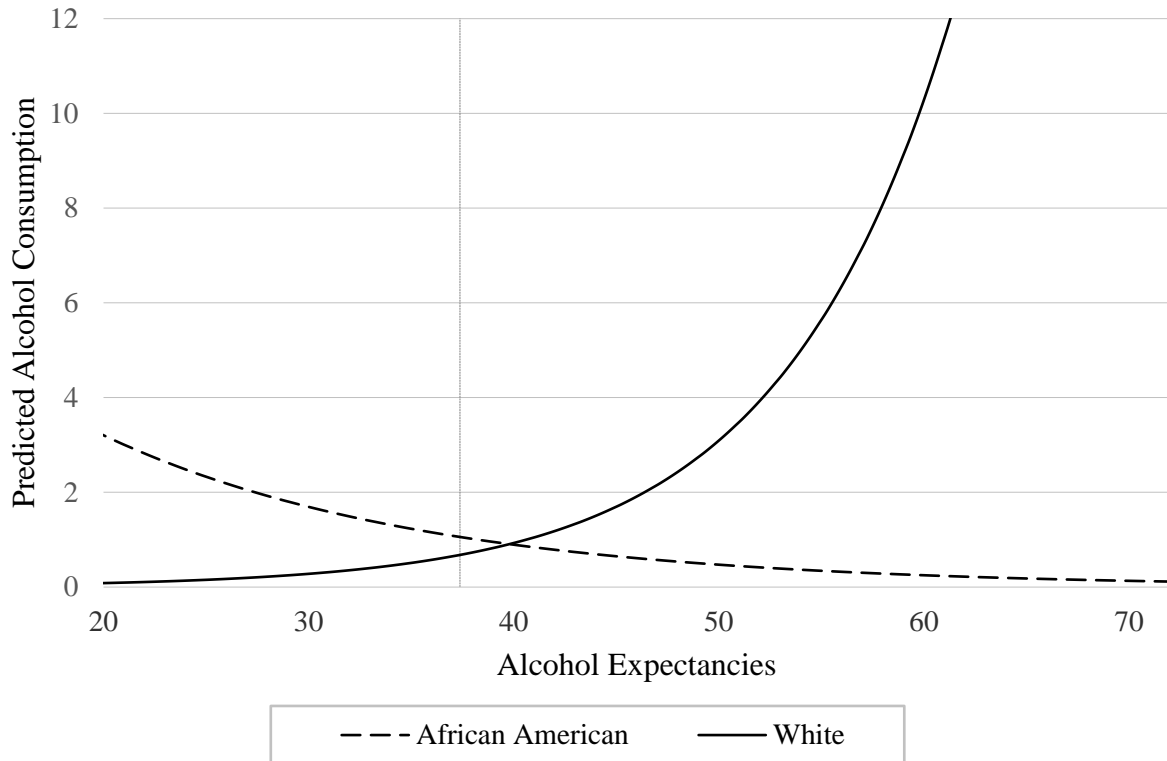


Fig 1. A depiction of the effect of alcohol expectancies on the predicted value of alcohol consumption (AUDIT-C score) among African American ($n = 65$) and White ($n = 39$) adolescents. Plotted effects control for age, sex and recruitment site.

4. Discussion

The current study examined whether White or African American race moderates the relationship between positive alcohol expectancies and alcohol consumption among adolescents. Consistent with previous findings (Christiansen et al., 1989; Fisher et al., 2007; Tobler et al., 2011), positive social alcohol expectancies were related to alcohol consumption among White adolescents. However, although African American adolescents endorsed positive alcohol expectancies at similar levels as their White peers, those expectancies were not related to their alcohol use.

These results suggest that alcohol expectancies, which are thought to be important mediators of the relationship between social and personality factors and adolescent alcohol use (Treloar et al., 2015), may not be as impactful for African Americans. Thus, research is needed to understand factors that are particularly relevant for African American youth. To date, researchers have had difficulty explaining variation in adolescent drinking among African Americans using traditional family, peer, environmental, and individual risk factors (Rinehart, Bridges, & Sigelman, 2006). Thus, research should continue to examine culturally-relevant risk factors, such as racial discrimination, racial identity, and racial socialization, which may pose a more salient risk for alcohol use among African American youth (Gibbons et al., 2010; Nasim, Belgrave, Jagers, Wilson, & Owens, 2007; Stock, Gibbons, Walsh, & Gerrard, 2011).

Another explanation for these results is that the factors that mediate the relationship between expectancies and alcohol use vary by race. For example, Cooper et al. (2008) demonstrated that coping motives for alcohol use in adolescence predicted adulthood alcohol use among African Americans, whereas enhancement motives predicted alcohol use overtime among Whites. As enhancement motives have been shown to mediate the relationship between positive social expectancies and alcohol use among adolescents (Read, Wood, Kahler, Maddock, & Palfai, 2003; Tyne, Zamboanga, Ham, Olthuis, & Pole, 2012), it may follow that positive social expectancies are not related to use among African American youth because their alcohol use is driven by negative affect coping rather than desires to enhance social experiences.

4.1 Limitations

These data should be considered in light of the study's limitations. Firstly, due to sample size, we only examined racial differences between White American and African American adolescents. Future studies should examine these relationships among other racial and ethnic

groups, which have also displayed differential trajectories from alcohol expectancies to alcohol use in adolescence (e.g., Hispanics; Shih, Miles, Tucker, Zhou, & Amico, 2010). Secondly, this study used a convenience sample of urban adolescents, which may limit the generalizability of the findings. Nationally representative studies that assess not only adolescent alcohol use, but also expectancies towards use are needed to bolster the current findings. Finally, this study included a small subsample of drinkers and a larger subsample of non-drinkers, which may have limited its power to detect effects.

4.2 Conclusions

The current study suggests that positive alcohol expectancies are not related to alcohol consumption among African American youth. Future studies should examine trajectories of the relationship between positive alcohol expectancies and alcohol use from adolescence to adulthood to replicate these findings prospectively among a larger sample of diverse youth. Additionally, more research is needed to understand mechanisms through which expectancies impact adolescent alcohol use, and to identify the risk factors most salient in predicting alcohol use among African American youth.

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