



Published in final edited form as:

*J Ethn Subst Abuse*. 2018 ; 17(3): 273–290. doi:10.1080/15332640.2016.1179155.

## Alcohol Consumption among Rural African American and White Adolescents: The Role of Religion, Parents, and Peers

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### Abstract

Although studies have examined ethnic differences in psychosocial factors and adolescent alcohol use, most have not examined these relationships for rural adolescents. 23,163 rural adolescents, attending African American secondary schools, completed the Community Drug and Alcohol Survey (CDAS). Multilevel analysis tested the hypothesis of stronger relationships between: peer use, religiosity, and alcohol use, and a weaker relationship for parental permissiveness and alcohol use for white compared to African American adolescents. Results suggested that peer use, religiosity, and parental permissiveness were more strongly associated with changes in alcohol use for white adolescents. Findings provide insight for alcohol prevention among rural adolescents.

### Keywords

adolescents; alcohol use; ethnic differences; religiosity; rural communities

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The prevalence of adolescent alcohol use remains high and continues to be a significant public health concern across the country. In the past, much research has examined alcohol use within inner-city communities (Botvin, Epstein, Baker, Diaz, Ifill-Williams, 1997; Chuang, Ennett, Bauman, & Foshee, 2005), deriving from traditional assumptions that substance abuse is primarily an inner city social problem that arises out of disparate poverty and other socio-demographic factors such as single parent households (Cronk & Sarvela, 1997; Epstein, Bang, & Botvin, 2007). However, more recent research suggests that adolescents who reside within rural communities are equally or more at risk than their urban peers for consuming alcohol (Clark, Belgrave, & Nasim, 2008). Once perceived as idyllic and a source of protection against risk engagement (Van Gundy, 2006), increased attention on rural populations has shown closing gaps between urban and rural youths' alcohol use (Edwards et al., 2007). According to the National Survey on Drug Use and Health (NSDUH), the rates of heavy alcohol use in metropolitan areas were similar to the rate for

youth aged 12 to 17 in rural areas (NSDUH, 2013). Other studies have found rural youth alcohol rates to be significantly higher than youth from more urban settings (Chamberlain, Muntaner, & Walrath, 2004; Authors, 2011). Rural youth have unique challenges that influence their alcohol use, with major contributing risk factors due, in part, to a shortage of proximal healthcare facilities, geographic and social isolation, and economic hardships (Chamberlain et al., 2004; Authors, 2011).

Past research indicates that studying ethnicity and psychological development has provided valuable insight into how ethnicity and psychosocial factors influence one another. The ethnic makeup and cultural attitudes within a given community have been found to predict participation in risky behaviors among adolescents. Ethnic trends of adolescent alcohol use have consistently shown that African American adolescents have lower prevalence rates of alcohol use compared to their white peers (Clark et al., 2008; NSDUH, 2012). O'Malley, Johnston, Bachman, Schulenberg, and Kumar (2006) examined alcohol use among urban African American youth and showed that attending school and residing in a predominantly African American community were found to reduce the risk of alcohol use due to the substantially lower rates of alcohol use among African American youth in general. Notably, an additional study by Dawkins (1996) examined the extent to which substance use perceptions and behaviors are influenced by social environmental contexts through comparing alcohol use among African American youth in rural, urban, and suburban communities. The African American rural 8<sup>th</sup> graders were more likely than urban and suburban youth to perceive that alcohol use is a problem at school and also in rural communities. These studies illustrate how the social and health consequences related to alcohol use are more severe for African American youth (NSDUH, 2012).

Additionally, there is debate whether African American and white adolescents are similarly exposed to the same risk factors. Though previous research argues that African American and white youth are equally exposed to the same risk factors (Hawkins et al., 1992), other research has refuted that argument suggesting that African American youth are more exposed to contextual risk factors such as economic hardship while white youth are more exposed to individual and interpersonal risk factors such as sensation seeking and peer use. (Wallace and Muroff, 2002). Given the heightened risk of those within rural populations coupled with the negative health outcomes for African American adolescents who consume alcohol, the extent to which proximal and distal psychosocial factors influence alcohol use between white and African American youth within rural communities is understudied (e.g., Proctor & Dalaker, 2003, U.S. Census, 2010).

Three psychosocial factors in particular, religiosity (Nasim Fernander, Townsend, Corona, & Belgrave, 2011), parental permissiveness (Wood, Read, Mitchell, & Brand, 2004), and peer use (Reifman, Barnes, Dintcheff, Farrell, & Uhteg, 1998) have been shown to be highly associated with the likelihood of alcohol use among adolescents. However, these studies most often do not assess African American rural adolescents specifically.

The present study was guided primarily by two psychosocial theories: social learning theory and primary socialization theory. Each of these theories predict the strong social influences from family, friends, and other individuals on risk behaviors. Social learning theory

(Bandura, 1977) posits that individuals' learned behaviors are derived from observation, modeling, and imitation of others physically and emotionally close to them. Primary socialization theory theorizes that drug use emerges from interactions with primary socialization sources such as family and peers and that specific drinking practices are developed across generations, and from one individual to another within a family, ethnic, or cultural group and these cultural groups can influence the likelihood of consuming alcohol (Oetting, Donnermeyer, Trimble, & Beauvis, 1998). Primary socialization theory proposes the examination of ethnicity as a moderator to explain the relationship between individual and environmental factors on youth alcohol use. According to Oetting and colleagues (1998), the extent to which cultural norms influence an individual's drinking behavior is determined, in part, by the extent of that person's identification with the group (e.g., ethnic identification), the degree of consistency in the group's norms, and the presence of other factors, such as gender, age, and peer norms. Despite the substantive amount of research exploring ethnic differences in alcohol use, there is limited research on the moderating effects of ethnicity on alcohol use among adolescents residing in rural communities. Thus, this paper focuses on how three psychosocial factors—religiosity, parental permissiveness, and perceived peer use—are related to alcohol use for white rural adolescents compared to African American rural adolescents. By comparing adolescents who live in predominantly African American rural communities and who therefore may experience some of the same socioeconomic and cultural environments, we can partially control for community contextual factors that may also influence alcohol use.

## Religiosity and Alcohol Use

Religiosity—an individual's "religious fervor, regardless of beliefs" (Brown, Parks, & Zimmerman, 2001, p. 697)—has been documented with some consistency to be a significant protective factor against and a robust predictor of substance use (Wallace, Brown, Bachman, & Laveist, 2003; Wallace et al., 2007). Specifically, frequent church attendance, religious practices, and having an important religious identity are strongly associated with decreased risk for alcohol use among youth (Nasim et al., 2011; Piko, Kovacs, Kriston, & Fitzpatrick, 2012). Even though researchers have different operational definitions of religiosity, studies consistently indicate that alcohol use is highest among individuals who minimally identify as religious (Brown et al., 2001; Wallace et al., 2003).

Previous studies on ethnic differences in religiosity suggest that religion is more of an important resource for African American youth compared to white youth (Brown et al., 2001; Donahue & Bensen, 1995). However, research has found that while a larger proportion of African American youth report having more religiosity than their white counterparts, the inverse relationship between religiosity and substance use is stronger among white than African American youth (Wallace et al., 2003; Wallace et al., 2007). For example, Wallace and colleagues (2003) found that highly religious white youth were more likely than highly religious African American youth to abstain from alcohol use. Additionally, past research suggests that religiosity impacts white youth at the individual level, but African American youth at the group level (Wallace et al., 2007).

It must be noted that these studies compared the influence of religion on alcohol use among national samples of adolescents. To date, very little research has examined how religiosity may serve as a protective factor for white compared to African American adolescents who specifically reside in predominantly African American rural communities. While the findings of previous literature suggest highly religious white adolescents are more protected against alcohol use than African American adolescents, the current study sought to extend the literature by examining those differences among rural adolescents who reside in predominantly African American communities.

### **Parental Permissiveness and Alcohol Use**

Another well-studied variable in adolescent substance use is parental permissiveness toward alcohol use, which consistently shows a strong positive relationship to adolescent alcohol use. Parental permissiveness is characterized as the extent to which students' perceive how much alcohol their parents would allow them to consume in a single sitting (Wood, Read, Mitchell, & Brand, 2004). The primary socialization theory argues that specific drinking practices are developed across generations, and from one individual to another within a family, ethnic, or cultural group and these cultural groups can influence the likelihood of consuming alcohol (Oetting, Donnermeyer, Trimble, & Beauvis, 1998). For instance, previous findings suggested that greater parental permissiveness toward drinking had a significant relationship to drinking behavior among late adolescents (Becoña et al., 2013; Wood et al., 2004). In research examining ethnic differences in exposure to family influences, there seems to be differing perspectives. Some research suggests that family may be among the strongest protective factors for African American youth (Clark, Nguyen, & Belgrave, 2011). Additionally, Brody et al. (1997) found that parental standards against engagement in risky behaviors, such as alcohol use, were associated with reduction in the initiation of alcohol use among rural African American youth. Further, research in risky decision making conducted by Wallace and Muroff (2002) showed that white adolescents reported a higher level of conflict and less relationship satisfaction with their parents than African American adolescents. Thus, family may be a stronger predictor of alcohol use for African American youth compared to white youth (Wallace & Muroff, 2002). Although ample research has examined parental influence on alcohol use, more research is needed to explore how parental permissiveness interacts with ethnicity in predicting alcohol use among African American and white rural adolescents.

### **Peer and Alcohol Use**

As hypothesized by social learning theory and primary socialization theory, extensive cross-sectional and longitudinal studies consistently show peers to be a salient predictor of risk engagement among adolescents. According to Osgood and colleagues (2013), peers have an enhanced proximal influence on adolescent alcohol use based on selecting friends who are similar to them in levels of drinking. In other words, alcohol-using peer groups provide an environment through which substances are available, and norms, attitudes, and beliefs associated with alcohol use are reinforced (Authors, 2012; Oetting and Beauvais, 1986).

Broadly speaking, the literature assessing peer influence on adolescent alcohol use has shown positive relationships regardless of ethnicity (Mason, Mennis, Bares, & Zaharakis,

2014; Gillmore, Catalano, & Morrison, 1990). However, some research suggests that peer influence may be weaker for African American adolescents than their white counterparts (Wallace et al., 1999; Weaver, Cheong, MacKinnon, & Pentz, 2011). Wallace and researchers (1999) posit that African American youth are more influenced by their parents, and thus less susceptible to peer influence. To further expand on this argument, Weaver and colleagues' (2011) conducted a longitudinal study showing that in relation to their white peers, African American middle school students reported fewer close friends who drank alcohol. Additionally, similar studies found that African American youth received greater support from family members and are thus less influenced by their peers, compared to their White peers (Mason, 2014; Taylor, Casten, & Flickinger, 1993). Given the strong relationship between peer influence and adolescent alcohol use, it is important to determine if these factors operate in a similar fashion among African American and white rural adolescents.

## The Current Study

In this study, we examined the relationships between religiosity, parental permissiveness, and peer alcohol use on alcohol use, testing for moderation by ethnicity for a large sample of African American and white rural adolescents. It was hypothesized that: 1) higher levels of religiosity are inversely associated with alcohol use; 2) higher levels of parental permissiveness towards drinking are positively associated alcohol use; and 3) higher levels of peer alcohol use are positively associated with alcohol use. Regarding ethnicity as a moderator, it was hypothesized that the relationship between each psychosocial factor and alcohol use would be moderated by ethnicity, such that 4) religiosity would have a stronger positive relationship to alcohol use for rural white adolescents compared to rural African American adolescents.; 5) parental permissiveness would have a stronger positive relationship to alcohol use for rural African American adolescents as compared to rural white adolescents; and 6) peer alcohol use would have a stronger positive relationship to alcohol use for white adolescents than for African American adolescents.

## Method

### Sample

This study's data came from a larger data collection effort of middle and high school students occurring during the time period 1997–2001. A U.S. nationally representative sample of communities in non-metropolitan counties was drawn from a strategically developed sampling frame designed to be representative of rural locations throughout the contiguous U.S., where communities in each of four FBI regions (Northeast, West, South, and Midwest) were categorized, according to their home county, across four levels of rurality. Counties categorized as metropolitan were then excluded from the study. As part of this data collection effort, predominantly African American communities (defined as population locations that have 40% or more African Americans) in non-metropolitan counties (population less than 50,000) in FBI-defined Southern states were oversampled in proportion to their representation in those states. This study used the data from these 42 distinct African American communities. Public school districts within each community were

contacted for approval of their schools' participation in the survey. Where approval was not granted, another community matched on demographic characteristics to the initially drawn community, was selected from the population. If it was not possible to match representation for a given state due to problems in using the protocol of consent or other recruiting difficulties, communities in nearby states within the same region were substituted. All procedures were approved by the university Institutional Review Board.

Within each community, surveys were administered at a single public high school (determined to be most representative of the community, based on ethnicity and income) and the public feeder junior high/middle school(s), beginning with 7<sup>th</sup> grade. Only students who reported an age of 12 years old to 18 years old ( $M = 14.96$  years) and who reported being either African American (72.3%) or white (27.7%) were used for this analysis. The final sample consisted of 23,163 students, with 53.7% being female.

### Instrument and Procedure

Students were administered the Community Drug and Alcohol Survey (CDAS). This 99-item survey is a variation of the American Drug and Alcohol Survey<sup>TM</sup> (Oetting, Beauvis, & Edwards, 1985; Rocky Mountain Behavior Institute, Inc., n.d.). It contains a comprehensive set of questions that address individual, familial, and perceived peer substance use including alcohol use, relationships with family and peers, crime, religion, cultural practices, and other risk and protective factors for substance use. Psychometric analyses indicate that the measure is reliable and valid (Oetting & Beauvis, 1990), and it is listed in the SAMHSA Measures and Instruments Resource Guide (2007).

Surveys were conducted with passive parental consent and procedures that ensured complete confidentiality and anonymity. A cover letter was distributed to the children's parents or parental guardians explaining the nature of the study and parents were provided a method to withdraw permission if the parents did not give consent. Surveyed schools with less than 70% of enrolled students taking the survey, schools where honesty questions suggested evidence of poor administration, or schools where there were large numbers of invalid surveys were replaced. This resulted in 13 schools being replaced with schools that were matched on demographic characteristics to the initially drawn school. In order to increase participation among the schools, every participating school received a complete report of substance use and other related issues in their school within two months post survey completion.

Prior to final data analysis, forty internal consistency assessments were made on each completed survey. An example of an inconsistency is that the student reported being drunk but never using alcohol. If an individual had at least 3 inconsistencies, they were categorized as an inconsistent responder and were dropped from the sample. If there were three or more inconsistencies (e.g., the student reported getting drunk but not ever using alcohol), the student's survey was discarded and not included in any analyses. Approximately 1.9% of surveys were unused due to inconsistent response patterns.

## Measures

**Student alcohol use.**—Self-reported last month alcohol use was dichotomized into either 0 (no alcoholic drinks last month) or 1 (one or more alcoholic drinks last month). Approximately 34.3% of the sample reported drinking in the last month.

**Peer alcohol use.**—A single item, “How many of your friends get drunk?” was used as a measure of peer use. It was measured on a scale from 1 (none) to 4 (all of them).

**Religiosity.**—Religiosity was measured using three items (Cronbach  $\alpha_{\text{white}} = .90$ ; Cronbach  $\alpha_{\text{African American}} = .87$ ): (Are you religious?; Are you involved in a religious group?; How important is religion in your life?). All three items were measured on a scale from 1 (not much) to 4 (a lot). The items were aggregated and averaged into a composite variable, with higher scores indicative of higher religiosity.

**Parental permissiveness.**—Parental permissiveness towards drinking was measured using three items (Cronbach  $\alpha_{\text{white}} = .82$ ; Cronbach  $\alpha_{\text{African American}} = .89$ ) with the stem “My parents don’t care if I…” followed by drink, drink at home, drink as long as it’s not at home, each measured on a 4-point scale, where 1 equaled (not at all true) to 4 equaled (very true). Higher scores reflect more parental permissiveness toward alcohol use. All Cronbach alphas were greater than .80 and were comparable in magnitude across the two ethnic groups, indicating acceptable reliability for both groups. Correlations between the three psychosocial variables ranged from  $-.04$  to  $.17$  for religiosity, peer use and parental permissiveness suggesting that multicollinearity was not a major issue for the analysis.

Demographic variables included student ethnicity, gender, and age, as shown in Table 1. Gender and race were coded as dichotomous variables (male = 1; white = 1). Age was measured as an interval variable, centered at age 12. To account for a potential non-linear relationship between age and the odds of last month alcohol use, age squared was also included in all models.

## Data Analysis

The data for this study are structured such that students (level 1) are nested within communities (level 2). Thus, we used multilevel analysis to account for the intraclass correlations of students within schools/communities. The models were estimated using HLM6 utilizing Bernoulli’s logistic regression with LaPlace estimation (Raudenbush & Bryk, 2002). Odds ratios (OR) or relative odds based on the population average coefficients are reported for these models. In order to better test the hypotheses, we estimated several models, with model 1 including control variables only, model 2 including psychosocial variables, and model 3 including interaction terms between psychosocial variables and race.

The percent of missing observations across variables ranged from 0% to 10.2%. The religiosity items and parental attitudes items had the highest level of missing values, ranging from 9.2% – 10.2%. To account for missing data, multiple imputation (Schafer & Graham, 2002) was completed using ICE in Stata software, Version 10.0 (Royston, 2004, 2005,

2007). In total, five imputed data sets were created and analyzed, and the parameter estimates were then combined using the procedures outlined by Rubin (1987).

## Results

Table 2 gives the percentage of students who drank in the last month by ethnicity for three age groups – ages 13, 15, and 17, along with the means and standard deviations of the psychosocial variables for each age group. It must be noted here that while age was used as a continuous variable centered at 12 years, we chose to illustrate alcohol use differences among three age groups where age 13 represents early adolescents, age 15 middle, and age 17 older adolescents. For all three age groups, African American students reported lower last month alcohol use than white students. For example, approximately 33% of 15 year-old African American students drank in the last month compared to 48% for white students. The mean for religiosity was higher for 13 and 15 year-old white adolescents than their African American adolescent peers. Similarly, parental permissiveness towards drinking was higher for 15 and 17 year-old white adolescents than their African American adolescent counterparts. Across all three groups, the means of perceived peer use was higher for white adolescents than for African American adolescents.

In Table 3, Model 1 provides the odds ratios (OR) and their confidence intervals for the control variables only (i.e., race, gender, age, and age<sup>2</sup>), based upon the population-average coefficients. A gender by race interaction term was originally included in this model; however, based on its non-significance and very small coefficient, it was dropped. The age by race interaction was retained.

The likelihood of alcohol use in the last month was greater for males compared to otherwise similar females (OR = 1.21). In addition, as age increased, the likelihood of last month alcohol use increased; however the results showed an increase at a decelerating rate for both African American and white adolescents. At any given age, the likelihood of last month alcohol use was higher for white adolescents than for African American adolescents. For example, at age 13, the relative odds of use in the last month of alcohol for an African American adolescents was 1.36; in other words, the odds of a 13 year old African American adolescents drinking alcohol in the last month was 1.36 times the odds of an otherwise similar 12 year old. For a 13 year-old white adolescents, the comparable odds ratio was 1.53. Although the difference between these odds ratios is significant, it is not particularly large, representing a 12.5% increase for white adolescents. Although the difference between these odds ratios is significant, it is not particularly large, representing a 12.5% increase for white adolescents.

In the next model, we included the three psychosocial variables - religiosity, parental permissiveness, and peer use; these results can be found under Model 2 in Table 2. A likelihood ratio test revealed a significantly better fit with the inclusion of these variables (Chi-square(3) = 1985.9;  $p < .0001$ ). Interestingly, once these variables were included, several of the demographic variables did not significantly predict last month alcohol use and/or the relationships were smaller. Odds of last month alcohol use for males (OR<sub>male</sub>) was no longer significantly different than females, and the relationship between age and the

log odds of alcohol use was now linear and smaller. As in Model 1, the coefficient on race was not significant. On the other hand, the psychosocial variables all showed a strong relationship to last month alcohol use in the directions expected. Thus, increasing religiosity lowered the probability of last month alcohol use, while increasing parental permissiveness or peer use increased the likelihood of last month alcohol use. A one standard deviation difference in each of these variables (religiosity, parental permissiveness, peer use) is associated with relative odds of .85, 1.37, and 2.08, respectively.

We then tested for moderation of race in the relationships between the psychosocial variables and last month alcohol use; these results can be found under Model 3. Compared to Model 2, the interaction between age and race was no longer significant in predicting alcohol use, suggesting that the interaction terms between race and the psychosocial variables now accounted for the difference previously seen in the relationship between age and alcohol use for African American adolescents and white adolescents. Male students had slightly higher relative odds of last month alcohol use ( $OR_{\text{male}} = 1.11$ ) while age showed a similar relationship to last month use as in Model 2.

The inclusion of the interaction terms between race and the psychosocial variables was tested using HLM's multivariate hypothesis testing feature (Bryk, Raudenbush, & Congdon, 2004). The likelihood ratio test statistic clearly showed significance for the inclusion of these variables ( $\text{Chi-square}(3) = 836.44$ ;  $df = 3$ ;  $p < .001$ ). For each variable, race moderated the relationship to last month alcohol use, with the relationship being stronger (larger in absolute value terms) for white as compared to African American adolescents. A one standard deviation difference in religiosity, parental permissiveness, and peer use were associated with relative odds of .77, 1.52, and 2.78, respectively, for a white 12-year old female and .88, 1.33, and 1.89 for an African American 12-year-old female. The difference between these relative odds is greatest for peer use where the relative odds for a white 12-year old female are 47% greater than an otherwise similar African American female. The differences in relative odds for parental permissiveness and religiosity are approximately 14% higher for the white females as compared to an African American female.

In summary, the psychosocial variables significantly predicted alcohol use among adolescents. Consistent with the hypotheses, both parental permissiveness and peer use were positively related to alcohol use while religiosity was inversely related to alcohol use. Further, when considering ethnic differences, the predictors were stronger in predicting alcohol use for white than African American adolescents.

## Discussion

The purpose of the current study was to determine the effect of demographic and psychosocial factors on alcohol use among African American and white adolescents residing in largely African American rural communities. Consistent with previous research, African American adolescents reported lower rates of last month alcohol usage compared to white adolescents in these communities (Mason et al., 2014; Authors, 2011). Consistent with our hypotheses, the findings indicated that religiosity, parental permissiveness, and perceived peer use all showed a strong relationship to last month alcohol use among both groups of

adolescents. Higher religious involvement was associated with less alcohol use in the previous month, while higher levels of parental permissiveness and perceived peer use increased the likelihood of alcohol use last month. The findings are confirming with our hypotheses, based on the social learning and primary socialization theories, that religiosity served as a strong protective factor against alcohol use, and peer and family influences through perceived peer use and parental permissiveness increased the risk of alcohol consumption.

We also hypothesized that African American adolescents would be more influenced than white adolescents by parental permissive, but less influenced by religiosity and perceived peer use regarding alcohol use. The hypotheses were supported for religiosity and peer use but not parental permissiveness. While religiosity was shown to serve as a protective factor against the consumption in alcohol use for both African American and white adolescents, its influence was stronger for white adolescents. This is in accordance with previous findings by Wallace et al. (2003; 2007), and the current data show that the greater influence of this protective factor extends to rural white adolescents. Similarly, previous research conducted by Wallace, O'Malley, Bachman, Schulenberg, Johnston, and Stewart (2007) saw that while a larger proportion of African American youth report having more religiosity than their white counterparts, the research suggests that the strength of the relationship between religiosity and alcohol use is greater for white than non-white youth. The data lends further support that greater influence of this protective factor extends to rural white adolescents.

The hypothesis that perceived peer alcohol use would be more strongly related to use among white compared to African American adolescents was supported. The results illustrate the social learning theory, which argues that adolescents learn appropriate and inappropriate behavior based on their environmental influences, such as peers and parents (Bandura, 1977). In exploring differences in peer influence compared to family influence, Wallace et al. (1999) has suggested that African American adolescents may be less susceptible to peer influence because of the greater influence of family. In addition, Wallace and Muroff (2002) proposed that family would be a greater influence for African American youth compared to White youth. However, our fifth hypothesis, that parental permissiveness would be more strongly related to alcohol use among African American adolescents, was not supported. This would appear to argue against Wallace et al. (1999) and Wallace and Muroff (2012)'s hypotheses of greater parental vs. peer influence among African American adolescents. While our findings showed greater effects for the risk of parental permissiveness among white students, it could still be the case that for African American adolescents, the comparative social influence may be greater for parents vs. peers. Previous studies have highlighted that African American adolescents have a greater positive response to autocratic rearing practices and active parental monitoring (Brody, Dorsey, Forehand, & Armstead, 2002) rather than parental permissiveness. On the other hand, research has shown that youth engage in more risky behaviors when monitoring is non-existent, as would be the case in permissive parenting style (Lansford et al., 2004). Therefore, even though African Americans are more influenced by parents than peers in most cases, perhaps relaxed parenting styles does not equate increased susceptibility to engaging in risk.

Generally speaking, compared to rural African American adolescents, there were stronger relationships between the psychosocial variables and alcohol use for rural white adolescents. It might be argued that because the sample of adolescents lived in predominantly African American rural communities, white adolescents were heavily influenced by the prevailing African American norms. However, with the exception of parental permissiveness, the effects of the other two covariates (religiosity, perceived peer alcohol use), produced results similar to those reported in national samples. Thus, the effects we reported here are likely not due to community effects, but support the broad effects of these variables across different types of samples. In alignment with previous research on community norms (Authors, 2011), the results of this current study suggest that the influence of religious community norms on alcohol use remain influential for white adolescents even when residing in predominantly African American rural communities. Similar consistent effects occur for perceived peer alcohol use.

### Limitations

Before considering the implications of this study, it is important to recognize its limitations. This study is cross-sectional and, as such, we are unable to determine causality and the longitudinal relationships between religiosity, parental permissiveness, and peer use on adolescents alcohol use. It would be beneficial to conduct longitudinal studies, particularly in regards to understanding long-term effects of these psychosocial factors. As in any study of this type, measures of key variables can always be improved. For example, types of religiosity were not measured as in other studies that showed differences between African American and white adolescents by type of religion (e.g., fundamentalism) (Brown et al., 2001). In addition, peer alcohol use was measured with a question asking about the number of friends who get drunk because there was no analogous question for friends who use alcohol. The relationship between peer use and respondent use may have been underestimated due to this limitation. Another limitation is the generalizability of the study to other racial/ethnic adolescents. Though the sample was representatively drawn from a rural African American community in the southeast of the United States, only African American and white adolescents were used in the present study. Thus, we do not know whether the findings of the study will generalize to rural Latino, Asian American, or Native American adolescents.

Also, a potential limitation is the age of the data. However, because we are interested in estimating and comparing relationships among variables, rather than in comparing substance use rates themselves, the findings will still be valid today if these relationships have not changed (as compared to substance use rates). Given the stability in other published results regarding the relationships between risk and protective factors and substance use over time, we expect that our findings can be extrapolated to today. In addition, this dataset is one of the largest of its kind and thus represents a unique opportunity for corroborating past research findings and furthering research knowledge in this area. Finally, although the variables used in this study were all individual level variables, it is not known to what extent community norms and the ethnic make-up of the community affect those values. These individual level variables do not arise in a vacuum, but are rather the result of individual,

family, school, and community contexts. Future studies to assess these relationships would give insight into the indirect effects of community on substance use.

### Implications for Prevention

Despite these limitations, the results of the study suggest the beneficial effects of religiosity in lowering alcohol rates among white and African American residing in rural communities. These findings are critically important and indicate that the establishment of an effective integration of religious participation into alcohol prevention programs among adolescents is vital. Past research suggests that cultural adaptations for existing prevention programs for African American families should include factors, such as education, strict discipline, religion, and extended family support, (Boyd-Franklin, 1989; Kumpfer, Alvarado, Smith, & Bellamy, 2002), while prevention programs for white adolescents should focus on fundamentalism in religiosity (Brown et al., 2001), parental attitudes, and peer influences. These results also suggest that parents continue to be a driving force in adolescents' decision about drinking. Due to the prevalence of alcohol use during adolescence, all students will inevitably be exposed to alcohol use through peers. Therefore, it is important for parental guardians to discuss their attitudes towards drinking with their children and how adolescents should respond to a situation where they may be at risk of consuming alcohol.

In summary, the results of our study illustrate the influence of psychosocial factors, such as religious practice, parental permissiveness, and peer alcohol use on actual alcohol use among African American and white rural adolescents. Moreover, the knowledge that religious involvement can lower the rates of alcohol use among African American and white adolescents, but in particular lower alcohol use at greater rates among white youth, is vital to addressing the public health concern of adolescent alcohol use. Religious practices, peer alcohol use, and parental permissiveness may constitute potential points of intervention to reduce the risk of alcohol use among African American and white rural adolescents, and future research should explore the effects of interventions that target these factors.

### Acknowledgments

Support for this research was provided, in part, by grants R01 DA09349, Ruth W. Edwards, PI, and P50 DA07074, Eugene R. Oetting, PI, from the National Institute on Drug Abuse of the Department of Health, Education, and Welfare.

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**Table 1.**

## Demographic Characteristics of Students

Characteristic	n	%
Sex		
Male	10,753	46.3
Female	12,410	53.7
Age		
12–14	9,691	41.8
15–16	8,327	35.9
17–18	5,145	22.3
Ethnicity		
African American	16,739	72.3
white	6,424	27.7

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**Table 2.**

Means and Standard Deviations of the Last Month Alcohol Use and Psychosocial Variables by Ethnicity and Age

Variable	Age 13		Age 15		Age 17	
	AA	W	AA	W	AA	W
Last month alcohol use	0.23(.42)	0.28(.45)	.33(.47)	.48(.50)	.38(.49)	.59(.49)
Religiosity	3.03(.94)	3.18(.81)	2.97(.92)	3.04(.85)	3.13(.83)	3.10(.78)
Parental permissiveness	1.17(.57)	1.16(.46)	1.18(.55)	1.26(.60)	1.24(.64)	1.35(.61)
Peer use	1.64(.86)	1.87(.92)	1.99(.95)	2.54(.90)	2.15(.96)	2.78(.83)

Note. AA: African-American; W: White; Standard deviations appear in parentheses

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**Table 3.**

Odds ratio and (Confidence Intervals) of the variables for Models 1, 2, and 3.

Variable	Model 1		Model 2		Model 3	
	OR	(CI)	OR	(CI)	OR	(CI)
Intercept	.20 <sup>***</sup>	(0.17, 0.23)	.29 <sup>***</sup>	(0.25, 0.34)	.29 <sup>***</sup>	(0.25, 0.33)
White	1.14	(0.96, 1.36)	1.03	(0.87, 1.22)	1.05	(0.88, 1.25)
Male	1.21 <sup>***</sup>	(1.11, 1.39)	1.08	(0.99, 1.19)	1.11 <sup>*</sup>	(1.01, 1.21)
Age	1.44 <sup>***</sup>	(1.34, 1.55)	1.20 <sup>***</sup>	(1.12, 1.29)	1.20 <sup>***</sup>	(1.12, 1.29)
Age <sup>2</sup>	.97 <sup>***</sup>	(0.96, 0.98)	.99	(0.98, 1.00)	.99	(0.98, 1.00)
Age × White	1.13 <sup>***</sup>	(1.08, 1.17)	1.05 <sup>**</sup>	(1.01, 1.10)	1.00	(0.96, 1.04)
Religiosity			.83 <sup>***</sup>	(0.80, 0.86)	.86 <sup>***</sup>	(0.83, 0.90)
Parental Permissiveness			1.72 <sup>***</sup>	(1.63, 1.81)	1.63 <sup>***</sup>	(1.54, 1.73)
Per. Peer Use			2.11 <sup>***</sup>	(2.03, 2.19)	1.91 <sup>***</sup>	(1.84, 2.00)
Religiosity × White					.86 <sup>**</sup>	(0.79, 0.94)
Parental Per × White					1.26 <sup>**</sup>	(1.11, 1.43)
Per. Peer Use × White					1.48 <sup>***</sup>	(1.36, 1.62)

Note. OR, odds ratio; CI, 95% confidence interval; Per. Peer Use, perceived peer use; Parental per, parental permissiveness;

\*  $p < .05$ ;

\*\*  $p < .01$ ;

\*\*\*  $p < .001$ .

# of level-1 units (students) = 23,163; # of level-2 units (communities) = 42.