

**Measurement of Alcohol Use at a Historically  
Black College/University (HBCU)**

by

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## Abstract

Previous studies have reported that African-American students attending HBCUs consume less alcohol and experience fewer negative consequences compared to students attending other public colleges and universities (Fowler, 2001). Factors such as religion (Kapner, 2008), alcohol-free campus policies (Wechsler, Lee, Gledhill-Hoyt, & Nelson, 2001), the HBCU environment (Kapner, 2008; Tyree, 2008), and ethnic pride/identity (Pugh & Bry, 2007) have been proposed to protect this population from heavy alcohol consumption. In the current study, motives for alcohol use were hypothesized to mediate the relationship between ethnic pride and various measures of alcohol use and related problems in a sample of African, Black, and Caribbean/West Indian American HBCU students. The study also sought to evaluate the psychometric properties of measures typically developed and used with primarily Caucasian clinical populations and/or adolescents to evaluate drinking motives (e.g., DMQ-R), alcohol consumption (e.g., DDQ), and related negative consequences (e.g., CAPS-r and YAACQ), but not validated for use with African-American college students. Results suggested the existence of full mediation, where students endorsing increased exploration of ethnic identity reported decreased alcohol consumption and related consequences, but only when mediated by decreased drinking motives related to coping with depression. Psychometric properties (e.g., internal reliability and concurrent associations) were similar to those reported by other studies using primarily Caucasian college students, suggesting that these measures are appropriate for use with African, Black, and Caribbean/West Indian American HBCU students.

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## Introduction

Research on alcohol use at U.S. colleges and universities has been focused on the prevention of heavy usage because of the resulting increase in negative consequences. Hingson, Zha, and Weitzman (2009) found that, in 2001, 599,000 full-time college students experienced alcohol-related injuries, 696,000 were assaulted or hit by college students consuming alcohol, and 97,000 experienced alcohol-related sexual assault or date rape; these statistics remained consistent in 2005. Although research on college student alcohol use has received abundant attention, the majority of the existing literature has been conducted with primarily Caucasian samples (Borsari, Neal, Collins, & Carey, 2001; Mallett, Varvil-Weld, Turrisi, & Read, 2011; Murphy, Barnett, & Colby, 2006; O'Connor & Colder, 2005; Read, Wood, Kahler, Maddock, & Palfai, 2003). Much less work has focused on African-American students, and very few studies have included students attending Historically Black Colleges and Universities (HBCUs). Previous studies have reported that African-American students attending HBCUs consume less alcohol and experience fewer negative consequences compared to students attending other public colleges and universities (Fowler, 2001; Meilman, Presley, & Cashin, 1995). It has been suggested that factors such as the HBCU environment (Kapner, 2008; Tyree, 2008), alcohol-free campus policies (Rhodes, Singleton, McMillan, & Perrino, 2005), and religious affiliation of the students (Poulson, Bradshaw, Huff, & Peebles, 2008) contribute to decreased alcohol use among African-Americans students. Several other variables (e.g., ethnic identity/pride, racial discrimination, and social norms) have also been suggested as potential risk and protective factors in the broader literature on alcohol use among African-Americans, but it is not clear if

these results would generalize to college students. The research on alcohol use among African-American college students is further hampered by the fact that most frequently used measures of college student alcohol consumption and consequences were not developed or validated with African-Americans or HBCU samples. Thus, risk and protective factors of alcohol use among African-American college students needs further development and using appropriate measures may allow researchers to identify the important characteristics. The current project proposed to evaluate a model of alcohol use and related negative consequences in a sample of HBCU students. In doing so, the project also evaluated the psychometric properties of some popular measures of alcohol use when used with this population.

### **Prevalence and Patterns of Use**

In a 2007 nationwide study of substance use for individuals aged 12 and older, the Substance Abuse and Mental Health Services Administration (SAMHSA; 2008) found that African-American reported the second lowest percentage of current alcohol use (39.3%) compared to Caucasian individuals (56.1%) who had the highest percentage. A similar finding existed for binge drinking (i.e., 5 or more standard drinks for males and 4 or more drinks for females on an occasion), where 19.1% of African-Americans reported binge drinking compared to 24.6% of Caucasians. The evidence suggested that African-Americans were less likely to currently consume alcohol and binge drink compared to the majority of other races/ethnicities (e.g. Caucasians, Asian-American or Pacific Islanders, and American Indians or Alaskan Natives) in the study.

The Core Institute at Southern Illinois University – Carbondale (Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention, 2007) collected data from 33,379 students attending 2-year and 4-year colleges/universities in the U.S. in 2005. The data indicated



that 75.3% of Caucasians, 75.3% of Latinos, 73.1% of American Indians, 59.1% of Asian and Pacific Islanders, and 52.3% of African-Americans reported alcohol use in the previous 30 days. In terms of binge drinking, 52.6% of American Indians, 50.2% of Caucasians, 49.3% of Latinos, 33.7% of Asian and Pacific Islanders, and 23.3% of African-Americans reported the behavior. Similar to the SAMHSA (2008) findings, the results provided evidence that African-American college students are consuming less alcohol and binge drinking less frequently when compared to other races/ethnicities. However, it is important to note that both studies grouped males and females together so it is possible that a skew in the data exists (e.g., high rates of alcohol use among African-American males if off-set by low rates of use among females). Thus, exploring alcohol use by separating gender may provide more specified information.

Ames and colleagues (2010) conducted a study comparing the alcohol use of male and female African-American and Caucasian students attending two large, public, southeastern universities. For Caucasian males ( $N=233$ ), 7 students reported “light” use, 64 reported binge drinking, and 3 reported an unknown amount. For Caucasian females ( $N=495$ ), 11 students reported “light” use, 53 reported binge drinking, and 3 reported an unknown amount. For African-American males ( $N=366$ ), 16 students reported “light” use, 40 reported binge drinking, and 7 reported an unknown amount. For African-American females ( $N=529$ ), 20 students reported “light” use, 29 reported binge drinking, and 5 reported an unknown amount. The results of the study suggested that about 50% more African-American male and female students reported “light” alcohol use while 50% more Caucasian males and females reported binge drinking. The largest discrepancy existed in binge drinking behavior for Caucasian males. Approximately 27.5% of the 233 Caucasian males reported binge drinking compared to 11% of all Caucasian females, 11% of all African-American males, and 5% of all African-American

females. These results provided additional evidence that African-Americans drink less alcohol than Caucasians, even when males and females were evaluated separately.

Studies examining alcohol use at HBCUs have been consistent with previous findings from national data (e.g., SAMHSA, 2008) and results from predominately Caucasian universities that include African-American students in the sample (e.g., Ames et al., 2010; Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention, 2007). In a study of three HBCUs located in North Carolina, Fowler (2001) surveyed a sample of 1,587 students, 82% of which were African-Americans, on their alcohol use. The results indicated that 10.1% of African-American males and 7.8% of African-American females reported binge drinking. Meilman, Presley, and Cashin (1995) compared data collected from 14 HBCUs with a sample of 14 predominately Caucasian 4-year colleges/universities. The participants from HBCUs were matched on criteria similar to that of non-HBCU students. Results suggested that African-American students reported drinking similar amounts at HBCUs compared to non-HBCUs (1.4 and 1.7 drinks per week, respectively). This was also similar for reported binge drinking rates among African-American students (22.5% at HBCUs and 19.6% at non-HBCUs). An important finding in the study was that Caucasian students attending HBCUs were also reporting a lower frequency of alcohol consumption (2.6 drinks per week) and binge drinking rates (22.3%) compared to Caucasian students attending non-HBCUs (4.9 drinks per week and 39.6%, respectively). Consistent with previous studies, the results provide further support that African-Americans consume less alcohol than Caucasians. Further, it provided evidence that students attending HBCUs, regardless of race/ethnic background, drink and binge less than students attending non-HBCUs. This appears to support Kapner's (2008) and Tyree's (2008) suggestion that the HBCU environment contributes to decreased alcohol consumption; this will be explored

below. However, this appears to be just one factor among many that contributes to lower rates of alcohol use and binge drinking among African-American HBCU students.

### **Risk and Protective Factors**

Several potential factors have been identified as important in understanding the relatively low rates of alcohol use and binge drinking among HBCU students. A sample of research on identified risk and protective factors is reviewed below. However, as previously noted research using HBCU students is lacking. Therefore the review does not restrict itself to only studies making use of HBCU samples, but also looks to studies using other samples (e.g., African-American adolescents, African-American students from primarily Caucasian colleges and universities) that have the potential to inform our understanding of alcohol use among HBCU students. The goal of such an approach is to identify a wider range of potential risk and protective factors.

**Environment of HBCUs.** Kapner (2008) stated that HBCUs resemble a family, provide a sense of community, and a cultural atmosphere that is supportive of African-American students. HBCUs are committed to providing assistance to their students to ensure success at the college level. Tyree (2008) provided a similar sentiment, stating that HBCU students are given more opportunities to succeed and lead without hurdles stopping them. The “just get by” type of philosophy does not work and students must work hard to earn their grades. However, both sources provided anecdotal support for this type of environment at HBCUs; Kapner (2008) directly stated that some of its evidence was anecdotal and Tyree (2008) was a graduate of an HBCU providing an account of his own experience as a student. It is possible that students attending HBCUs feel more support from their institution so alcohol use remains at a low to moderate level, but there does not appear to be objective evidence supporting this claim.

**Alcohol-Free Policies and Dry Campuses.** As many HBCUs are considered dry campuses, it is possible that students attending HBCUs consuming less alcohol because of the policies banning alcohol possession and consumption. Wechsler, Lee, Gledhill-Hoyt, and Nelson (2001) reported that banning alcohol on campus increased abstinence and decreased binge drinking by 30%, but alcohol-related negative consequences remained unchanged. This suggested that banning alcohol on campus can decrease consumption rates, but those who continue to drink are experiencing an increase in negative consequences. In other words, students that explore other opportunities to drink are putting themselves at increased risk of alcohol-related consequences. For example, Taylor, Johnson, Voas, and Turrisi (2006) reported that alcohol use and negative consequences were similar on dry campuses and campuses with varying substance use policies. The researchers suggested that the policies may limit alcohol use on campus, but it does not prevent its use and consequences off-campus. Thus, banning alcohol on campus either has limited effect or the decline in alcohol consumption and binge drinking is offset by the increase in alcohol-related consequences among those who continue to drink.

In a study of 1,018 students attending 5 HBCUs located in the southern U. S., Rhodes, Singleton, McMillan, and Perrino (2005) found that 18% of students reported binge drinking, 67% reported drinking, but not bingeing in the previous 2 weeks, and 15% reported abstaining from alcohol. The researchers noted that 69% of students reported knowledge that their school had a written substance use policy, but they were unsure of the specifics of the policy (e.g., disciplinary actions if caught in possession/consuming, treatment services, etc.). Additionally, male students who were unaware of the policies were more likely to binge drink compared to their counterparts with knowledge of the policies. It appears that the majority of students were aware that a policy on alcohol use exists and the lack of specific knowledge about the policies

contributed to continued alcohol use. Fortunately, the majority of students reported moderate alcohol consumption while only a minority of students, especially male students who were unaware of the policies, reported binge drinking. Thus, policies that ban alcohol possession and consumption can have some positive effects at HBCUs, but it is possible that its rates of use are similar to campuses without policies in place.

**Discrimination.** It has been suggested that racial discrimination is the main reason why a discrepancy exists between the physical health of African-American and Caucasian individuals in the United States (Krieger, 2000; Mays, Cochran & Barnes, 2007; Williams, Neighbors, & Jackson, 2003). The correlation between racial discrimination and physical health has been found directly and indirectly. In terms of direct effect, African-Americans reporting perceived racial discrimination have higher blood pressure, which contributes to cardiovascular disease (Richman, Bennett, Pek, Siegler, & Williams, 2007). Indirectly, African-Americans reporting perceived discrimination are more likely to report increased alcohol use (Gil, Wagner, & Tubman, 2004) and cigarette use (Bennett, Wolin, Robinson, Fowler, & Edwards, 2005; Landrine, Klonoff, Corral, Fernandez, & Roesch, 2006). Further, Kwate, Valdimarsdottir, Guevarra, & Bovbjerg (2003) reported that African-American perceiving discrimination were twice as likely to abuse alcohol. Thus, racial discrimination appears to affect the physical health of African-Americans and increasing substance abuse is an indirect path it occurs.

Attention has also been focused on the effects of racial discrimination on mental health and most studies (e.g., Gee, Ryan, Laflamme, & Holt, 2006; Jackson, Williams, & Torres, 1997; Simons, Murry, McLoyd, Hsiu, Cutrona, & Conger, 2002) have found positive correlations between discrimination and distress (e.g., depression, anxiety, and general distress). Wills, Sandy, & Yaeger (2002) suggested that racial discrimination leads to substance abuse as a way

of coping with the distress. Distress has also been linked with an increased likelihood to associate with peers who use substances (Petraitis, Flay, & Miller, 1995) and risky cognitions (e.g., positive images of substance users; Gibbons, Gerrard, Cleveland, Wills, and Brody (2004), which are strong predictors of future substance use. Thus, racial discrimination may lead African-Americans to substance use, or other behaviors associated with substances, as a way to cope with their distress.

Gibbons et al. (2004) noted that studies of racial discrimination, distress, and substance use typically use one-item measures of discrimination so other factors may account for the findings. For example, their study of African-American parents and children found that the majority of perceived discrimination occurred “a few times” and anger was the primary affect experienced. Only individuals reporting frequent encounters with discrimination developed symptoms of depression and anxiety. Additionally, the researchers noted increased substance use for those reporting perceived discrimination, but only 5% used the substances to the point of abuse. Thus, evidence appears to suggest that discrimination increases distress, which in turn increases substance use. However, distress related to discrimination does not appear to be well understood given that only one item is used to measure discrimination and increased substance abuse only occurs in a minority of individuals.

**Religion and Spirituality.** It has been suggested that religion and spirituality may be a reason why students attending HBCUs use less drugs and alcohol (Kapner, 2008). In studies of African-American adolescents and adults, religious beliefs have been shown to have an inverse relationship with alcohol use (Brown & Gary, 2000; Steinman & Zimmerman, 2004). For example, Steinman and Zimmerman (2004) compared religious activity and risk behaviors (e.g., sexual intercourse and alcohol, cigarette, and marijuana use) among a group of 705 African-

American high school students in the Midwest. The researchers found evidence that attendance at church or other religious services declined while alcohol use increased as students progressed from 9<sup>th</sup> to 12<sup>th</sup> grade. They found that the effect was even greater for African-American male high school students because those with greater than average decline in religious activity were more likely to consume alcohol compared to those without as steep of a decline. Similarly, Brown and Gary (2000) studied religious involvement and health status among a sample of 537 African-American adult males. Although religious activities were not associated with physical health, those affiliated with a religious denomination, attended church a few times per month, and had moderate to high levels of religiosity had significantly lower levels of daily alcohol consumption. Specifically, African-American adult males that reported attending church at least once per week had the fewest number of individuals reporting alcohol use (8.6%) compared to those attending church once per month (20.5%), several times per year (16.2%), rarely (24.8%), and never (29.6%). Thus, it appears that African-American adolescents and adults with decreased religious involvement are more likely to frequently consume alcohol.

Alcohol-related consequences have also been studied among African-American adolescents. For example, Brown, Parks, and Zimmerman (2001) studied religion, alcohol use, and alcohol-related problems among a group of Caucasian and African-American adolescents. Although the data suggested that fundamentalist religious beliefs and church/service attendance were inversely related to alcohol use among both groups of adolescents, religiosity was differentially related to alcohol-related problems among African-American males and females. Specifically, African-American females who reported that religion was very important in their lives also reported fewer alcohol-related problems, but males reporting strong religious beliefs did not report experiencing fewer consequences. Thus, it appears that stronger religious beliefs

and involvement may decrease alcohol use among African-American adolescents, but decreasing alcohol-related problems may only exist for females.

Research on alcohol use and religion among college students has also found that those who consume alcohol infrequently or moderately cite their religious beliefs as one of the reasons they avoid heavy alcohol use (Slicker, 1997). However, studies on alcohol use and religious affiliation among African-American college students appear limited. Poulson, Bradshaw, Huff, and Peebles (2008) compared religious beliefs and alcohol use with a sample of 155 southeastern HBCU students, where 97% identified as African-American. The responses indicated that 80% of students reported strong religious affiliation/beliefs (e.g., I believe God operates in my daily life...Strongly Agree) and the majority of the student sample did not consume alcohol or were moderate drinkers. Specifically, 77% of students reported not consuming alcohol in a typical week, 18% reported consuming alcohol 1-2 days in a typical week, and only 5% reported heavy consumption. Results indicated that 23% of students (i.e., everyone who did not report abstaining from alcohol consumption) indicated being intoxicated 1-2 times in the past month. In other words, the majority of students drank infrequently, but they likely drank to the point of intoxication when they had the opportunity to consume alcohol. This suggested that strong religious beliefs may decrease the number of individuals consuming alcohol, but those that do may still engage in risky alcohol use behaviors. Thus, religion may be an additional piece to the puzzle, but not a full explanation, for why students at HBCUs consume less alcohol.

**Social Influence.** Studies have found that college students typically overestimate the alcohol consumption rates of peers (Baer, Stacy, & Larimer, 1991; Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002; Perkins & Wechsler, 1996) and the overestimation is used to justify their own levels of use (i.e., wanting to drink as much as one's peers; Laird, Shelton, &



Jefferson, 2007). However, the correlation of perceived peer consumption rates and self-consumption rates are typically lower among African-American compared to Caucasian individuals (Hamm, 2000; Robinson, Murray, Alfano, Zbikowski, Blitstein, & Klesges, 2006). Gibbons and colleagues (2010) compared peer influences of substance use among a group of African-American and Caucasian adolescents. Results suggested that African-American adolescents were less likely to have positive prototypes (i.e., perceptions) of individuals who consumed alcohol, less likely to associate with those individuals, and less willing to drink alcohol. Similarly, Laird, Shelton, and Jefferson (2007) examined social influence among African-American and Caucasian students enrolled at a HBCU and found that African-American students consumed less alcohol per sitting, binge drink less frequently, and abstain from alcohol more frequently, even with the perception that their peers drank every day. In contrast, Wheeler, Wright, Frost (2006) looked at alcohol use at a predominantly Caucasian university in the same state and found that Caucasian students were more likely to drink at higher rates in order to keep pace with the perception of higher consumption among peers. This appears to suggest that African-American students also overestimate the amount of alcohol their peers consume, but they are less likely to increase their own consumption based on the overestimation. In summing up this literature, Gibbons and colleagues (2010) reported that African-American students who identified more closely with African-American culture may be better at resisting peer influences.

Another social influence of college student alcohol consumption comes from membership in fraternities and sororities. Previous studies have reported that members of Greek organizations drink more frequently, in larger amounts, and experience more negative consequences than students not in fraternities and sororities (Wechsler, Kuh, & Davenport, 1996; Pace & McGrath, 2002; Eberhardt, Rice, & Smith, 2003). Although Wechsler, Kuh, and

Davenport (1996) reported that 86% of members living in fraternity houses and 80% living in sorority houses binge drink compared to 45% of non-Greek members, Kuh, Pascarella, and Wechsler (1996) stated that alcohol abuse is not the standard in some fraternities and high academic achievement is common. This may be the case for traditionally Black Greek-letter organization governed by the National Pan-Hellenic Conference, Inc. (NPHC) as these groups may have more positive influences (e.g., leadership development) over their members (Pascarella & Terenzini, 2005). Although few studies on NPHC Greek organizations have been published, one study of alcohol negligence legal cases involving fraternities and/or sororities from 1970 to 2001 found that, of the 43 cases identified, no NPHC organization was named in any of the cases (Elkins, Helms, & Pierson, 2003). The researchers acknowledge many limitations with their study (e.g., more than 90% of cases never make it to court, not all court cases have decisions, and not all cases with decisions are reported), but it provides some evidence that members NPHC organizations may be more responsible when it comes to alcohol use. Thus, it appears possible that membership into NPHC Greek organizations actually provides students with leadership skills and/or other characteristics that are protective factors of alcohol abuse.

**Ethnic Pride/Identity.** Ethnic pride not only involves the positive perception of one's ethnic group (Williams, Spencer, & Jackson, 1999; Smith & Brookins, 1997), it has been suggested to be a component of positive self-esteem (Harter, 1999). In a study of 670 African-American adolescents living in a rural region of Georgia, Wills and colleagues (2007) suggested that those with less ethnic pride had lower self-esteem, which increased the likelihood that the adolescents would associate with peers who drank alcohol and/or smoked cigarettes. It appeared that those with less ethnic pride had lower self-esteem and were more willing to engage in risky behaviors to fit in and gain acceptance from their peers. This effect may be related to racial

discrimination, where those experiencing distress related to discrimination may be more willing to associate themselves with peers who use alcohol and other substances (Petraitis, Flay, & Miller, 1995).

The opposite also appears to be true as Corneille and Belgrave (2007) and Pugh and Bry (2007) suggested that African-American adolescents and college students with more Afrocentric values possessed more negative attitudes toward drug use and were better able to resist/delay the age of first use. In a study of 627 low-income African-Americans aged 16-25 years old from Harlem, Brook, Balka, Brook, Winn, and Gursen (1998) found that individuals with more awareness of African-American history, identified with their African-American friends, and had a sense of belonging to the African-American ethnic group used less drugs. Similarly, Caldwell, Sellers, Bernat, and Zimmerman (2004) found that having strong racial identity and thinking positively about African-Americans was correlated with less alcohol use. Pugh and Bry (2007) examined alcohol use among 167 African-American college students from a large public university in the northeastern U.S. Using the Multigroup Ethnic Identity Measure (MEIM; Phinney, 1992), the researchers found significant negative correlations between high ethnic pride and beer, liquor, and wine use. In other words, African-American college students endorsing stronger ethnic pride reported less alcohol use, even after accounting for influences from year in school, sex, and friend's use of alcohol. Thus, it appears that ethnic pride/identity contributed to decreased alcohol use in African-American individuals from adolescence into adulthood. Although there does not appear to be research examining ethnic pride/identity at HBCUs, it has been suggested that African-American history and values are an integral component of academia and the HBCU environment. According to Roebuck and Murty (1993), HBCUs are committed to preserving Black history, racial/ethnic pride and traditions, and African-American

consciousness. Thus, it is possible that HBCUs empower their students against risky alcohol use behaviors and consequences through the strengthening of their ethnic identity. Perhaps the increased pride in one's ethnic identity motivates students not to engage in behaviors that reinforce negative stereotypes (Pugh & Bry, 2007).

### **Motivational Model of Alcohol Use**

As the above section suggests, there appears to be multiple factors with a potential to decrease and/or increase alcohol use for African-Americans. However, the literature appears to be mixed in terms of risk and protective factors given that a risk factor (e.g., membership in Greek organizations) can be protective (e.g., membership in Black Greek organizations) under certain circumstances. Further, research on alcohol use appears to be focused on African-American adolescents compared to African-American college students so it is possible that the risk/protective factors during adolescence may not be the same during young adulthood for this population. Thus, it is important to examine each of the possible contributing factors of alcohol consumption among African-American college students to determine if they are similar to those found in adolescents and possibly identify other characteristics that may not have been identified in previous studies. Finally, the literature includes a range of environmental (e.g., HBCU campus) and individual-level (e.g., ethnic pride) level variables that vary in terms of proximity to actual drinking scenarios, and there have not been attempts to integrate research across identified risk factors. To do so, a comprehensive model will be needed to account for the various factors identified in the previous section.

The motivational model of alcohol use (Cox & Klinger, 1988) proposes that the different factors contributing to alcohol consumption combine to influence motivation towards one behavior over others. In other words, the decision to drink or not is determined by the net value

of all the different factors influencing the individual's choice. Cox and Klinger use the term *incentive motivation* to refer to an organism's motivation to pursue positive and avoid negative incentives. They posited that three types of historical factors (i.e., past experiences with alcohol) combine to influence the decision to use alcohol: 1) biochemical reactivity, 2) personality characteristics, and 3) sociocultural environment. This suggests that the reason an individual chooses to abstain, drink moderately, or drink heavily depends on multiple factors working together, consciously or unconsciously. A depiction of the Cox and Klinger model is presented in Figure 1. A more specific model of alcohol use among HBCU students, as suggested by the previously reviewed literature is depicted in Figure 2.

A number of practical issues (e.g., sample size and participant burden) precluded the current study from evaluating the full model. Instead the current study was designed to assess a limited number of potential relationships, and provided an initial test of the utility of the motivational model. The relationships among ethnic pride, motivation to drink, and alcohol use and related problems have been selected for this initial test. For African-Americans attending HBCUs, ethnic pride may be a primary factor contributing to drinking motivation because HBCUs continue to promote the development of African-American identity and pride among students (Roebuck & Murty, 1993). In the proposed model of alcohol use motivation for African-American college students attending HBCUs, illustrated in Figure 3, possessing increased ethnic pride may decrease the motivation to drink alcohol, which decreases alcohol use and problems. Similarly, those possessing decreased ethnic pride may increase the motivation to drink and problems related to alcohol use. Ethnic pride has primarily been studied with adolescents so the model needed to be examined to determine if the proposed relationships exist with African-American college students.

## **Measurement Issues Related to Research with HBCU Students**

**Assessing Race.** Beginning with the 2000 Census, the Office of Management and Budget (OMB) updated the categories used to collect information on race and ethnicity (Bare, Meek, & Frase, 1998). The five categories for race are: 1) White, 2) Black or African-American, 3) Asian, 4) Native Hawaiian or other Pacific Islander, and 5) American Indian or Alaska Native. Data on ethnicity are collected using the categories Hispanic or Latino and Not Hispanic or Latino. Although this system provides a quick way of assessing the U.S. population, it makes the assumption that members of the same race/ethnicity have similar cultural values and experience. For research purposes, another classification system that provides more specificity is needed to assess for potential differences both across members of a population and within subgroups of the population.

As Davis and colleagues (2010) reported, it is important to recognize the heterogeneity within the African-American population. Previous research has found that they possess varied attitudes about race, ethnicity, and what it means to be classified as African-American (Cross, 1991; Jones, Cross, & DeFour, 2007; Sellers, Smith, Shelton, Rowley, & Chavous, 1998). On the one hand, Reverend Jesse Jackson believed that using the term “Black” to refer to African-Americans is as unjustified as using the terms “colored” or “Negro” because African-Americans want their heritage to be associated with their land or origin (Smitherman, 1991). On the other hand, Smitherman’s (1991) survey of African-American individuals living in five U.S. cities revealed that only one-third to half of those individuals were in favor of shifting from using African-American instead of Black. The primary reasons for using African-American instead of Black were: 1) identification with dual heritage, 2) inadequacy of color label, and 3) aesthetic quality. The primary reasons for continuing to identify as Black were: 1) lack of identification

with Africa, 2) syllabic density (i.e., too many words to say), and 3) semantic change is not necessary because it changes every few decades. Hecht, Jackson, and Ribeau (2003) reported that using the term Black was generally acceptable, but using Black-American signified pride in its acknowledgement of being Black and from America from respondents.

It appears that individuals typically classified as African-American are divided about whether African-American or Black/Black-American is most appropriate, but it is clear that there are differences in perspectives, and possibly cultural values, within this population. Christmon (1995) suggested that researchers must start with an examination of Africa and African cultural values in order to understand African-Americans. The author noted that alcohol played important roles in traditional African religious ceremonies and social gatherings, but responsible use was the rule regardless of the situation. African individuals gained respect for drinking in moderation and those who engaged in drunken behaviors were considered less reasonable than individuals with a mental illness. Differential attitudes extend to other substances as well. In a study comparing cigarette smoking among native born (i.e., born in the U.S.) and foreign born African-Americans, King, Polednak, Bendel, and Hovey (1999) found that African-Americans born in the U.S. were more than twice as likely to be smokers than those born in another country (30.4% vs. 14.1%). Although foreign born African-Americans were not necessarily from Africa and those born in the U.S. were not differentiated based on cultural heritage, the study provides evidence that there are differences in substance use among African-Americans with different cultural values.

Additionally, individuals from the Caribbean/West Indies (e.g., Dominican Republic, Jamaica, Trinidad and Tobago, etc.) are also classified as African-American/Black, but they have cultural values and traditions that are different from African-Americans and Black-Americans

(Williams & Jackson, 2000). In a study of behavioral risk factors for stroke (e.g., smoking cigarettes, drinking alcohol, exercising, and weight) comparing Black African, Black Caribbean, and Caucasian individuals, Dundas, Morgan, Redfern, Lemic-Stojcevic, and Wolfe (2001) found that fewer Black Africans (10%) reported cigarette use compared to Black Caribbean (23%) and Caucasian (31%) individuals. Similarly, fewer Black Africans (4%) reported heavy rates of alcohol consumption compared to Black Caribbean (11%) and Caucasian (19%) individuals. Although the study compared African and Caribbean individuals, the sample was collected in south London so the cultural values of the sample reflects British instead of American culture. The findings suggest differences in substance use among African and Caribbean individuals, but it was not clear whether the individuals were recent immigrants from Africa and the Caribbean or if they lived in London for multiple generations. Thus, it is important to allow respondents the opportunity to more accurately identify their cultural heritage because there will likely be differences in how each group (i.e., African-Americans, Black Americans, and Caribbean/West Indians) perceives the use of alcohol. To date, research on the use of alcohol among HBCU students, or more general samples of African-American college students, have not assessed or analyzed more specific ethnic subcategories.

**Assessing Alcohol Use.** An important component of examining alcohol-related consequences is administering the appropriate measures for the population of interest (i.e., using measures that have been developed and/or validated for the population). Using measures not validated for a population creates what Midanik, Greenfield, and Bond (2007) referred to as the *Two Worlds* problem, where one makes the assumption that the different populations share similar characteristics. This may lead to the measurement of consequences and risk factors that



may not exist in the population of interest or, more problematic, it may omit some of their experiences.

In a comprehensive review examining measures of alcohol abuse, dependence, and alcohol-related consequences in college students, Devos-Comby and Lange (2008) identified five that have been the top cited: 1) Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993), 2) Rutgers Alcohol Problems Index (RAPI; White & Labouvie, 1989), 3) CAGE (acronym for each item of the measure: cut down, annoyed, guilty, and eye-opener; Ewing, 1984), 4) Michigan Alcoholism Screening Test (MAST; Selzer, 1971), and 5) College Alcohol Problem Scale (CAPS; O'Hare, 1997). Although all are widely used with college students, only the CAPS was developed with a college student population; the other measures were developed with clinical populations or adolescents. Additionally, the CAPS was the only measure specifically validated with African-American college students (West & Graham, 2001). Specifically, the researchers compared the AUDIT, CAGE, and CAPS with a measure of alcohol use quantity and frequency using 33 African-American college students attending a large, predominately Caucasian, southwest university. The results suggested that the AUDIT and CAGE only correctly identified 24 non-abusers and an individual whose responses indicated a diagnosis of alcohol abuse (76% accuracy rate) while the CAPS correctly identified 22 non-abusers and 7 abusers (88% accuracy rate). However, the study used a small sample of African-American college students (n=33) with the majority (70%) being female so evaluating the CAPS in a larger sample is important. Assessing the psychometric properties of other widely used measures when used with HBCU students also remains as an important area of research.

## **Present Study**

Colleges and universities have been interested in measuring alcohol use and consequences among the student population and they have used well established measures to accomplish these goal. However, many of these measures were developed with primarily Caucasian clinical populations and/or adolescents (e.g., AUDIT, RAPI, MAST, and CAGE) and few have been established for use with African-American college students (e.g., CAPS). Previous studies have found evidence that African-American college students consume less alcohol and encounter fewer alcohol-related consequences than Caucasian students (e.g., Ames et al., 2010; Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention, 2007). Research with African-American adolescents have suggested that increased ethnic pride is a major influence of decreased alcohol use and problems among this group (Caldwell, Sellers, Bernat, & Zimmerman, 2004; Corneille & Belgrave, 2007). Ethnic pride has primarily been studied with African-American adolescents and other non- student samples so the present study sought to determine if the relationship existed among college students. The relationship between ethnic pride and alcohol use and related problems was evaluated in the context of a broader motivational model that placed reasons for using alcohol (i.e., motives) as a mediator between alcohol use and more distal factors. In the current study, motives for alcohol use were hypothesized to mediate the relationship between ethnic pride and various measures of alcohol use and related problems. Additionally, this study sought to differentiate between sub-groups that have typically been classified as African-American/Black (e.g., individuals of African heritage, those who have been in the U.S. for multiple generations, and those of West Indian heritage) to determine if differences in alcohol consumption and alcohol-related consequences existed within the larger population.

## Methods

### Participants

A total of 199 undergraduates from a Southeastern HBCU participated in the paper-and-pencil study in a classroom setting. However, students who did not identify as either African-American, Black-American, West Indian/Caribbean, or provided no information ( $n = 7$ ) and those who did not complete the DDQ ( $n = 8$ ) or MEIM-R ( $n = 1$ ) were removed, resulting in a sample of 183. The average age of the sample was 22.32 years ( $SD = 4.91$ ). The sample was composed of 65.6% women and 13.1% were affiliated with a Greek organization. The majority of participants identified as Black-American (79.8%), 30.6% as African-American, 6.0% as American Indian/Native American, 3.8% as Caucasian/White, 2.7% as West Indian/Caribbean, 1.1% as Other (e.g., French and British Caribbean), and 0.5% as Native Hawaiian/Pacific Islander; percentages sum to greater than 100% because participants could endorse multiple categories. For alcohol use in the last 30 days, 54% of males reported drinking (mean 3.24 standard drinks in a typical week,  $SD = 4.26$ ) compared to 56.2% of females (mean 2.67 standard drinks in a typical week,  $SD = 3.81$ ) and 41.9% of males reported binge drinking compared to 44.7% of females. For marijuana use in the last 30 days, 38.1% of males reported smoking compared to 29.8% of females. It should be noted that the data was collected approximately 2 weeks after spring semester break, which may have influenced how much alcohol and marijuana use was being reported in the previous 30 days. Participants were compensated for their participation with extra credit in their undergraduate psychology courses.

### Procedure

All procedures were approved by the Institutional Review Boards (IRB) of Auburn University and the participating HBCU. All participants read the Information Letter prior to participating in the study and completing the measures indicated their consent to participate. Participants completed the demographics questionnaire and the study measures described in the next section in a classroom setting.

## **Measures**

**Daily Drinking Questionnaire (DDQ).** Collins, Parks, and Marlatt (1985) developed the DDQ as a self-report questionnaire that has participants reporting their alcohol use during the previous 28 days. Participants report the “number of drinks” and “number of hours drinking” for each day of a *typical week* and *heaviest drinking week* during the past 28 days. The DDQ is widely used with college students and non-students and has been shown to correlate with other substance use self-report measures, ranging from .65 and .72 (Kivlahan, Marlatt, Fromme, Coppel, & Williams, 1990).

**Drinking Motives Questionnaire – Revised (DMQ-R).** The DMQ (Cooper, 1994) was developed based on the motivational model proposed by Cox and Klinger (1988). The revised 28-item DMQ-R (Blackwell & Conrod, 2003) refined the original instrument by separating the coping motive into anxiety and depression; thus measuring five drinking motives: 1) Social (e.g., “As a way to celebrate”), 2) Coping-Anxiety (e.g., “Because it helps me when I am feeling nervous”), 3) Coping-Depression (e.g., “To cheer me up when I’m in a bad mood”), 4) Enhancement (e.g., “Because it makes me feel good”), and 5) Conformity (e.g., “So that others won’t kid me about not using”). The items are measured on a 5-point rating scale ranging from 1 (almost never/never) to 5 (almost always/always). Participants are instructed to think of all the times they drank alcohol and indicate how often they drank for each reason. The scales of the

DMQ-R have displayed adequate internal reliabilities, ranging from .61 to .91, and correlated with measures of alcohol use (e.g., frequency of drinking occasions, number of drinks per occasion) and alcohol-related problems (e.g., RAPI) when used with large samples of college students (Grant, Stewart, O'Connor, Blackwell, & Conrod, 2007). Clark and Watson (1995) reported that contemporary researchers consider internal consistency ranging from .60 to .70 as adequate.

**College Alcohol Problem Scale - Revised (CAPS-r).** The CAPS was developed by O'Hare (1997) to measure alcohol-related negative consequences in young adults. The revised version (CAPS-r; Maddock, Laforge, Rossi, & O'Hare, 2001) improved the items to reflect the alcohol-related problems experienced by college students. The resulting 8-item measure consisted of two factors: 1) *Social problems* (e.g., "Engaged in unplanned sexual activity," "Drove under the influence," "Did not use protection when engaging in sex," and "Engaged in illegal activities associated with drug use") and 2) *Personal problems* (e.g., "Felt sad, blue, or depressed," "Was nervous or irritable," "Felt bad about myself," and "Had problems with appetite or sleeping"). Responses are measured on a 6-point scale, where 0 indicates *never* experiencing problems and 5 indicates experiencing problems *10 or more times*. Internal consistency was .75 and .79 for the social and personal problems subscales, respectively. Each subscale and the total score of the CAPS-r were also found to be correlated with other drinking related variables in a sample of primarily Caucasian (88%) students (e.g., drinking days, drinks per occasion, peak drinks; Maddock et al., 2001). As discussed earlier, West and Graham (2001) found evidence that the CAPS had a higher accuracy rate compared to the other measures (88% vs. 77%) for distinguishing between alcohol abusers and non-abusers among a sample of undergraduate African-Americans attending a predominately Caucasian university. Thus, the

original CAPS appeared to be the only measure specifically validated with African-American/Black college students and the revised version may offer similar advantages.

**Young Adult Alcohol Consequences Questionnaire (YAACQ).** The YAACQ (Read, Kahler, Strong, & Colder, 2006) is a more recently developed measure of alcohol-related consequences experienced by college students. This instrument sets itself apart from earlier ones in that it was designed specifically for assessing a broad spectrum of alcohol-related consequences in college students (Devos-Comby & Lange, 2008). Specifically, the measure consists of 48-items with eight subscales: Social-Interpersonal consequences (SOC; e.g., “While drinking, I have said or done embarrassing things”), Impaired Control (CONTR; e.g., “I often have found it difficult to limit how much I drink”), Self-Perception (SELF-P; e.g., “I have felt guilty about my drinking”), Self-Care (SELF-C; e.g., “I have been less physically active because of my drinking”), Risky Behaviors (RISK; e.g., “I have driven a car when I knew I had too much to drink and drive”), Academic/Occupational consequences (AC-OCC; e.g., “I have neglected obligations to family, work, school because of drinking”), Physical Dependence (PHYS-DEP; e.g., “I have felt like I needed a drink after I’d gotten up”), and Blackout Drinking (BLKOUT; e.g., “I have passed out from drinking”). The internal consistencies for each of the eight factors ranged between .70 and .91 in the initial study and from .75 to .95 in a follow-up study, both using primarily Caucasian samples (Read, Merrill, Kahler, & Strong, 2007). The follow-up study also found that the eight factors loaded onto a single factor of alcohol-related problems, with reliabilities ranging from .96 to .98. The YAACQ has been found to be positively correlated with scores on the RAPI ( $r=.79$ ), AUDIT ( $r=.76$ ), and negatively correlated with grade point average (GPA; Read, Kahler, Strong, & Colder, 2006).

**Multigroup Ethnic Identity Measure – Revised (MEIM-R).** The MEIM-R (Ong & Phinney, 2007) was developed as a measure of ethnic identity across different ethnic groups without content specific to particular groups. The 6-items measure consists of two factors, *Exploration* (e.g., “I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs;” “I have often done things that will help me understand my ethnic background better;” and “I have often talked to other people in order to learn more about my ethnic group”) and *Commitment* (e.g., “I have a strong sense of belonging to my own ethnic group;” “I understand pretty well what my ethnic group membership means to me;” and “I feel a strong attachment towards my own ethnic group”). Participants respond using a 5-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). The internal consistency of both factors and the combined instrument ranged from .72 to .93 (Pugh & Bry, 2007; Worrell, 2000; Yip & Fuligni, 2002) and has been used to measure the relationship between ethnic identity and substance use with African-American college students (Pugh & Bry, 2007).

### **Data Analyses**

Psychometric properties (e.g., internal consistency and concurrent validity) of each measure were evaluated with the current sample of students attending an HBCU. Correlation, regression and path analysis were conducted to analyze the main hypothesis that increased ethnic pride in African-American college students attending an HBCU decreased drinking motives, leading to decreased alcohol consumption and related consequences. In other words, it was hypothesized that students with higher ethnic pride (i.e., greater MEIM-R scores) have lower rates of alcohol consumption (i.e., lower DDQ and binge drinking rates) and alcohol-related problems (i.e., fewer CAPS-r and YAACQ endorsements), and that the relationship would be mediated by decreased drinking motives (i.e., lower DMQ-R scores). Similarly, those reporting

less ethnic pride were hypothesized to have increased drinking motives, which would in turn be related to increased alcohol consumption and alcohol-related problems.

Prior to conducting the path analyses, Baron and Kenny (1986) suggested that correlation analyses should be performed to determine the relationships among the independent, dependent, and mediator variables and then regression analyses should be performed to specify any potential mediation models. They proposed that 3 conditions must be satisfied for mediation to exist: 1) the independent variable must effect the mediator, 2) the mediator must effect the dependent variable, and 3) the independent variable must effect the dependent variable. However, other researchers (e.g., LeBreton, Wu, & Bing, 2009; Zhao, Lynch, & Chen, 2010) have refuted the third condition, suggesting that a direct effect between the independent and dependent variables need not exist. Specifically, Zhao, Lynch, and Chen (2010) proposed that a significant direct effect suggests a potential partial mediation (i.e., the independent variable effects the dependent variable and the effect is strengthened by the mediator) and the lack of a direct effect (i.e., indirect effect) suggests a potential full mediation (i.e., the independent variable effects the dependent variable only when the mediator is present). Thus, in keeping with the methods suggested by Baron and Kenny (1986), correlation and regression analyses were performed first to determine existing relationships between ethnic pride, drinking motives, and alcohol use and related consequences before path analyses were evaluated. However, the correlations and regressions were interpreted in light of more recent commentaries on the Baron and Kenny approach and alternative approaches to testing for mediation.

Initial analyses evaluated the bivariate correlations among the different measures and their subscales. Positive correlations were hypothesized among the DDQ, binge drinking, DMQ-R, CAPS-r, YAACQ while negative correlations were hypothesized between these measures and



the MEIM-R. The hypothesized meditational models were then assessed with regression and path analyses, with separate models developed to test the relationships between specific mediators (i.e., each DMQ-R scale) and the dependent variables (i.e., DDQ, subscales of the CAPS-r and YAACQ). Moderation models of racial identity were proposed but not conducted due to the large discrepancy between students identified solely as Black American ( $n=117$ ), African-American ( $n=32$ ), and Caribbean/West Indian American ( $n=1$ ).

## Results

### Reliability

Internal reliability for the DMQ-R, CAPS-r, YAACQ, MEIM-R, and their subscales were evaluated using Cronbach's alpha. For the DMQ-R, coefficient alphas were .85 for the Social subscale, .67 for the Coping-Anxiety subscale, .91 for the Coping-Depression subscale, .87 for the Enhancement subscale, .89 for the Conformity subscale, and .94 for the total DMQ-R scale. For the CAPS-r, coefficient alphas were .82 for the Personal Problems subscale, .76 for the Social Problems subscale, and .79 for the total CAPS-r scale. For the YAACQ, coefficient alphas were .75 for the Social-Interpersonal subscale, .61 for the Impaired Control subscale, .76 for the Self-Perception subscale, .67 for the Self-Care subscale, .68 for the Risky Behaviors subscale, .52 for the Academic/Occupational subscale, .39 for the Physical Dependence subscale, .75 for the Blackout Drinking subscale, and .91 for the total YAACQ scale. The Academic/Occupational and Physical Dependence subscales were endorsed by less than 8 students and below Clark and Watson's (1995) .60 cut off for adequate reliability so its items were removed, resulting in a .90 coefficient alpha for the total YAACQ scale. For the MEIM-R, coefficient alphas were .77 for the Exploration subscale, .85 for the Commitment subscale, and .88 for the total MEIM-R scale.

Judging items solely on adequate internal consistency could be misleading because high internal consistency ( $\alpha > .90$ ) could be the product of using a large number of items and/or redundant items (Haynes, Smith, & Hunsley, 2011). The DMQ-R total ( $\alpha = .94$ ), DMQ-R Coping-Depression subscale ( $\alpha = .91$ ), and YAACQ total ( $\alpha = .90$ ) (after the low internal

consistency subscales were removed) exhibited high internal consistency. Examination of the DMQ-R and YAACQ items appear to suggest that the items measure their respective subscales and do not significantly overlap. However, both the DMQ-R and YAACQ had a large number of items (28 and 39 items respectively) compared to the CAPS-r (8 items) and MEIM-R (6 items) so it is possible that the number of items was a factor in the high internal consistency.

### **Concurrent Associations**

A series of correlations were conducted to determine the relationship between measures of alcohol use, alcohol-related consequences, and ethnic pride (see Table 1). The DDQ's measure of alcohol consumption in a typical week and binge drinking during the previous 30 days were positively correlated with each other and the DMQ-R, CAPS-r, YAACQ, and their respective subscales. This suggested that, as drinking motives increased, alcohol consumption, binge drinking, and alcohol-related negative consequences also increased. The exception was that the Self-Perception subscale of the YAACQ was not correlated with alcohol use ( $r=.056$ ,  $p=.451$ ) or binge drinking ( $r=.074$ ,  $p=.323$ ), suggesting that students were not experiencing negative self-perception (e.g., feeling bad, unhappy, guilty, or depressed) because of alcohol use or binge drinking.

In addition to the total scores correlating, the subscales of these measures were also positively correlated with other subscales of the same measure, the total score of the measure, and the subscales and total scores of the other measures. This finding suggested that increased motives to consume alcohol contribute to increased alcohol-related negative consequences. The exception was that the DMQ-Conformity and CAPS-Personal subscales were not correlated ( $r=.086$ ,  $p=.243$ ), suggesting that students who drank to fit in with others were not experiencing personal consequences (e.g., depression, irritability, feeling bad, or problems with

sleep/appetite). Overall, it appeared that the measures were valid representations of alcohol use, motives for consumption, and associated negative consequences for this HBCU sample.

The MEIM-R and its subscales were positively correlated with each other, but not with the measures of alcohol use, motives, alcohol-related consequences, or their respective subscales. This suggested that increased ethnic pride did not increase drinking motives, alcohol use, or its related consequences. However, the MEIM-R total score and MEIM-Exploration subscale were negatively correlated with the DMQ-Coping-Depression and DMQ-Conformity subscales, suggesting that students who were more likely to explore their culture and traditions were less likely to drink alcohol to cope with depression or increase alcohol consumption to fit in with their friends.

Correlations were also calculated for potential risk/protective factors of alcohol use, marijuana use, and ethnic pride (Table 2). Alcohol use during the typical week and binge drinking were positively correlated with perceived peer pressure and marijuana use, but were not correlated with attendance at church/religious services, perceived support from HBCU faculty/staff, or knowledge of the alcohol use/possession policies on campus. This suggested that increased peer pressure was related to increased consumption of alcohol and marijuana use, but the hypothesized protective factors (e.g., religion, HBCU support, and campus policies on alcohol) were not effective in decreasing use or negative consequences. Perceived peer pressure was also positively correlated with the DMQ-R, CAPS-r, and YACCQ total scores, suggesting that peer pressure increased both the motives to consume alcohol and alcohol-related negative consequences experienced by students. Although the MEIM-R and its subscales were not correlated with alcohol use, its associated problems, or the hypothesized protective or risk (e.g., peer pressure) factors, they were positively correlated with marijuana use. Specifically, the

MEIM-Commitment subscale and the MEIM-R total score were positively correlated with marijuana use in the previous 30 days, suggesting that students who reported increased commitment to their ethnic group (i.e., strong sense of belonging to ethnic group, understands what membership in the group means to them, and feeling a strong attachment towards ethnic group) were more likely to report marijuana use.

### **Regression Analyses**

Regression analyses were first conducted to determine if ethnic pride and/or its subscales could be used to directly predict the motives to consume alcohol, alcohol use, or alcohol-related negative consequences (Table 3). First, the MEIM-R total score was used to predict DMQ-R, alcohol use in a typical week, CAPS-r, YAACQ, and its respective subscales. As expected from the correlation analyses, the MEIM-R total did not predict alcohol use or its related consequences, but there was a significant negative relationship between ethnic pride and drinking to cope with depression (i.e., DMQ-R Cope-Depression) and drinking to conform with social pressures (i.e., DMQ-R Conformity). This suggested that there isn't a direct relationship between ethnic pride and alcohol use/problems, but students endorsing increased ethnic pride reported decreased instances of drinking to cope with depression and fitting in with social group.

Second, the same analyses were run with the MEIM-R subscales separated to determine if exploration of ethnic pride (i.e., MEIM-Exploration) or commitment to ethnic group (i.e., MEIM-Commitment) better predicted alcohol use and related problems. The MEIM-R Exploration subscale only had a significant negative relationship with DMQ-R Cope-Depression and DMQ-R Conformity, similar to the MEIM-R total score, but MEIM-R Commitment was not significant with drinking motives, alcohol use, or related problems. This suggested that students who reported increased exploration of their ethnic pride were less likely to consume alcohol to

cope with depression or conform to social pressures. Commitment to ethnic group was not significantly related to alcohol consumption motives, alcohol use, or related consequences.

Third, the DMQ-R total and its Cope-Depression and Conformity subscales were used to determine direct relationships of drinking motives with alcohol use and related negative consequences (Table 4). The DMQ-R total and its Cope-Depression and Conformity subscales were all significantly positively related to alcohol use and its related problems, with the exception of the Conformity subscale not predicting personal problems related to alcohol consumption (i.e., CAPS-r Personal). This suggested that students who reported increased motives to consume alcohol, particularly those who drink to cope with depression and to fit in with their social groups, consume more alcohol during the typical week and experience increased alcohol-related negative consequences. The exception is that students who drink to conform to social pressures do not appear to be experiencing personal consequences (e.g., depression, irritability, feeling bad about self, or problems with sleep/appetite). Thus, consistent with analytic strategies proposed by Baron and Kenny (1986), regression analyses provided evidence that a potential full mediation existed, with the relationship from ethnic pride to alcohol use and its related negative consequences being mediated through drinking motives. Path analyses were performed to examine these relationships.

### **Path Analyses**

Path analyses were conducted in Mplus version 6.12 (Muthén & Muthén, 2010) to explore potential models of ethnic pride (i.e., MEIM-R), mediated by drinking motives (i.e., DMQ-r), on alcohol use (i.e., DDQ) and related problems (i.e., CAPS-r and YAACQ) for this HBCU sample (Table 5). Model 1 explored the effect from the ethnic pride total (i.e., MEIM-R) to alcohol use and related problems through alcohol consumption motives total (i.e., DMQ-R).

The model fit indices suggested an adequate fit utilizing cutoffs suggested by Hu and Bentler (1999), but there was no direct effect of ethnic pride on drinking motives (estimate =  $-.19$ ,  $p=.40$ ) and the subsequent indirect effects were also not significant: ethnic pride on alcohol use (estimate =  $-.03$ ,  $p=.40$ ), CAPS-r (estimate =  $-.04$ ,  $p=.40$ ), and YAACQ (estimate =  $-.04$ ,  $p=.40$ ).

Model 2 explored the indirect path from the MEIM-R subscales (i.e., Exploration and Commitment) to alcohol use and related problems through the DMQ-R subscales (i.e., Social, Cope-Anxiety, Cope-Depression, Enhancement, and Conformity). The model fit indices suggested poor fit and the indirect effects of each MEIM-R subscale to alcohol use and related consequences through each DMQ-R subscale were not significant. However, the Exploration subscale of the MEIM-R had a significant effect on the Cope-Depression (estimate =  $-.44$ ,  $p<.05$ ) and Conformity (estimate =  $-.24$ ,  $p<.05$ ) subscales of the DMQ-R so those variables were further explored.

Model 3 examined the indirect path from the MEIM-Exploration subscale to alcohol use and related problems through the DMQ-R Cope-Depression and Conformity subscales. The model fit indices suggested poor fit and the indirect effects from MEIM-Explore to DDQ (estimate =  $-.01$ ,  $p=.72$ ), CAPS-r (estimate =  $-.02$ ,  $p=.59$ ), and YAACQ (estimate =  $-.02$ ,  $p=.47$ ) through DMQ-Conformity were not significant. However, the indirect effects from MEIM-Explore to DDQ (estimate =  $-.09$ ,  $p<.05$ ), CAPS-r (estimate =  $-.14$ ,  $p<.05$ ), and YAACQ (estimate =  $-.17$ ,  $p<.05$ ) through DMQ-Cope-Depression were each significant so a more parsimonious model was examined.

Model 4 explored the indirect path from MEIM-Explore to alcohol use and related consequences through DMQ-Cope-Depression and the model fit indices suggested a good fit. The indirect effects to DDQ (estimate =  $-.10$ ,  $p<.01$ ), CAPS-r (estimate =  $-.15$ ,  $p<.05$ ), and

YAACQ (estimate =  $-.18$ ,  $p < .05$ ) were each significant (Figure 4). Additionally, the bootstrap test (Preacher & Hayes, 2004; 2008) was performed with 5000 samples and the 99% Confidence Interval for the DDQ ( $-.201$ ,  $-.016$ ), CAPS-r ( $-.356$ ,  $-.024$ ), and YAACQ ( $-.398$ ,  $-.027$ ) all excluded zero, which suggested that the indirect effects were significant. The results suggest that the most parsimonious full mediation model has the exploration of ethnic identity effecting alcohol consumption and related negative consequences through the motivation to consume alcohol to cope with depression. Specifically, HBCU students who reported higher exploration of ethnic identity had less motivation for drinking to cope with depression, which decreased their alcohol consumption and related consequences. It should be noted that power estimates of this model was low (power =  $.19$ ), likely due to the small sample size ( $N = 183$ ) and degrees of freedom ( $df = 3$ ).



## Discussion

### **Mediation Model**

The present study sought to examine the influence of ethnic pride/identity on drinking motives, alcohol consumption and its related negative consequences. The initial hypothesis suggested a partial mediation (i.e., ethnic pride/identity directly effects alcohol consumption and its consequences but the effect is strengthened when mediated by drinking motives) based on Pugh and Bry's (2007) finding that ethnic identity was negatively correlated with alcohol use. Baron and Kenny (1986) suggested that partial mediation models are more practical to assume, but James, Mulaik, and Brett (2006) suggested that testing only the indirect path yields a more parsimonious model. Initial correlation and regression analyses suggested that no direct relationship existed between exploration of ethnic identity and alcohol use/related problems so only the indirect relationship was tested. Utilizing the decision tree for establishing mediation provided by Zhao, Lynch, & Chen (2010), a full mediation appeared to be the most parsimonious model because: 1) the indirect effect of MEIM-Exploration on DDQ, CAPS-r, and YAACQ when mediated by DMQ-Coping-Depression was significant; and 2) the direct effect of MEIM-Exploration on DDQ, CAPS-r, and YAACQ was not significant. Thus, increased exploration of one's ethnic identity decreased the motivation to drink in order to cope with depression, which in turn decreased alcohol consumption and its related negative consequences.

Previous studies have found that African-Americans with strong racial identities had better psychosocial outcomes for psychological distress (Cokley, 2007). In terms of depression, Neville and Lily (2000) found that African-Americans who reported greater acceptance of their

ethnic identity and endorsed more openness to other cultures and worldviews had lower levels of depression compared to those who were not as open. Similarly, researchers have also found that African-Americans with positive perceptions of their ethnic group experienced fewer symptoms of depression (Bynum, Best, Barnes, Burton, 2008; Sellers, Copeland-Linder, Martin, & Lewis, 2006; and Settles, Navarrete, Pagano, Abdou, & Sidanius, 2010). These findings support the results of the current study that a positive perception and openness to exploring one's ethnic identity and culture are protective factors for depression related drinking motives, which in turn decrease alcohol use and its negative consequences. It should be noted that symptoms of depression were not directly assessed in this study so a direct link between ethnic pride/identity, depression, and depression-related drinking motives could not be established. Although both Kapner (2008) and Tyree (2008) suggested that the HBCU environment was the contributing factor in decreased alcohol consumption among African-American students, it appears that the HBCUs continual promotion and development of African-American pride/identity among students (Roebuck & Murty, 1993) is the underlying factor.

The current study found full mediation of ethnic pride/identity on alcohol use and related consequences through drinking motives related to depression, but previous studies have reported direct effects (Brook et al., 1998; Caldwell et al., 2004; Corneille & Belgrave, 2007; and Settles et al., 2010). In particular, Pugh and Bry (2007) examined alcohol use with African-American college students attending a large public university in the northeast using the MEIM measure and found significant negative correlations between high ethnic pride and alcohol consumption. Taken together, these results may suggest that a partial mediation better accounts for the relationship between ethnic pride/identity and alcohol use and related consequences among African-American college students. However, it is possible that sample differences (i.e., large

public university versus HBCU) influenced the contrasting findings, and the full mediation is specific to HBCU students. As Cox and Klinger's (1988) motivational model proposed, there are various sociocultural environmental factors that can influence an individual's alcohol consumption motives. Specifically, they suggested that the net total of behaviors related to positive and negative affect influences an individual's decision to consume alcohol or not. The promotion of African-American pride/identity at HBCUs may function to increase the quality and quantity of positive affect to buffer against consuming alcohol to cope with existing negative affect (e.g., depression). Those attending non-HBCUs may be consuming alcohol to cope with negative affect because positive affect from ethnic pride/identity is not being cultivated in that environment. This implication dovetails with previous findings that African-American adolescents and adults are more likely to consume alcohol to cope with negative affect compared to Caucasian adolescents and adults who are more likely to drink to enhance positive affect (Cooper, Russell, Skinner, Frone, & Mudar, 1992; Cooper et al., 2008; Jones-Webb, Jacobs, Flack, & Liu, 1996).

Coupled with previous findings, results from the current study suggested that ethnic pride/identity and negative affect (e.g., depression) are important factors when it comes to alcohol use among African, Black, and Caribbean/West Indian Americans. These implications may benefit clinicians assessing or treating this population in various settings (e.g., university counseling centers, outpatient clinics, hospitals, etc.) for alcohol abuse or depression because problems in one domain may suggest problems in the other. In other words, African, Black, and/or Caribbean/West Indian Americans presenting with symptoms of depression should be evaluated for alcohol abuse and individuals presenting with alcohol abuse should be assessed for depression. Educators at all levels (i.e., elementary school through college) should consider

integrating more diversity topics into their lesson plans to promote openness toward other cultures and ethnicities and develop ethnic pride/identity among their students.

### **Psychometric Properties**

The current study also sought to examine the psychometric properties of measures developed and typically used with Caucasian students. Measures of alcohol use (i.e., DDQ), alcohol-related negative consequences (i.e., CAPS-r and YAACQ), alcohol consumption motives (i.e., DMQ-R), and ethnic pride/identity (i.e., MEIM-R) were utilized to explore the protective effects of ethnic pride on alcohol use and related problems. With the exception of the CAPS-r and MEIM-R, the measures were typically developed and validated with Caucasian samples, but used with other racial groups without further validation. As Midanik, Greenfield, and Bond (2007) pointed out, using measures not validated for a population makes the assumption that the different populations share similar characteristics, which can lead to overemphasis or omission of actual factors in the population of interest. Thus, the reliability and validity of the measures were evaluated for use with an African, Black, and Caribbean/West Indian American students attending a HBCU in the southeast.

The coefficient alphas of each measure and their subscales were above the .60 cut off Clark and Watson (1995) suggested for adequate internal consistency, with the exception of the Academic/Occupational and Physical Dependence subscales of the YAACQ. Examination of the items for these two subscales showed that the majority of items were only positively endorsed by less than 10 of the 183 students in the sample. This suggested that participants were experiencing few consequences related to school, work, and physical dependence resulting from alcohol consumption. Given the low average of standard drinks consumed in a typical week for male (3.24) and female (2.67) students, it is possible that they are not consuming enough alcohol

on a consistent basis to develop symptoms of physical dependence. In terms of problems at school and/or work, Read et al. (2007) reported that the Academic/Occupational subscale of the YAACQ was not a significant predictor of academic success. This may suggest that if students are experiencing academic/occupational difficulties, the subscale does not adequately assess it.

The validity of the measures was evaluated by comparing the correlations of their total scores and subscales. As hypothesized, the DDQ, DMQ-R, CAPS-r, YAACQ and their respective subscales were positively correlated. Specifically, subscales were positively correlated with the total score of its respective measure and each measure and its subscales were also correlated with total scores and subscales of the other measures. This suggested that increases in drinking motives and alcohol consumption correspond to increases in alcohol-related negative consequences and vice versa. Although previous studies have not examined these measures together, psychometric properties similar to the current study were found when utilized with African-American and predominately Caucasian adolescent and college student samples. For example, the DMQ-R (Grant et al., 2007), CAPS-r (West & Graham, 2001), and YAACQ (Read et al., 2007) subscales were generally significantly positively correlated with each subscale within its respective measure. Internal reliabilities of the subscales and measure total scores for the DMQ-R (Cooper et al., 2008), CAPS-r (West & Graham, 2001), YAACQ (Read et al., 2007), and MEIM-R (Phinney & Ong, 2007) were above the .60 cut off suggested by Clark and Watson (1995). Correlations also existed between the DMQ-R (Cooper, 1994), CAPS-r (West & Graham, 2001), and YAACQ (Devos-Comby & Lange, 2008; Read et al., 2007) when compared to alcohol use and related negative consequences. This speaks to the generalizability of the findings and increases our confidence when using these measures with HBCU samples.

Also as hypothesized, the MEIM-R subscales were positively correlated with each other, the total score, and none of the other measures. However, they were only negatively correlated with the DMQ-R Coping-Depression and Conformity subscales. This result was in contrast to Pugh and Bry's (2007) findings that increased ethnic pride/identity had a significant negative correlation with alcohol use among African-American college students, but it suggested that a full mediation was a potential explanation of the relationship between ethnic pride/identity, alcohol use, and its related consequences for HBCU students. Taken together, it appeared that the measures discussed above are reliable and valid measures of alcohol use, drinking motives, alcohol-related negative consequences, and ethnic pride/identity with African, Black, and Caribbean/West Indian American students attending a HBCU.

### **Other Notable Findings**

For the HBCU participants in this study, the average number of standard drinks consumed in a typical week (3.24 for males and 2.67 for females) appeared to support previous findings that African-Americans drink less than the majority of other racial groups (Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention, 2007; SAMHSA; 2008). However, the current sample is consuming almost double the average number of standard drinks in a typical week (2.86 versus 1.40) when compared to the sample of 14 HBCUs reported by Meilman, Presley, and Cashin (1995). Reports of binge drinking in this sample (41.9% of males and 44.7% of females) were also higher compared to previous studies; for example, 23.3% of African-American students attending multiple non-HBCU universities reported binge drinking (Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention, 2007) and 22.5% of African-American students attending 14 different HBCUs reported binge drinking (Meilman, Presley, & Cashin, 1995). Although these rates are still low compared to Caucasian

college students, the large increase compared to other African-American samples was surprising. It is possible that the influence of spring break 2 weeks before data collection increased alcohol consumption among this sample. More research will have to be conducted to determine if these rates were sample specific or if there has been an increase in alcohol consumption rates among African, Black, and Caribbean/West Indian American HBCU students.

Results from correlation and regression analyses appeared to indicate that attending religious/spiritual services, knowledge about the alcohol-free campus policies, and perceived support from HBCU faculty/staff did not affect drinking motives, alcohol consumption in a typical week, or alcohol-related negative consequences. Research in these areas have produced mixed results in terms of how each factor influenced alcohol use and related consequences. In terms of religion, Poulson, Bradshaw, Huff, and Peebles (2008) reported that increased attendance at religious/spiritual services decreased overall alcohol use, but individuals who drank consumed more alcohol and experienced increased negative consequences. In terms of alcohol-free campus policies, Wechsler, Lee, Gledhill-Hoyt, and Nelson (2001) reported that banning alcohol on campus increased abstinence and decreased binge drinking, but alcohol-related consequences did not change. In comparing dry campuses and campuses with varying alcohol policies, Taylor, Johnson, Voas, and Turrisi (2006) found that alcohol use and negative consequences were similar regardless of the policies in place. In terms of HBCUs providing an environment with increased support from faculty and staff, it appeared that the promotion and development of African-American pride/identity was the more important environmental factor.

An interesting finding from the correlation analyses was that marijuana use in the last 30 days was positively correlated with ethnic pride/identity, specifically the Commitment subscale (e.g., having a strong sense of belonging to one's ethnic group, understanding the meaning of

one's ethnic group membership, and feeling a strong attachment toward one's ethnic group). Reports of marijuana use in the last 30 days from this sample (38.1% of males and 29.8% of females) were higher compared to rates from previous studies; for example, 9% of African-American students attending a non-HBCU university in the south reported smoking marijuana in the last 30 days (Globetti, Globetti, Lo, & Brown, 1996) and 23.9% of African-American students attending a HBCU in the south reported marijuana use in the past week or was high in the past month (Poulson et al., 2008). Previous studies have not explored ethnic pride/identity and marijuana use among African-American college students, but one study has suggested that marijuana functions as a gateway drug for African-American youth. Specifically, Kandel and Yamaguchi (2002) proposed that alcohol and cigarettes serve as gateways to illicit substances (e.g., cocaine and heroin) for most racial groups, but Vaughn, Wallace, Perron, Copeland, and Howard (2008) found that African-American adolescents were more likely to initiate marijuana use before cigarettes. The researchers suggested that the finding was a cultural artifact that is not well understood. Perhaps there is a relationship between marijuana use and ethnic pride/identity and more research will need to be conducted to examine these findings.

### **Limitations and Future Directions**

A limitation of the current study was the small sample size, which likely contributed to the lack of participants identified as African and Caribbean/West Indian Americans. A number of practical issues (e.g., cost and HBCU participation) precluded the current study from obtaining a larger sample size. Previous studies (e.g., Dundas et al, 2001; King et al., 1999) have found differences in alcohol consumption among diverse populations typically categorized as Black/African-American so racial identity may moderate alcohol use. Future studies should try



to coordinate participation from multiple HBCUs to obtain a large sample with better distribution of African, Black, and Caribbean/West Indian American participants.

Another limitation of the current study was that it examined alcohol use and related consequences at only one HBCU instead of multiple HBCU and/or non-HBCUs. The findings cannot be generalized to African, Black, and Caribbean/West Indian American students attending other HBCUs or those attending non-HBCUs. Future studies should consider collecting data from multiple institutions to better examine the protective factors of the HBCU environment proposed by Kapner (2008) and Tyree (2008). Utilizing multiple institutions would also allow researchers to better understand if a full or partial mediation of ethnic pride/identity on alcohol use and related negative consequences through motives exists. Inclusion of other racial groups may allow researchers to determine if ethnic pride/identity is only a protective factor of alcohol use and related consequences for African, Black, and Caribbean/West Indian American adolescents and college students.

Although multiple measures were used to measure alcohol use and its related negative consequences, only one measure was used to measure ethnic pride/identity and only one item was used to measure marijuana use, attendance at religious/spiritual services, perceived support from HBCU faculty/staff, and knowledge of alcohol-free campus policies. Time constraints prevented the use of multiple questionnaires to measure each of these factors so concurrent validity could not be established. Future studies should consider using additional questionnaires to more fully explore the role of each factor in its effect on alcohol use and related problems. For example, directly measuring ethnic pride/identity, depression, and depression-related drinking motives can help fully explore the model suggested by this study. Additionally, Osborn, Thombs, and Olds (2007) suggested that feedback from participants can also provide

researchers with information on relevant and irrelevant items for particular racial and/or cultural group. In the current study, alcohol-related consequences related to academic/occupational difficulties and physical dependence were endorsed by only a few participants. Obtaining feedback will help improve the reliability and validity of measures that were not originally developed with the population of interest.

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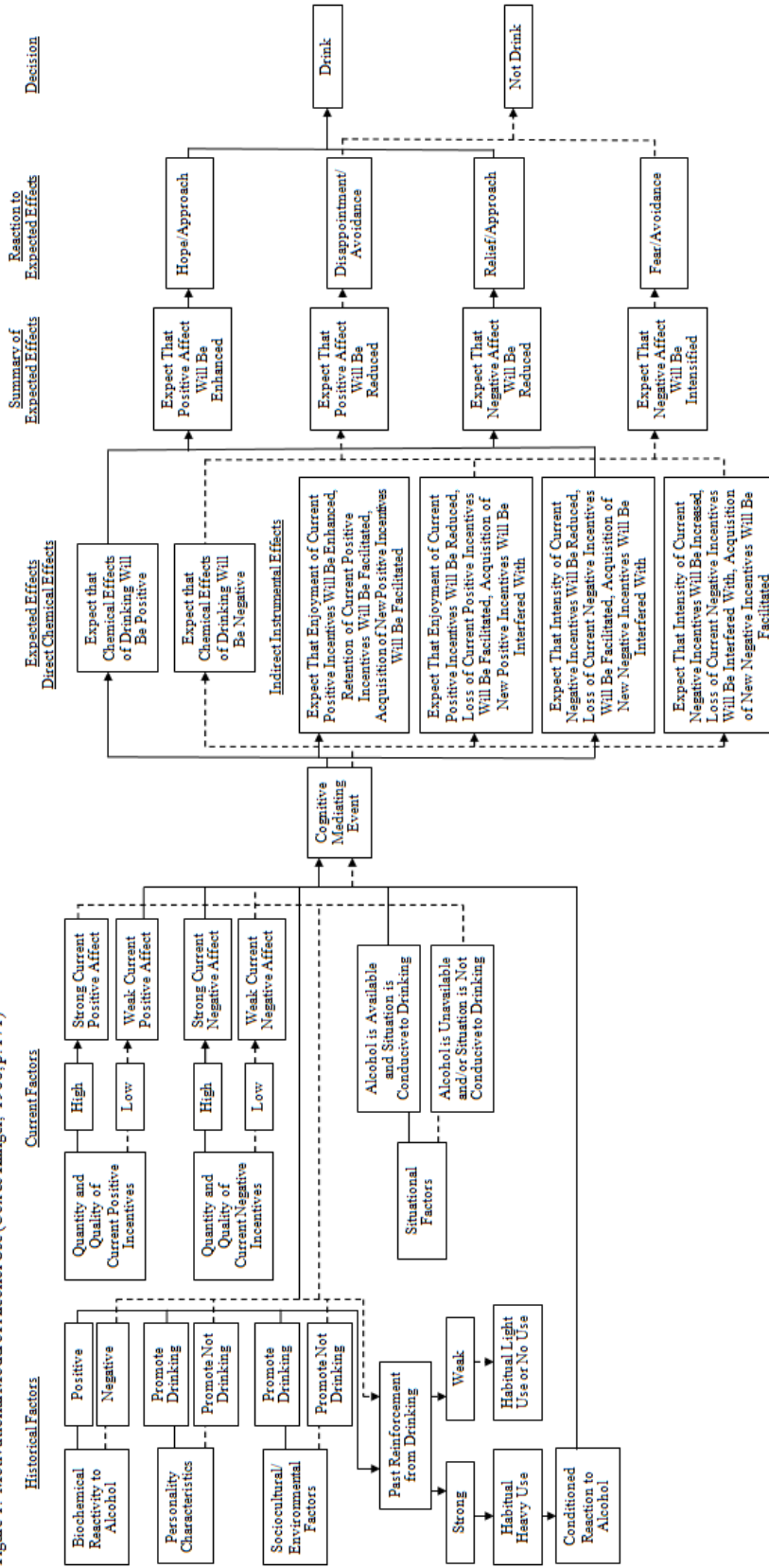
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Figure 1. Motivational Model of Alcohol Use (Cox & Klinger, 1988, p. 171)



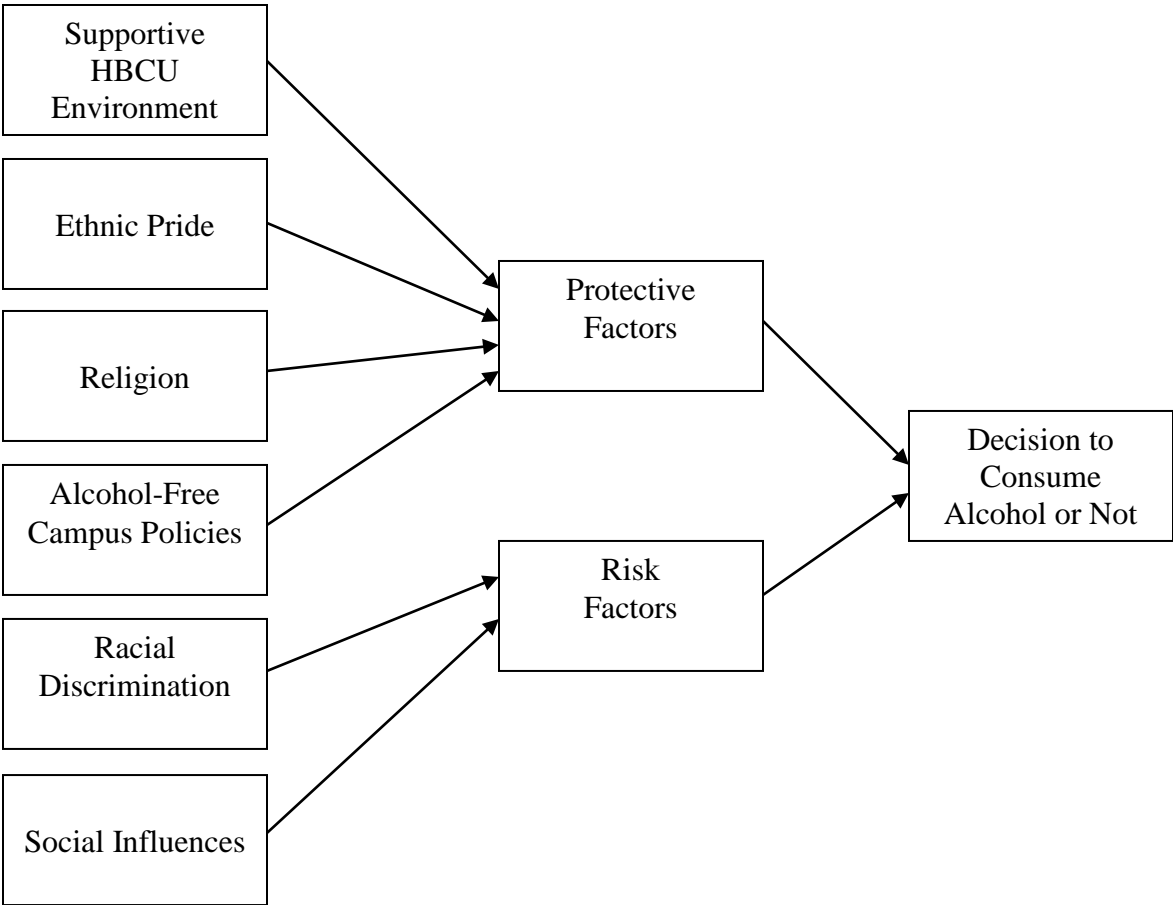


Figure 2. Proposed model of alcohol use influences among Black, African, and Caribbean/West Indian American college students.

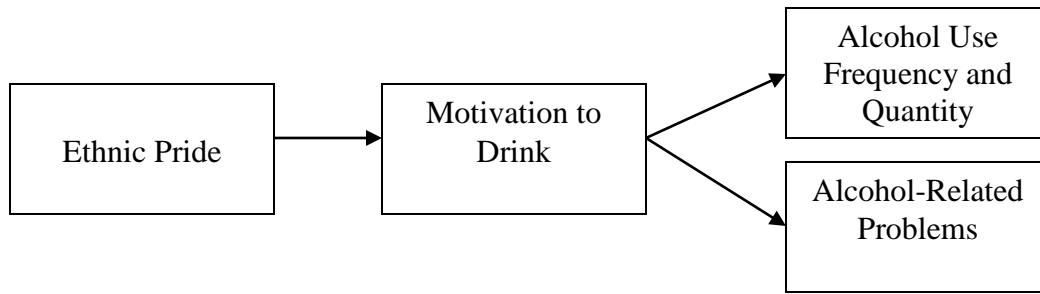


Figure 3. Proposed motivational model of alcohol use for Black, African, and Caribbean/West Indian Americans attending a HBCU.

Table 1  
Correlations of Alcohol Related Measures and Ethnic Pride

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Alcohol Typical Week	1																				
2. Binge Drinking	.77***	1																			
3. DMO-Social	.68***	.57***	1																		
4. DMO-Cope-Anxiety	.56***	.51***	.62***	1																	
5. DMO-Cope-Depression	.32***	.40***	.45***	.68***	1																
6. DMO-Enhance	.59***	.54***	.79***	.66***	.54***	1															
7. DMO-Conformity	.21**	.28***	.36***	.41***	.58***	.45***	1														
8. DMO-Total	.63***	.59***	.86***	.83***	.77***	.89***	.38***	1													
9. CAPS-Personal	.25**	.15*	.32***	.30***	.34***	.33***	.09	.38***	1												
10. CAPS-Social	.64***	.51***	.59***	.43***	.30***	.58***	.33***	.58***	.36***	1											
11. CAPS-Total	.59***	.46***	.59***	.47***	.39***	.56***	.26***	.60***	.74***	.86***	1										
12. YAACQ-Social-Interpersonal	.55**	.47***	.50***	.44***	.36***	.46***	.22**	.51***	.30***	.36***	.43***	1									
13. YAACQ-Impaired Control	.63***	.50***	.60***	.54***	.38***	.53***	.16*	.61***	.30***	.45***	.47***	.59***	1								
14. YAACQ-Self-Perception	.06	.07	.22**	.23**	.27***	.29***	.36***	.31***	.32***	.17*	.28***	.48***	.22**	1							
15. YAACQ-Self-Care	.31***	.35***	.29***	.33***	.41***	.39***	.40***	.40***	.27***	.24**	.33***	.47***	.28***	.53***	1						
16. YAACQ-Risk Behaviors	.60***	.52***	.55***	.52***	.40***	.50***	.26***	.57***	.23**	.55***	.51***	.59***	.60***	.34***	.41***	1					
17. YAACQ-Blackout Drinking	.60***	.50***	.61***	.50***	.37***	.59***	.27***	.62***	.25**	.49***	.48***	.55***	.59***	.31***	.32***	.37***	1				
18. YAACQ-Total	.69***	.57***	.66***	.59***	.46***	.64***	.30***	.69***	.37***	.52***	.57***	.83***	.79***	.52***	.58***	.83***	.83***	1			
19. MEIM-Exploration	.07	.01	.01	-.07	-.22***	-.70	-.23***	-.11	-.02	.05	.02	.08	.04	-.04	-.04	.01	.01	.01	1		
20. MEIM-Commitment	.11	.04	.09	-.03	-.14	.04	-.11	-.01	-.08	.08	.02	.08	.03	.04	-.04	.04	-.05	.06	.73***	1	
21. MEIM-Total	.01	.03	.06	-.06	-.19**	-.02	-.18*	-.07	-.05	.07	.02	.09	.04	.02	-.09	.01	.01	.04	.93***	.93***	1

\*p < .05

\*\*p < .01

\*\*\*p < .001

Table 2  
Correlations of Risk and Protective Factors

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Alcohol Typical Week	1												
2. Binge Drinking	.77***	1											
3. Marijuana Use	.37***	.26***	1										
4. Religious Attendance	-.08	-.08	.02	1									
5. HBCU Support	-.07	-.10	-.02	.12	1								
6. Alcohol Policy	-.02	-.08	-.03	-.01	.08	1							
7. Peer Pressure	.28***	.16*	.13	-.05	-.03	.05	1						
8. DMQ-Total	.63***	.59***	.24**	-.10	-.05	-.04	.32***	1					
9. CAPS-Total	.59***	.46***	.36***	-.06	-.06	-.06	.30***	.60***	1				
10. YAACQ-Total	.69***	.57***	.16*	-.09	.05	-.03	.28***	.69***	.57***	1			
11. MEIM-Exploration	.07	.01	.13	.06	.05	-.02	-.01	-.11	.02	.01	1		
12. MEIM-Commitment	.11	.04	.20**	-.02	.09	-.001	.03	-.01	.02	.06	.73***	1	
13. MEIM-Total	.10	.03	.18*	.02	.07	-.01	.01	-.07	.02	.04	.93***	.93***	1

\* $p < .05$

\*\* $p < .01$

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

Table 3

## Regression Analyses of MEIM-R and subscales with Motivation, and Alcohol Use/Problems

Predictor	B	SEB	$\beta$	t	R-Square
MEIM-R Total					
DMQ-R Total	-.19	.21	-.07	-.90	.00
DMQ-R Social	.06	.07	.06	.79	.00
DMQ-R Cope-Anxiety	-.03	.04	-.06	-.78	.00
DMQ-R Cope-Depression	-.18*	.07	-.19	-2.61	.04
DMQ-R Enhancement	-.01	.07	-.02	-.21	.00
DMQ-R Conformity	-.07*	.03	-.18	-2.44	.03
Alcohol Typical Week	.08	.06	.10	1.37	.10
CAPS-r Total	.02	.07	.02	.24	.00
CAPS-r Personal	-.03	.04	-.06	-.80	.00
CAPS-r Social	.06	.06	.07	1.00	.01
YAACQ Total	.03	.07	.04	.48	.00
YAACQ Social	.02	.02	.09	1.16	.01
YAACQ Control	.01	.02	.04	.51	.00
YAACQ Self-Perception	.00	.01	.02	.26	.00
YAACQ Self-Care	-.02	.01	-.09	-1.23	.01
YAACQ Risk	.00	.02	.02	.21	.00
YAACQ Blackout	.00	.02	.00	.05	.00
MEIM-R Exploration					
DMQ-R Total	-.58	.38	-.11	-1.52	.01
DMQ-R Social	.03	.13	.02	.20	.00
DMQ-R Cope-Anxiety	-.07	.06	-.08	-1.05	.01
DMQ-R Cope-Depression	-.38**	.13	-.22	-3.00	.05
DMQ-R Enhancement	-.11	.12	-.07	-.95	.01
DMQ-R Conformity	-.17**	.05	-.23	-3.12	.05
Alcohol Typical Week	.11	.10	.08	1.03	.01
CAPS-r Total	.03	.13	.02	.21	.00
CAPS-r Personal	-.03	.08	-.03	-.33	.00
CAPS-r Social	.07	.11	.05	.68	.00
YAACQ Total	.01	.13	.01	.09	.00
YAACQ Social	.04	.03	.08	1.07	.01
YAACQ Control	.02	.03	.04	.52	.00
YAACQ Self-Perception	.00	.02	.00	-.02	.00
YAACQ Self-Care	-.04	.02	-.13	-1.80	.02
YAACQ Risk	-.01	.03	-.02	-.21	.00
YAACQ Blackout	-.02	.04	-.04	-.55	.00
MEIM-R Commitment					
DMQ-R Total	-.06	.40	-.01	-.14	.00
DMQ-R Social	.17	.14	.10	1.28	.01
DMQ-R Cope-Anxiety	-.03	.07	-.03	-.40	.00
DMQ-R Cope-Depression	-.24	.13	-.14	-1.84	.02
DMQ-R Enhancement	.07	.12	.04	.58	.00
DMQ-R Conformity	-.08	.06	-.10	-1.40	.01
Alcohol Typical Week	.16	.11	.11	1.53	.01
CAPS-r Total	.03	.14	.02	.24	.00
CAPS-r Personal	-.09	.08	-.09	-1.16	.01
CAPS-r Social	.13	.11	.09	1.19	.01
YAACQ Total	-.06	.40	-.01	-.14	.00
YAACQ Social	.04	.04	.08	1.08	.01
YAACQ Control	.01	.03	.03	.44	.00
YAACQ Self-Perception	.01	.02	.04	.51	.00
YAACQ Self-Care	-.01	.02	-.04	-.48	.00
YAACQ Risk	.02	.03	.05	.62	.00
YAACQ Blackout	.03	.04	.05	.66	.00

\* $p < .05$ \*\* $p < .01$

Table 4

## Regression Analyses of Motivation and subscales with Alcohol Use/Problems

Predictor	<i>B</i>	<i>SEB</i>	$\beta$	<i>t</i>	R-Square
DMQ-R Total					
Alcohol Typical Week	.17***	.02	.63	10.90	.40
CAPS-r Total	.21***	.02	.60	10.16	.36
CAPS-r Personal	.08***	.01	.38	5.55	.15
CAPS-r Social	.16***	.02	.58	9.64	.34
YAACQ Total	.23***	.02	.69	12.78	.47
YAACQ Social	.04***	.01	.51	7.88	.26
YAACQ Control	.05***	.01	.61	10.25	.37
YAACQ Self-Perception	.01***	.00	.31	4.31	.09
YAACQ Self-Care	.02***	.00	.40	5.87	.16
YAACQ Risk	.05***	.01	.57	9.41	.33
YAACQ Blackout	.07***	.01	.62	10.69	.39
DMQ-R Cope-Depression					
Alcohol Typical Week	.25***	.06	.31	4.45	.10
CAPS-r Total	.40***	.07	.39	5.73	.15
CAPS-r Personal	.21***	.04	.35	4.94	.12
CAPS-r Social	.25***	.06	.30	4.15	.09
YAACQ Total	.46***	.07	.46	7.00	.21
YAACQ Social	.09***	.02	.36	5.12	.13
YAACQ Control	.09***	.02	.39	5.62	.15
YAACQ Self-Perception	.04***	.01	.27	3.81	.07
YAACQ Self-Care	.07***	.01	.41	5.98	.17
YAACQ Risk	.10***	.02	.40	5.91	.16
YAACQ Blackout	.12***	.02	.37	5.42	.14
DMQ-R Conformity					
Alcohol Typical Week	.39**	.14	.21	2.82	.04
CAPS-r Total	.63***	.17	.26	3.62	.07
CAPS-r Personal	.13	.11	.09	1.19	.01
CAPS-r Social	.66***	.14	.33	4.74	.11
YAACQ Total	.70***	.17	.30	4.20	.09
YAACQ Social	.14**	.05	.22	3.07	.05
YAACQ Control	.09*	.04	.16	2.16	.03
YAACQ Self-Perception	.12***	.02	.36	5.21	.13
YAACQ Self-Care	.17***	.03	.40	5.86	.16
YAACQ Risk	.15**	.04	.25	3.54	.07
YAACQ Blackout	.20***	.05	.27	3.71	.07

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

Table 5  
Results of Model Comparisons

Models	$\chi^2$	<i>df</i>	CFI	TLI	RMSEA	SRMR
Model 1 (MEIM-R Total -> DMQ-R Total -> DDQ, CAPS-r, YAACQ)	6.57	3	.99	.97	.08	.04
Model 2 (MEIM-R Subscales -> DMQ-R Subscales -> DDQ, CAPS-r, YAACQ)	486.46***	16	.46	-.46	.40	.27
Model 3 (MEIM-R Exploration -> DMQ- R Cope-Depression, Conformity -> DDQ, CAPS-r, YAACQ)	72.19***	4	.80	.24	.31	.13
Model 4 (MEIM-R Exploration -> DMQ- R Cope-Depression -> DDQ, CAPS-r, YAACQ)	4.83	3	.99	.98	.06	.05

*Note.*  $N=183$ ; \*\*\* $p<.001$

CFI, comparative fit index; TLI, Tucker-Lewis index; RMSEA, root mean square error of approximation; and SRMR, standardized root mean square



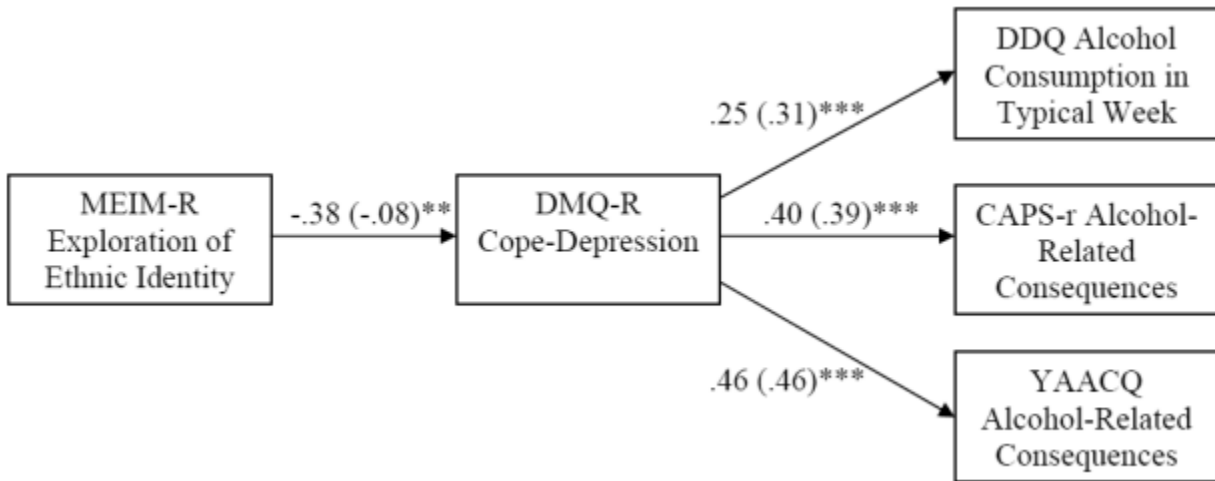


Figure 4. Mediation model of ethnic identity exploration, drinking to cope with depression, alcohol use, and alcohol-related negative consequences for Black, African, and Caribbean/West Indian Americans attending a HBCU. Note that  $\beta$  (standardized  $\beta$ ) are provided and  $**$  denotes  $p < .01$ , and  $***$  denotes  $p < .001$ .