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Predictors of Sexual Decision-Making and Behavior among HBCU Students

Implications for STI/HIV Prevention and Intervention

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ABSTRACT—Due to their enhanced risk for STIs, including HIV, the need for research to target young Black college students is substantial and there is a significant contribution to be made in understanding factors related to risk in an effort to design prevention interventions are specific to this group. The study included 351 Black students ($M=20.42$, $SD=1.71$, range 18–24 years) attending a Historically Black College/University (HBCU). Results reveal alcohol use and condom attitudes were the most significant predictors of sexual decision-making and behavior. The findings, along with implications, signal the need for more research with this population in order to increase prevention efforts.

KEYWORDS—African American, college, HBCU, STI, HIV, sexual behavior

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Introduction

The Centers for Disease Control and Prevention (CDC) estimate that youth between the ages of 15–24 make up approximately 25% of the sexually active population, yet they account for 50% of new sexually transmitted infections (STIs) that occur in the United States (US) each year (CDC, 2017). Surveillance data continues to show that numbers and rates of reported chlamydia and gonorrhea cases are highest in young people between the ages of 15 and 24 (CDC, 2018). STIs threaten the sexual and reproductive health of all adolescents and young adults (Browne, Clubb, Wang & Wagner, 2009), but are especially deleterious for women. Untreated STIs can cause cancer, pelvic inflammatory disease, infertility, and other health problems for women (USDHHS, 2012). STIs, including HIV are an urgent public health crisis for all Americans, but particularly for Black/African Americans¹ (CDC, 2018; Kaiser Family Foundation [KFF], 2020).

Black youth and emerging adults are disproportionately affected by HIV. The rates of HIV infection among young Black males in the 13–24 age range accounts for a large number of new HIV diagnoses in the US (USDHHS, 2016). In fact, among Blacks in the US, Black youth (male and female) have a disproportionately high incidence of HIV infection (KFF, 2020). The rate of new HIV diagnoses, per 100,000 among Black adolescents was eight times that of whites, and more than twice that of Latinos. Although many of the published psychological and public health studies utilize general college populations, there needs to be more of a focus on the sexual environments of African American students, who are at an increased risk for STIs and HIV infection when compared with their nonminority peers (Bazargan et al., 2000; Payne et al., 2006). The increasing number of STI/HIV cases among Black/African Americans young adults, many who are in college, necessitates further examination of risk-related factors.

The Sexual Milieu of Black College Students

There is a dearth of literature focusing on Black college students attending Historically Black Colleges and Universities (HBCUs) even though in 2016–2017, HBCUs enrolled 9% of the Black student population, but awarded one in seven undergraduate (14%) degrees received by Black students (US Department of Education, 2018). Preventing STIs/HIV in the HBCU environment is important for several reasons. One is that research indicates

that Blacks tend to have sex with those of the same race/ethnicity (CDC, 2010)—most HBCUs have Black populations of over 75% concentrated on the campus. Secondly, the highest rates of HIV infection among Blacks are among those living in Southern states—which are where the vast majority of HBCUs are located. Finally, and perhaps the most important reason is that HBCUs are often geographically located within Black communities (Treadwell et al., 2009) and have many similarities and challenges documented in broader psychological, social, and cultural contexts. Concerns that have a long history of documentation in STI/HIV related literature among college students such as inconsistent condom use (Lewis et al., 2009; Valentine et al., 2003; Younge et al., 2018), concurrent partnerships (Lewis et al., 2009; Pittman et al., 2019), casual sex (Grello, 2006; Pittman et al., 2019), younger age of sexual debut (Browne, 2008; Hayes, 2009; Hou, 2009) and alcohol and substance use in the context of sexual behavior (Gullette & Lyons, 2005) are all evident among students on HBCU campuses (Alleyne & Gaston, 2010; Thomas et al., 2008). Black HBCU students also report specific protective factors at similar or higher rates than White students at predominately White institutions (PWIs) including condom use and less substance use, yet still bear a disproportionate burden of STIs/HIV (Younge et al., 2013). The focus of this paper is to examine seven factors that are documented in the literature as psychosocial and sociocultural factors impacting sexual decision-making and subsequent sexual behavior among young Black college students. Predictors examined included ethnic identity, religiosity, mental health (depression and anxiety), substance use (alcohol and marijuana), and condom attitudes as predictors of sexual risk and/or protective behaviors. The implications of this study will be important in designing and instituting programs that focus on sexual health and preventing STI/HIV infection and transmission among students attending HBCUs.

Predictors of Sexual Decision-Making and Behavior

Ethnic Identity. Ethnic identity refers to how a person views themselves with respect to their cultural affiliation including cultural, behaviors, beliefs, and values (Phinney & Ong, 2007).

Several studies have found that stronger ethnic identity is associated with less risky drug use (Bowman Heads et al., 2018; Corneille & Belgrave, 2007)

and sexual attitudes (Belgrave et al., 2000), higher sexual refusal efficacy (Corneille & Belgrave, 2007; Salazar et al., 2004), less risky sexual behavior (Beadnell et al., 2003), and less alcohol and marijuana use (Pugh & Bry, 2007). Higher ethnic identity is thought to promote positive self-esteem (Phinney & Chavira, 1992; Smith et al., 1999) and serve as a component of health identity development for African American young people that may protect them from pressure to engage in risky sexual behavior and drug use (Townsend et al., 2010). Ethnic identity has shown a positive relationship with other factors, such as spirituality and religiosity, among African American youth and emerging adults.

Religiosity. Given that most HBCUs were founded with strong ties to religious institutions, an important characteristic to explore in this population is religiosity (Younge et al., 2013). Generally, the term 'religiosity' denotes attendance, beliefs, practices, and behaviors associated with religious organizations (Miller & Thoresen, 2003). There has been mixed results on the relationship between religiosity and sexual behavior. Thompson-Robinson et al. (2005) conducted a qualitative study with HBCU students and found that students perceived religiosity as having an impact on their decision to engage in sex. This theme was found to be more pronounced among women on campus than men. Kogan et al. (2008) conducted a study with 186 African Americans between the ages of 18–21 and found that high religiosity attenuated the impact of substance use on sexual risk behavior. Washington et al. (2009) found that for those students who indicated that religiosity was an important element in their lives were more likely to use condoms than those students for whom religion was not seen as important. The relationship between religiosity and sexual risk behaviors has been explored in research; however, the concept of spirituality and its relationship to sexual risk are less investigated. Spirituality, and religiosity, can be important resources for dealing with one's emotional and psychological distress.

Mental Health. The aversive nature of anxiety and depression may lead people to take measures to alleviate these states by engaging in alcohol/drug use and unprotected sex (Crepaz & Marks, 2001). Depression, in particular, has been found to be associated with increased sexual risk (Alvy et al., 2011; Khan et al., 2009; Lehrer et al., 2006). Studies with Black youth and young adults found that depressive symptoms were associated with sexual sensation-seeking, unprotected sex, the prevalence of STIs (Jackson et al.,

2015), and inconsistent condom use (Brown et al., 2006). Those with elevated anxiety among a sample of 680 African American young people were significantly less likely to use condoms (Turner et al., 2010). A recent meta-analysis of sexual risk reduction interventions designed for women found that studies that had a significant reduction in depressive symptoms were more likely to reduce sexual risk behaviors (Lennon et al., 2012). Additional research is needed to clarify the relationship between mental health and sexual risk reduction among groups disproportionately impacted by STIs, including HIV. Those students who may display depression and/or anxiety symptomology are also more likely to self-soothe and cope by engaging in substance use.

Substance Use. Alcohol and other drug (AOD) use alter judgment, remove inhibitions and engender high risk sexual behaviors (Adefuye et al., 2009). Hou (2009) conducted a study with Black HBCU students and White PWI students, and results indicate that HBCU students reported lower alcohol use than White students. However, for students who did use AOD, the frequency of use and use prior to a sexual encounter were reportedly associated with risky sexual behavior (Thomas et al., 2008). Jones et al. (2018) noted, in a study with 150 HBCU students, a significant positive relationship between risky sexual behavior and delinquency, as well as substance use/dependency and risky sexual behavior.

In a large study, Browne et al. (2009) sampled 1837 male freshmen enrolled at 34 HBCUs and found that regardless of the gender of their sexual partners, the consumption or use of AOD prior to sexual activity made them more prone to engaging in risky sexual behaviors. Young women in the Browne et al. (2009) study indicated that being under the influence of AOD was the highest barrier to engaging in safer sex practices (Duncan et al., 2002). In a study with 390 students, both men and women in the study were more likely to report having multiple sexual partners and inconsistent condom use if they reported AOD use (Adefuye et al., 2009). Inconsistent condom use can be directly impacted by one's attitude toward the importance of using condoms during sexual interactions.

Condom Attitudes. Inconsistent condom use is related to increased risk for STIs, including HIV. Black college students have reported more consistent condom use than their white collegiate counterparts. However, research indicates an important factor in whether or not students use condoms is attitudes and perceptions of condoms (Browne et al., 2009; Duncan et al.,

2002; Elifson et al., 2010). Among 824 sexually active African American college students across 24 HBCUs, 63.8% reported having used a condom in their previous sexual encounter. Those that engaged in spontaneous sexual encounters, did not feel at risk for HIV. In addition, their partner's perception of condom use was associated with choosing not to use a condom in their most-recent sexual encounter. Finally, over a third of the students sampled reported not using a condom during their most recent sexual encounter (El Bcheraoui et al., 2013).

Norwood and Zhang (2015) sampled 424 African American women college students and found that those participants with more norms associated with encouraging condom use amongst peers reported significantly more favorable attitudes towards condom use. Also, those concerned with embarrassment while purchasing a condom or the belief it would hinder sexual pleasure held unfavorable attitudes towards using condoms. Condom views and use aside, neither group felt HIV was a risk in the coming months (Norwood & Zhang, 2015). The women were less likely to use condoms when in a monogamous relationship due to testing and knowing their partner's status, trust, and the use of hormonal contraception for preventing pregnancy. However, they felt an increase of condom use came when there was suspicion of infidelity (McLaurin-Jones, Lashley & Marshall, 2017).

The literature on attitudes in condom use varies amongst males. In 1,117 first year male (94% self-identified as Black/African American) HBCU students, those that used a condom in their previous sexual encounter also held positive views towards condom use (Younge et al., 2018). A sample of 43 heterosexually active African American males felt it was difficult to communicate their sexual history, their sexual satisfaction, and to discuss condom use with their partners. These difficulties lead to challenges in finding intimacy and practicing safe sex/using condoms (Graham, Aronson, McCoy and Rhodes, 2016).

Purpose

A criterion sample of Black college students from an HBCU in the US completed a confidential survey. This manuscript is a part of a larger mixed-method study conducted on the campus of an HBCU. The broad objective of the larger study was to better understand STIs, including HIV risk among

Black college students by identifying the psychosocial, environmental, and cultural predictors of sexual decision-making and subsequent behavior.

Method

Participants

Participants were 351 Black undergraduate college students attending an HBCU located in a metropolitan area of the southeastern US. The ages of the students ranged from 18–24 ($M = 20.42$ years, $SD = 1.71$). Recruitment criteria for the study were that students self-identify as Black, full-time college student between the ages of 18–24, unmarried, not knowingly pregnant or attempting to become pregnant, not knowingly HIV positive, and must have engaged in sexual activity (vaginal and/or anal) within the past 12 months. Oral sex, as inclusion criteria, was not included as the rates of transmission are low. This study focused on penetrative sex, as it is a major mode of STI and HIV transmission among young Black men and women. See Table 1 for sociodemographic information.

** $p \leq .01$

Recruitment and Procedures

Participants were recruited on campus via Institutional Review Board (IRB)-approved fliers posted in common areas and through face-to-face (f2f) contact. The fliers provided the eligibility criteria, and indicated that students should contact the researcher if interested. Once contacted, a brief screening was administered to confirm eligibility. Those students who were recruited f2f were approved by a trained research student and shown the same flier posted around campus. The research assistants briefly explained the purpose of the study and asked students to look at the eligibility criteria and to indicate if they met all of the criteria and would be interested in participating in the study. Those who met the criteria were either given information to contact the researcher, or if they agreed, the research assistant took their contact information. Once students called to participate, they were screened to confirm eligibility and scheduled for survey administration.

Students completed the quantitative assessments in private on a laptop equipped with Computer Assisted Survey Information Collection (CASIC) Builder. CASIC Builder is used to collect data because computerized meth-

Table 1. Sociodemographic Information

<i>Variable</i>	<i>Entire Sample (N = 351)</i>	<i>Males (n = 152)</i>	<i>Females (n = 199)</i>
<i>Mean Age (SD)</i>	20.42 (1.71)	20.44 (1.72)	20.41 (1.70)
<i>Range</i>	18–24	18–24	18–24
<i>Sexual Orientation**</i>			
Heterosexual	81.5%	87.5%	76.8%
Gay/Lesbian/Bisexual	16.5%	11.2%	20.6%
<i>Educational Level</i>			
Freshman/Sophomore	41.3%	65.1%	38.2%
Junior/Senior	57.8%	52.6%	61.8%
<i>Current Relationship Status**</i>			
In a Committed Relationship	32.8%	27.6%	36.7%
In a Casual Relationship	11.1%	7.9%	13.6%
Not Currently Involved	47.9%	55.3%	42.2%
<i>Student Health Center</i>			
Ever used?*	65.5%	57.9%	71.4%
Use as primary healthcare provider?	15.2%	17.0%	14.0%
Ever had an HIV test?	73.2%	69.1%	76.4%
<i>Mean Age at first voluntary sexual intercourse (SD)*</i>	15.90 (2.06)	15.68 (2.29)	16.08 (1.86)
<i>Range</i>	6–22	6–21	10–22

Note. All categories do not add up to 100% as some small categories were not included in the table. * $p \leq .05$

ods have been shown to be highly successful as a means of gathering sensitive or personal data from participants. The study question appeared on the computer screen in a standard order (consistent questionnaire delivery), and participants were able to read them and complete the survey at their own pace. Additionally, each question required a formal response, including “N/A” or “refuse to answer” before participants were able to proceed to the next question. A member of the research staff helped the participant log on

to the system and helped him/her familiarize themselves with progressing through the survey. After determining that the participant was comfortable with the system, the research staff member left the room, unless assistance was requested. All participants were debriefed at the end of the survey and given contact information in case of follow-up questions or concerns. Participants were provided with a gift card worth \$25 for their time and effort.

Measures

Sociodemographic information collected from participants included gender, age, sexual orientation, educational status, current relationship status, age at first voluntary sexual intercourse, Student Health Center usage, and if they ever had an HIV test.

Ethnic Identity ($\alpha = .88$). Ethnic Identity was measured using the Multigroup Ethnic Identity Measure (MEIM; Phinney, 1992). The MEIM measures how participants feel about and/or react to their ethnic group. Participants are asked to indicate agreement or disagreement with 12 statements (from 1 = *I strongly disagree* to 4 = *I strongly agree*). Higher scores indicate more positive feelings/reactions to ethnic group.

Depression ($\alpha = .85$). The Patient Health Questionnaire (PHQ-9; Kroenke and Spitzer, 2002) was used to measure depressive symptomology. The PHQ-9 is a multipurpose instrument used for screening, diagnosing, monitoring, and measuring the severity of depression. Participants responded to the question, “*Over the past 2 weeks, how often have you been bothered by any of the following problems?*” by indicating the frequency (0 = *not at all* to 3 = *nearly every day*) on nine statements. Higher scores indicate higher levels/frequency of depressive symptoms.

Anxiety ($\alpha = .91$). Anxiety was measured using the Beck’s Anxiety Inventory (BAI; Beck et al., 1988). The BAI consists of 21 questions about how the participant has been feeling in the last week, expressed as common symptoms of anxiety (e.g., unable to relax, heart pounding or racing). Participants are asked to “*look at the list of common symptoms of anxiety and indicate how you have been bothered by that symptom during the past week, including today, by circling the number in the corresponding space in the column next to each symptom.*” Available options ranged from 0 = *not at all* to 3 = *severely, it bothered me a lot*. Higher scores indicate higher levels/frequency of anxiety.

Religiosity ($\alpha = .92$). Religiosity was measured by the Systems of Belief Inventory (SBI; Holland et al., 1998). The SBI-15R was designed to measure

religious and spiritual beliefs and practices, and the social support derived from a community sharing those beliefs. Participants responded to 15 questions using a Likert-type scale with 1 = *strongly disagree* to 4 = *strongly agree*. Higher scores indicate more religiosity.

Alcohol Use ($\alpha = .74$). This was measured by adapting an established alcohol scale (Boyer et al., 2008). Participants responded to three questions by indicating how strongly they agree or disagree with the statement, 1 = *strongly agree* and 5 = *strongly disagree*. The three questions were: 1) *I am more likely to have sex with someone I do not know very well after I have had a few drinks*; 2) *I enjoy sex more after I have had a few drinks of alcohol*; and 3) *I am more likely to have sex without condoms after I have had a few drinks of alcohol*. Higher scores represent less risky behavior.

Marijuana Use ($\alpha = .80$). This was measured by using the same three questions from the alcohol use scale and replacing “marijuana” with “alcohol.” Higher scores represent less risky behavior.

Condom Attitudes ($\alpha = .76$). Condoms attitudes were measured by adapting an established condom use scale (Boyer et al., 2008). Participants responded to five questions by indicating how strongly they agreed or disagreed with the statement. The Likert-type scale ranged from 1 = *strongly agree* to 5 = *strongly disagree*. Higher numbers represent less negative attitudes toward condoms.

Sexual Decision-Making and Behaviors. Questions pertinent to this study were taken from the author-developed and pilot-tested Sexual Experiences and Behaviors (SEB) portion of the survey. Two categories of experiences and behaviors were examined: 1) Different Partners; and 2) Last Sexual Encounter; and 3) STI and HIV-related Behavior.

Different Partners. Three questions asked about the number of different partners the student had a sexual encounter with within the past 12 months? Participants were able to indicate the number by choosing one of four options (1 = *one partner exclusively*, 2 = *one primary partner and one or more others*; 3 = *one or more partners who are friends (but no primary partner)*; or 4 = *one of more partners who were strangers (e.g., one-night stands)*).

Last Sexual Encounter. There were five individual questions with dichotomous (yes/no) response options to assess participants' behavior during their *last* sexual encounter: 1) unprotected vaginal intercourse; 2) protected vaginal intercourse; 3) unprotected anal intercourse; 4) protected anal intercourse; or 5) used AOD immediately prior to (or during) sexual encounter.

STI and HIV-related Behaviors. Two questions with dichotomous (yes/

Table 2. Means, Standard Deviations, and Ranges for Measures

<i>Variable</i>	<i>p</i>	<i>Overall (N=351)</i>	<i>Men (n=152)</i>	<i>Women (n=199)</i>
MEIM (M, SD)	.546	21.32 (4.72)	21.49 (4.64)	21.19 (4.78)
Range		6–30	6–30	6–30
Systems of Belief Inventory (M, SD)	.014	50.92 (7.85)	49.74 (7.60)	51.82 (7.93)
Range		17–60	17–60	17–60
PHQ-9 (M, SD)	.034	5.79 (4.88)	5.16 (4.80)	6.27 (4.89)
Range		0–27	0–27	0–27
Becks Anxiety Inventory (M, SD)	.087	6.90 (7.92)	6.07 (7.50)	7.53 (8.19)
Range		0–47	0–39	0–47
Alcohol Use (M, SD)	<.001	10.60 (3.40)	9.36 (3.41)	11.54 (3.08)
Range		3–15	3–15	3–15
Marijuana Use (M, SD)	<.001	11.43 (3.52)	10.36 (3.72)	12.26 (3.12)
Range		3–15	3–15	3–15
Condom Attitudes (M, SD)	.001	15.29 (4.66)	14.32 (4.41)	16.03 (4.72)
Range		5–25	5–25	5–25

no) response options were used to assess STI and HIV history: 1) have you ever tested positive for an STI? and 2) have you ever been tested for HIV? Three questions asked participants about their concern about contracting HIV ($1 = \text{not concerned at all}$ to $4 = \text{very concerned}$), which category of HIV transmission risk they were in ($1 = \text{very high risk}$ to $6 = \text{no risk}$), and knowledge about contracting HIV ($1 = \text{not much at all}$ to $10 = \text{a whole lot}$).

Results

Descriptive Analyses

Descriptive statistics for predictors are provided in Table 2. Gender differences were found in five of the eight predictor variables, Religiosity, $t(349) = -2.48, p = .014$; Depression, $t(349) = -2.13, p = .031$; Alcohol Use, $t(349) = -6.27, p < .001$; Marijuana Use, $t(349) = -5.20, p < .001$; and Condom Attitudes, $t(349) = -3.45, p = .001$. Women reported higher scores than men in

all five of those scales, and reported higher levels of religiosity and more depressive symptomology; however, they reported less risky alcohol and marijuana use, and more positive condom attitudes.

Main Effects

Analysis of Variance (ANOVA) was used to test for main effects of sexual orientation on the eight predictor variables. A main effect of sexual orientation was found for four of the eight variables: Religiosity, $F(4, 346) = 2.52, p = .04$; Depression, $F(4,346) = 4.43, p = .002$; Anxiety, $F(4,346) = 3.92, p = .004$; and Condom Attitudes, $F(4,346) = 2.47, p = .045$. Heterosexual ($M = 51.31, n = 286$) and Gay/Lesbian ($M = 50.78, n = 32$) reported higher religiosity than did those who identified as Bisexual ($M = 46.35, n = 26$). Heterosexual students ($M = 15.05, n = 285$) reported lower scores on condom attitude (more negative attitudes) scale than Gay/Lesbian ($M = 17.53, n = 32$) students.

Predictors of Sexual Decision-Making and Behavior

Different Partners. Frequencies revealed that 39.9% of the sample had sex with one partner exclusively in the past 12 months, 36.8% had sex with a primary partner and at least one other person, 19.9% with one or more partners who were friends, and 3.4% with one or more partners who were strangers. 'Strangers' was operationalized as someone who students did not know, nor did they have regular contact (i.e., a student in their class). A chi-square test of independence revealed a significant gender difference between the number of different partners participants' engaged in sexual activity with, $\chi^2(3, N = 351) = 15.226, p = .002, Cramér's V = .208$. Men were less likely to have sex with one partner exclusively but more likely to have sex with strangers than women were.

An ANOVA revealed that the category of different sexual partners in the past 12 months was positively related to both Alcohol Use, $F(3,347) = 10.03, p < .001$, and Marijuana Use, $F(3,347) = 5.849, p = .001$. Post-hoc Tukey tests revealed that those who had sex with *one partner exclusively* ($n = 140, 11.66$) demonstrated significantly lower alcohol use (*higher scores mean lower use*) than those who had sex with a *primary partner and at least one other person* ($n = 129, 10.23$), $p = .002$. Additionally, this trend is also seen with those who had sex with *one or more partners who were friends* ($n = 70, 9.56$), $p < .001$, and those who had sex with *multiple strangers* ($n = 12, 8.16$), $p = .002$. Post-hoc tests also revealed a similar pattern is that students who exclusively had

Table 3. Multivariate logistic regression predicting sexual risk behaviors ORs (C.I.)

OR (C.I.)	<i>Condom Attitudes</i>	<i>Alcohol Use</i>
Unprotected vaginal intercourse	1.281 (1.196–1.373)***	.881 (.804-.966)**
Protected vaginal intercourse	.867 (.819-.918)***	1.064 (.979–1.151)
Unprotected anal intercourse	1.160 (1.018–1.373)*	.854 (.692–1.054)
Protected anal intercourse	.822 (.737-.917)***	1.100 (.977–1.305)
AOD prior/during intercourse	.922 (.942–1.044)	.895 (.825-.970)**

Note. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq .001$

sex with one person ($n = 140, 12.31$) used marijuana less than those with a primary partner and at least one other person ($n = 129, 10.84$), $p = .003$, and those who had sex with one or more partners who were friends ($n = 70, 10.61$), $p = .005$.

Last Sexual Encounter. The five questions about the last sexual encounter had dichotomous response options (Yes or No); therefore, we performed a multivariate logistic regression model on each outcome variable. Results revealed that Condom Attitudes were significant in four of the five SEB outcomes, and Alcohol Use was significant in two variables. The model, $\chi^2(7, N = 323) = 71.97, p < .001$ for unprotected vaginal intercourse at last sexual encounter was significant and explained 26.6% (Nagelkerke R^2) of the variance. Those with negative condom attitudes were 1.28 times more likely to engage in unprotected vaginal intercourse, and increasing alcohol use was associated with the increased likelihood of negative condom attitudes. The model $\chi^2(7, N = 323) = 28.84, p < .001$ for unprotected anal intercourse at last sexual encounter was significant and explained 11.4% of the variance. Those with more negative condom attitudes were 1.16 times more likely to engage in unprotected anal intercourse. The model $\chi^2(7, N = 350) = 42.49, p < .001$ for Alcohol use and unprotected vaginal intercourse at last sexual encounter was significant and explained 15.5% of the variance. Those who had higher Alcohol use were .88 times more likely to engage in unprotected vaginal intercourse. See Table 3 for more information.

STI/HIV-related Behavior. The model for STI history was significant, $\chi^2(7, N = 92) = 13.99, p = .05$, and explained 27.2% of the variance. The two

main predictors were Condom attitudes (OR .777; CI .631-.957, $p = .02$) and Alcohol use (OR .726; CI .542-.971, $p = .03$). Depression was the only significant predictor of history of HIV testing (OR 1.078; CI 1.015-1.461, $p = .01$), but the results show that students who demonstrate more depressive symptomology were approximately 1.1 times for likely to not test for HIV. No predictors were related to the participants' level of concern about contracting HIV. However, self-identified transmission category was positively related to Alcohol use, $F(5, 345) = 7.58, p < .001$, and Marijuana use, $F(5, 345) = 2.88, p = .031$. The only predictor related to HIV knowledge was Marijuana use, $r = .12, p = .021$.

Discussion

HBCUs can provide an experience that promotes personal and professional growth (see Lockett & Harrell, 2003; USCCR, 2010); however, few STI/HIV prevention efforts have been designed specifically to address the sexual health needs of this population. The current study sought to inform the development of STI/HIV prevention programs for HBCU students by examining the psychosocial and sociocultural variables that had the greatest impact on sexual risk and protective behaviors among Black HBCU students.

In prior research, both positive and negative condom attitudes have been reported by HBCU students (Alleyne & Gaston, 2010; El Bcheraoui et al., 2013; Graham et al., 2016; Norwood & Zhang, 2015; Younge et al., 2018). In this study, men held more negative condom views and were more likely to engage in sex with strangers. Participants also reported negative attitudes that increased with alcohol use and were associated with both unprotected vaginal and anal intercourse. This could be explained by previous findings on negative condom attitudes and feeling HIV is not *really* a risk (Adefuye et al., 2009; El Bcheraoui et al., 2013). Previous findings that suggest spontaneous sexual encounters and the choice to not use a condom is partner related/based on partner's perception (Browne et al., 2009; Duncan et al., 2002; El Bcheraoui et al., 2013; Elifson et al., 2010), and/or induced by AOD (Adefuye et al., 2009; Duncan et al., 2002; Jones et al., 2018; Thomas et al., 2018) could also give further explanation. These findings further inform the need for developing STI/HIV prevention programs for HBCU students focusing on safer sex practices and responsible substance use.

Consistent with prior research (Adefuye et al., 2009), having different

sexual partners over 12 months was related to alcohol and marijuana use. Lower alcohol and marijuana use were consistent with individuals who indicate they were only having sex with one person. Interestingly, this trend continued with having more partners as well. However, these additional partners were either one other or those who were considered a friend, which could explain why those students sampled reported lower use of alcohol or drugs (see Hou, 2009).

Previous research on mental health could explain why students with depressive symptomology were less likely to get tested for HIV. Sexual risk taking behaviors have been associated with symptoms of depression and anxiety (Alvy et al., 2011; Jackson, et al., 2015; Khan et al., 2009; Lehrer et al. 2006). It is possible that the choice to not get tested for STIs/HIV or a lack of sexual self-care could be associated with mental health disparities. Future research and further exploration on mental health and STI/HIV risk is necessary to clarify.

Differences between genders and among different sexual-orientations should also be noted. Women reported higher scores over men in the following predictors: religiosity, depressive symptomology, alcohol use, marijuana use, and condom attitudes (more positive). Higher religiosity was also reported in those that identified as heterosexual and gay/lesbian over those who identified as bisexual. Future research should explore sexual-decision making through a gender and/or sexuality-specific lens.

Strengths and Limitations

Although this study provides a contribution to our understanding of sexual risk and protective behaviors of HBCU students; some limitations do exist. The study conducted sampling from one HBCU. The study site has a 70% female to 30% male ratio. Sex ratio imbalance may affect perceptions of mate availability among students who identify as heterosexual. Research on sex ratio imbalance has found that heterosexual women who perceive fewer available male partners report lower condom use (Ferguson et al., 2006; Thomas et al., 2008; Wingood & DiClemente, 1998). Additionally, data were collected using a convenience sample and self-report measures, thus the findings are subject to the biases of self-report such as under-reporting and over-reporting of sexual behaviors. Although the study used a convenience sample, the researchers did make specific efforts to recruit both heterosexually-identified and gay/lesbian participants. Researchers reached out to student-led organizations on campus that support and provide re-

sources for LGBTQ+ students. These limitations notwithstanding, the data from this study may provide invaluable information concerning critically important and influential domains to address within a population that has limited exposure in published public health and behavioral research.

Conclusion

This research indicates the need to increase prevention efforts among HBCU students that integrate a component designed to reduce alcohol and marijuana use into STI/HIV prevention efforts. This may be particularly important among students who reported more negative attitudes towards condoms and greater alcohol and marijuana use. Additional research is needed to examine additional protective factors within the context of HBCUs and how this environment can promote sexual health.

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Note

1. African American and Black will be interchanged throughout the article based on how information is reported in sources cited.

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