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# Religiosity and Sexual Risk Behaviors Among African American Cocaine Users in the Rural South

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## Abstract

**Purpose—**Racial and geographic disparities in human immunodeficency virus (HIV) are dramatic and drug use is a significant contributor to HIV risk. Within the rural South, African Americans who use drugs are at extremely high risk. Due to the importance of religion within African American and rural Southern communities, it can be a key element of culturally-targeted health promotion with these populations. Studies have examined religion's relationship with sexual risk in adolescent populations, but few have examined specific religious behaviors and sexual risk behaviors among drug-using African American adults. This study examined the relationship between well-defined dimensions of religion and specific sexual behaviors among African Americans who use cocaine living in the rural southern United States.

**Methods—**Baseline data from a sexual risk reduction intervention for African Americans who use cocaine living in rural Arkansas (N = 205) were used to conduct bivariate and multivariate analyses examining the association between multiple sexual risk behaviors and key dimensions of religion including religious preference, private and public religious participation, religious coping, and God-based, congregation-based, and church leader-based religious support.

**Findings—**After adjusting individualized network estimator weights based on the recruitment strategy, different dimensions of religion had inverse relationships with sexual risk behavior, including church leadership support with number of unprotected vaginal/anal sexual encounter and positive religious coping with number of sexual partners and with total number of vaginal/anal sexual encounters.



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**Conclusion—**Results suggest that specific dimensions of religion may have protective effects on certain types of sexual behavior, which may have important research implications.

## Keywords

African Americans; drug abuse; religion; sexual risk behavior

Human immunodeficency virus (HIV) among African Americans has been at epidemic levels for more than 2 decades.[1] Incidence of HIV and other sexually transmitted infections (STIs) is significantly higher among African Americans than among whites.[2] For example, while in 2010 only 12% of the US population was African American, African Americans represented 44% of new HIV infections in the United States.[3] This disparity is especially large in the southern United States.[4] High-risk sex is the primary route of HIV transmission among African Americans, and noninjection drug use is a major contributing factor to participation in risky sexual behaviors and to disproportionate HIV and STI rates.[2] Thus, African American drug users are at especially high risk for HIV and other STIs.

Due to the need to address these disparities and the importance of religion within many rural, Southern, and African American communities, there have been calls for faith-based elements to be incorporated into sexual risk reduction efforts for these communities.[5–7] A limited number of qualitative studies have begun to explore the importance of religion in the lives of African Americans who use drugs living in the rural South. This work found that despite potential stigmatization, rural Southern African Americans who use drugs rely on their religious beliefs and local religious institutions for intangible and tangible support; they appear to be as religious as their non–drug using counterparts in terms of expressions of faith, connection to God, and the use of prayer and other forms of private religious practice.[8,9] These studies have also found that drug use may limit their participation in public religious activities and may result in ostracism from church-based social networks, social support, and other avenues by which religion has been hypothesized to affect health behaviors.[6,8,10]

Furthermore, previous research has shown the protective influence of religion against the initiation of substance use, the development of substance abuse disorders, the receipt of substance abuse treatment, and other HIV-related substance use risk behaviors.[11–13] Several dimensions of religion have also been associated with HIV-related sexual risk behaviors, including increased HIV testing, fewer sexual partners, and higher self-efficacy in refusing risky sexual encounters and discussing HIV prevention.[14–16] With a few noteworthy exceptions,[17–20] much of the sexual risk and religion research has been among adolescents and not among at-risk adults. Few quantitative studies have examined religion's association with sexual risk behavior among substance abusing adults who are not currently receiving counseling or treatment.

One reason for this hesitancy may be that research involving religion has been extensively criticized due to poor operationalization of religious constructs and the use of unreliable measures.[6,21,22] Researchers in this area have been encouraged to use increased specificity in their description and measurement of individual heterogeneous dimensions of religion and to avoid collapsing separate religion variables.[21,23] Similarly, sexual risk researchers have

recommended increased specificity in the measurement of sexual behaviors.[24–26] Although the number of unprotected sex acts is the recommended self-report behavior for HIV prevention research among at-risk heterosexuals,[27] there are numerous other sexual behaviors that can increase STI risk including multiple sexual partners, transactional sex, incorrect condom use, and substance use before or during sex. Whether assessing religious behaviors or sexual behaviors, specific and thorough measurement is critical to advancing the field. In fact, the relationship between religion and sexual behavior may differ depending on the exact religion and sexual behaviors being measured. It is possible that the mixed results in the literature on risk behavior and religion are related to a failure to account for these issues.[18,19,28]

The aim of this exploratory study was to examine the relationship between well-defined dimensions of religion and specific sexual behaviors within an understudied at-risk population, African Americans who use cocaine living in the rural southern United States. Based on community input and the limited body of empirical evidence, we hypothesized that among our study participants: (1) positive religious coping; private and public religious participation; and God-based, congregation-based, and church leader-based religious support would be inversely associated with at least 1 sexual behavior (ie, less unprotected sex, fewer sexual partners, less substance use before or during sex, fewer sexual encounters, or less transactional sex); (2) negative religious coping would be positively associated with at least 1 sexual behavior (ie, more unprotected sex, more sexual partners, greater substance use before or during sex, more sexual encounters, or more transactional sex); and (3) religious preference would not be associated with sexual behavior due to lack of variation in the sample.

## Methods

### Participants

This manuscript utilized data from the baseline assessments of a longitudinal sexual risk reduction intervention for African Americans who use cocaine living in 2 predominantly African American, rural, impoverished counties in the Arkansas Mississippi Delta region. These counties have STI and HIV rates that are almost twice the statewide rates.[29,30] Inclusion criteria for the study required that participants: (1) were at least 18 years old; (2) self-identified as African American, black, or of mixed racial descent with a significant portion from African American ancestry; (3) reported using cocaine at least once in the past 30 days; (4) reported engaging in oral, vaginal, or anal sex in the past 30 days; and (5) reported currently residing in 1 of the study counties. In this manuscript, we analyzed baseline data from 205 participants. All study procedures were reviewed and approved by the Institutional Review Board of the University of Arkansas for Medical Sciences.

### Procedures

Respondent-driven sampling (RDS) was used to recruit the population for participation in the intervention.[31] Participants were screened for basic eligibility and then consented. They were then given 3 coded coupons to give to “people like you” who might be interested in the study. For each individual a participant referred who was subsequently determined to be

eligible for the study, the referring participant received $10 (up to a total of $30 for 3 successful referrals). Participants also received $30 compensation for their time and travel expense for the baseline assessment. Interviews were conducted using Computer-Assisted Personal Interviewing (CAPI) technology and took place in offices that were located centrally in each county and identified as an acceptable and trusted location by members of the research project's Community Advisory Board (CAB), a group of 10 men and women from the study community who met the study's inclusion criteria and served as advisors to the study during its conceptualization, development, and implementation.[32] Recruiters and interviewers were residents of the study community who were selected in part because of their experience with and understanding of the needs and concerns of the study population.[32] These individuals were employed full-time by the research project and received extensive training in interviewing techniques to ensure the accuracy of the self-report data.

## Measures

The measures used in this study were carefully selected based on appropriateness for the study population, prior usage in related religion–health research, strong psychometric properties, and potential modifiability of the dimension of religion measured. Before recruitment of any intervention participants, the measures selected for the study were administered to the CAB and select members of the study population to identify items that were consistently unclear or identified as inappropriate for the study community. Minor changes were recommended and made to the interview protocol. Details regarding these changes and the psychometric properties of these measures in the study population have been published elsewhere.[45]

**Demographics—**A brief demographic questionnaire assessed participants' age (range from 18 to 65), gender, marital status (partnered, not partnered), employment (employed, not employed), and education (at least high school education, less than a high school education).

**Sexual Behavior—**The National Institute on Drug Abuse Risk Behavior Assessment was used to assess all sexual behavior variables.[33] The absolute count of the number of times in the past 30 days the participant reported having oral, anal, or vaginal sex and the number of times he or she used a condom or other barrier during these sexual encounters was calculated using gender-specific and sex act-specific items. Anal sex and vaginal sex were combined due to similarities in HIV risk and low frequency of anal sex in our study population. Similarly, oral sex was analyzed separately due to its relatively low HIV risk and high frequency in this population and other similar populations.[34] Other examined self-reported sexual behaviors in the past 30 days included giving or receiving sex for food, money, or drugs (transactional sex; yes, no), intensity of substance use before or during sex, and an absolute count of the number of oral, anal, or vaginal sex partners. Intensity of substance use before or during sex was calculated by summing the observed values of before or during sex use scores for several illicit drugs (eg, cocaine, amphetamines, marijuana, and heroin) and alcohol, which were measured on an ordinal scale (0 = never, to 4 = always).

**Religious Coping—**Based on the measure of religious coping known as the RCOPE, the Brief RCOPE includes 14 items assessing positive (eg, collaborative problem-solving,

positive reappraisals, and benevolent religious involvement) and negative (eg, religious struggle, spiritual discontent, and demonic reappraisal) forms of religious coping measured on a 4-point Likert scale (1 = not at all, to 4 = a great deal).[35] Previous research has supported the psychometric properties of both the positive and negative religious coping subscales.[36] Directions were revised to instruct participants to reference how they have coped with negative events in their lives rather than with a specific negative event in order to assess religious coping for negative events in general. Similar changes have been made in previous research with the psychometric properties remaining stable.[37]

**Religious Support—**The Religious Support Scale (RSS) uses a 5-point Likert response scale (1 = strongly disagree, to 5 = strongly agree) to measure perceived support from 3 distinct sources: God, congregation, and church leaders.[38] The RSS was modified for this study to clarify items that the pretesting, mentioned above, revealed were unclear or inappropriate measures of the population's religious experiences. Similar changes have been made to the RSS in previous research without drastically affecting the measure's reliability and validity.[39]

**Religious Participation—**Although the Multidimensional Measurement of Religiousness/Spirituality (MMRS) is presented as a single scale, it was designed by a panel of religion-health experts to also assess different dimensions of religion using each of the subscales separately.[40] Subscales measuring religious preference, private religious participation, and public religious participation were selected from the MMRS because they are widely used dimensions of religion in health promotion research.[41] Religious preference was a demographic variable and was measured using 1 openended question ("What is your religious preference?") but was collapsed into a dichotomous variable measuring Baptist versus Non-Baptist due to lack of variation in religious preference across the study population. Private religious participation was measured using 3 Likert-scale items (1 = several times a day, to 8 = never): frequency of prayer outside of church, frequency of scripture reading, and frequency of watching or listening to religious programming. Four additional items measured public religious participation: frequency of attendance at religious services (1 = more than once a week, to 6 = never), frequency of attendance at other activities held at a place of worship (1 = more than once a week, to 6 = never), church membership (yes, no), and perceived "fit" with other church congregants (1 = fit extremely well, to 5 = do not fit at all). Responses to religious participation items were reverse-coded and rescaled. The resulting scores were added together to create the private and public religious participation variables.

## Statistical Analyses

Initially, preliminary descriptive statistics, including frequencies and percentages or means and the standard error of the mean (SEM) were calculated. To account for the recruitment process, weighted descriptive measures were derived incorporating sampling weights produced using RDSAT version 7.1 (RDSAT, Ithaca, New York). To assess the relationship between dimensions of religion and sexual behaviors, analyses were performed at both the bivariate and multivariate level. Individual sexual behavior weights (eg, number of partners, intensity of substance use before or during sex, transactional sex) were generated in RDSAT

and exported to SAS version 9.3 (SAS Institute Inc., Cary, North Carolina). Using the corresponding weights for each sexual behavior measure, rank transformed regression or logistic regression models were conducted for bivariate and multivariate analyses with SAS/STAT PROC SURVEYREG or SURVEYLOGISTIC (SAS Institute Inc., Cary, North Carolina). The rank transformation was performed on the original scores of each sexual behavior and religion measure due to the departure from normality of the data obtained using these measures.[42] For multivariate analyses, separate rank transformed multiple regression or logistic regression were performed for each sexual behavior measure with all the religious dimensions included in the model as independent variables along with key demographic characteristics such as age, gender, marital status, education, and employment. Moreover, 2-way interactions among religious dimensions and demographics were tested for potential moderation effect. All statistical analyses were 2-tailed tests with $P < .05$ considered statistically significant.

## Results

Descriptive data are presented in Table 1 with both unweighted and weighted measures. Seventy-one percent of respondents reported being Baptist, which confirmed our hypothesis that religious preference would serve as a demographic constant due to the homogeneity of religious preference in this area. One-third of participants reported having no unprotected sex in the past 30 days.

In the initial bivariate analyses, results indicated that positive religious coping was negatively associated with total vaginal/anal sex ($P = .031$) and number of sexual partners ($P = .005$). Additionally, public religious participation and total oral sex were positively associated ($P = .040$). All other bivariate associations between sexual behavior and religious dimensions were nonsignificant (see Table 2).

In the multivariate analyses, the negative association of positive religious coping with total vaginal/anal sex ($P = .019$) and number of partners ($P = .024$) remained statistically significant while holding other religious dimensions and demographic variables constant. Moreover, those who indicated having a partner engaged in more vaginal/anal sex but with fewer sexual partners. Unprotected vaginal/anal sex was not associated with any religious dimensions at the bivariate level, but this behavior was negatively associated with church leadership support ($P = .014$) and positively associated with being partnered ($P = .003$) in the multivariate analysis. Initially, all multivariate analyses included 2-way interactions among demographic variables and religious dimensions; however, none of these interactions were statistically significant, and thus they were dropped from the final model. Table 3 provides the complete results for cases in which there was at least 1 significant religious dimension predictor. None of the religious dimension predictors were significant for oral sex, but younger participants ($P = .022$) and those with less than a high school education ($P = .023$) tended to have higher numbers of oral sexual encounters.

## Discussion

Religion is an important cultural and social construct in many rural, African American, and Southern communities. A greater understanding of the influence of religion on sexual behaviors in high-risk subgroups is needed to address disproportionate HIV/STI rates in these communities. In this study, the importance of measuring specific types of sexual behavior and religious activities was highlighted. After adjustment for key demographic variables and individualized RDS estimator weights, our multivariate analyses revealed that positive religious coping had inverse associations with number of sexual partners and total vaginal/anal sexual encounters. Furthermore, church leadership support was inversely associated with unprotected vaginal/anal sex. The results from this exploratory research provide early evidence about the specific relationships between aspects of religious experience and sexual risk behaviors in an understudied vulnerable population.

Even after controlling for age, gender, marital status, education, and employment, positive religious coping was associated with fewer vaginal/anal sexual encounters and fewer sexual partners and thereby, it arose as a particularly important dimension of religion as it relates to sexual risk behavior. There are several posited reasons for this relationship, including religious coping having an influence on choices surrounding partner selection, engagement in concurrent sexual partnerships, and number of nonmain partners, especially among individuals with a deeper intrinsic faith. Religious doctrine frequently used in positive religious coping strategies is more likely to discourage having multiple sexual partners and concurrent sexual relationships rather than to encourage condom use. Additionally, positive religious coping may be protective in that individuals who utilize these coping strategies may be less likely to put themselves at risk for STIs by engaging in risky sexual behaviors due to better mental health and higher self-esteem.

Church leadership-based religious support also emerged as a dimension of religion that was associated with sex risk through an inverse association with unprotected sex. This early quantitative evidence supports qualitative findings that church leaders can and do engage disenfranchised at-risk populations. Sexton and associates[9] found that African American clergy in rural southern areas were willing and able to engage local African Americans who use cocaine and were currently providing them with counseling and informal social services as well as promoting healthy behavior changes such as reducing their drug use. Researchers wishing to address sexual risk reduction in similar populations should work with community leaders like clergy to enhance credibility and leverage their influence on the population to adopt healthier behaviors, a strategy used in previous research with promising results.[43]

### Limitations

Several study limitations should be acknowledged. First, several of the variables investigated were potentially stigmatizing and personal. Self-report data in general and particularly self-report data on sensitive topics, such as religion and sexual behavior, are susceptible to social desirability bias, recall bias, and measurement error. We used multiple approaches, including well-trained and culturally similar interviewers, CAPI techniques, multimodal assessment measures, and instruments that have demonstrated minimal social desirability effects, to reduce the effects of bias and measurement error. However, bias and

error, especially social desirability bias when discussing religion and sexual behavior, must be considered when interpreting these findings. Second, religion and religious belief are complex constructs that may not be fully captured by the instruments selected for this study. Current religion–health research has discouraged assessment of religion in general and has recommended the measurement of modifiable dimensions of religion. Consequently, we used a multidimensional assessment of religion-based variables, which enabled this study to garner novel information about the relationship between key dimensions of religion and sexual risk and to identify subtle differences in religious experience among members of this population.

Third, despite the importance of partner specificity in sexual risk reduction research, we did not consider main versus casual partner status in the measurement of sexual behavior.[24] Partner status was considered beyond the scope of our research. Future research should explore whether partner status influences the religion–risk link. Finally, postdiction, which refers to the common error in which variability in past behavior is explained in terms of currently held beliefs, also limits the interpretation of the study findings.[44] Several of the religion variables were measures of presently held beliefs (eg, religious coping and perceived religious support) that were analyzed to explain past behavior (eg, unprotected sex in the past 30 days). This is a frequent concern in cross-sectional behavioral research because it can compromise internal validity and result in overestimation of the explained variance of the dependent variable.[44] Though religious beliefs are believed to be relatively stable over time, postdiction is still important to consider when interpreting these results.

## Conclusion

Despite the limitations of this research, these findings are an important initial step in understanding how religion is associated with sexual risk in an at-risk, understudied rural population and can potentially aid others in the selection of relevant dimensions of religion and sexual risk in future research. More research is necessary to understand the complex relationships between religion and sexual behavior in this population. Researchers working with highly religious but socially ostracized populations (such as African Americans who use cocaine living in the rural South) should gather extensive community input and support before incorporating faith-based elements into their health promotion messages. As this study has found, dimensions of religion are not universally associated with health-promoting benefits, especially among at-risk adults. Future research should explore pathways that may explain these relationships and other individual heterogeneous dimensions of religion to identify any protective or harmful effect religion may have on sexual behavior. Specific dimensions of religion must be examined to determine their relationship with health behaviors so that cultural adaptation using religion has the desired effect. This research makes an important contribution by expanding on previous religion–sexual risk research through the examination of independent contributions of distinct dimensions of religion and sexual behavior in an understudied, high-risk adult population.

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**Table 1**

Distributions of Demographics, Religion, and Sexual Risk Measures

| Measurement | Unweighted Mean ± SEM/ Percent (N) | Weighted Mean ± SEM/ Percent |
|---|---|---|
| Demographics | | |
| Age | 36.92 ± 0.90 | 36.51 ± 1.08 |
| Female | 45% (92) | 46% |
| Partnered | 19% (38) | 25% |
| At least high school education | 48% (99) | 48% |
| Employed | 24% (50) | 27% |
| Religion | | |
| Positive religious coping | 21.00 ± 0.35 | 21.36 ± 0.41 |
| Negative religious coping | 13.36 ± 0.34 | 13.44 ± 0.45 |
| Private religious participation | 1.76 ± 0.04 | 1.74 ± 0.06 |
| Public religious participation | 1.63 ± 0.08 | 1.63 ± 0.10 |
| Congregational support | 2.98 ± 0.09 | 2.99 ± 0.13 |
| Church leadership support | 3.06 ± 0.09 | 3.04 ± 0.14 |
| God support | 4.15 ± 0.04 | 4.22 ± 0.04 |
| Baptist affiliation | 71% (146) | 69% |
| Sexual risk | | |
| Unprotected vaginal or anal sexual encounters (30 d) | 12.15 ± 1.02 | 12.56 ± 1.70 |
| Total vaginal or anal sexual encounters (30 d) | 9.57 ± 0.62 | 9.52 ± 0.86 |
| Unprotected oral sex (30 d) | 6.23 ± 0.70 | 6.20 ± 1.07 |
| Total oral sex (30 d) | 6.80 ± 0.73 | 5.97 ± 0.97 |
| Number of partners | 2.06 ± 0.17 | 1.68 ± 0.13 |
| Intensity of substance use before or during sex | 5.93 ± 0.26 | 5.80 ± 0.39 |
| Transactional sex (yes) | 27% (55) | 22% |

**Table 2**

Bivariate Rank Transformation Regression and Logistic Regression Adjusted for Individualized RDS Estimator Weights

| | Unprotected Vaginal or Anal Sex Est. (SE) | Total Vaginal or Anal Sex Est. (SE) | Unprotected Oral Sex Est. (SE) | Total Oral Sex Est. (SE) | Number of Partners Est. (SE) | Intensity of Substance Use Before or During Sex Est. (SE) | Transactional Sex OR (95% CI) |
|---|---|---|---|---|---|---|---|
| Positive religious coping | −0.092 (0.088) | −0.180* (0.083) | −0.111 (0.083) | −0.117 (0.082) | −0.140** (0.049) | −0.150 (0.085) | 1.024 (0.954, 1.099) |
| Negative religious coping | −0.010 (0.086) | 0.015 (0.082) | 0.019 (0.085) | 0.028 (0.083) | 0.023 (0.050) | 0.154 (0.095) | 1.030 (0.954, 1.113) |
| Private religious participation | 0.008 (0.091) | −0.068 (0.085) | 0.025 (0.088) | 0.019 (0.087) | −0.085 (0.052) | −0.174 (0.094) | 1.034 (0.587, 1.821) |
| Public religious participation | 0.109 (0.084) | 0.059 (0.084) | 0.132 (0.078) | 0.155* (0.074) | 0.012 (0.052) | 0.006 (0.090) | 0.963 (0.709, 1.307) |
| Congregational support | 0.046 (0.098) | −0.043 (0.094) | 0.089 (0.087) | 0.074 (0.087) | −0.035 (0.054) | −0.065 (0.101) | 1.051 (0.801, 1.379) |
| Church leadership support | −0.005 (0.096) | −0.070 (0.091) | 0.076 (0.086) | 0.058 (0.085) | −0.020 (0.051) | −0.053 (0.096) | 1.008 (0.785, 1.296) |
| God support | −0.021 (0.081) | −0.078 (0.073) | −0.075 (0.083) | −0.084 (0.082) | −0.034 (0.058) | −0.043 (0.097) | 1.413 (0.608, 3.279) |
| Religious affiliation (Baptist) | 5.186 (10.376) | 2.064 (10.194) | 1.453 (10.260) | 4.466 (10.120) | −5.511 (6.586) | −1.286 (10.771) | 0.785 (0.355, 1.739) |

*$P < .05$;

**$P < .01$.

## Table 3

Multiple Rank Transformation Regression Adjusted for Individualized RDS Estimator Weights

| Independent Variables | Unprotected Vaginal or Anal Sex Est. (SE) | Total Vaginal or Anal Sex Est. (SE) | Number of partners Est. (SE) |
|---|---|---|---|
| Religious measures | | | |
| Positive religious coping | −0.162 (0.104) | −0.251* (0.106) | −0.139* (0.060) |
| Negative religious coping | 0.026 (0.085) | 0.052 (0.081) | 0.071 (0.055) |
| Private religious participation | 0.050 (0.099) | 0.012 (0.100) | −0.079 (0.061) |
| Public religious participation | 0.164 (0.097) | 0.187 (0.099) | 0.063 (0.065) |
| Congregational support | 0.313 (0.170) | 0.155 (0.179) | −0.075 (0.154) |
| Church leadership support | −0.413* (0.167) | −0.294 (0.170) | 0.079 (0.154) |
| God support | 0.040 (0.106) | 0.037 (0.098) | 0.025 (0.063) |
| Religious affiliation (Baptist) | 3.449 (11.709) | −4.307 (11.099) | −6.891 (7.263) |
| Demographics | | | |
| Age | −0.116 (0.095) | −0.111 (0.092) | −0.009 (0.075) |
| Female | 0.801 (9.965) | 3.473 (9.921) | −9.347 (6.796) |
| Partnered | 39.350** (13.143) | 36.624** (12.431) | −16.667* (6.795) |
| ≥High school education | 18.532 (10.465) | 7.241 (9.363) | 8.791 (7.420) |
| Employed | −5.027 (10.908) | 3.593 (9.699) | −11.156 (8.049) |

No 2-way interactions between demographic variables and religious measures were statistically significant; thus they were removed from the model.

*$P < .05$;

**$P < .01$.