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Religiosity, Spirituality, and HIV Risk Behaviors among African American Women from Four Rural Counties in the Southeastern U.S

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Abstract

In a cross-sectional survey of 1,013 African American women from rural Alabama and North Carolina, we examined the relationship of (1) organizational religiosity (i.e., religious service attendance), (2) non-organizational religiosity (e.g., reading religious materials), and (3) spirituality with these outcomes: women’s reports of their sexual behaviors and perceptions of their partners’ risk characteristics. Women with high non-organizational religiosity, compared with low, had fewer sex partners in the past 12 months (adjusted prevalence ratio (aPR): 0.58, 95% confidence interval (CI): 0.42, 0.80) and were less likely to have concurrent partnerships (aPR: 0.47, 95% CI: 0.30, 0.73). Similar results were observed for spirituality, and protective but weaker associations were observed for organizational religiosity. Weak associations were observed between organizational religiosity, non-organizational religiosity, and spirituality with partners’ risk characteristics. Further exploration of how religiosity and spirituality are associated with protective sexual behaviors is needed to promote safe sex for African American women.

Keywords

Religion; spirituality; African American; women; sexual behavior; HIV risk; and sex partner

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In the United States (U.S.), African American women continue to be disproportionately affected by HIV/AIDS.¹ Among U.S. women diagnosed with HIV/AIDS in 2010, 64% were African American and most (84%) contracted HIV through heterosexual contact.¹ As in most of the world, women in rural parts of the Southern U.S. are most likely to acquire HIV through heterosexual transmission.² Behavioral risk factors for acquisition of HIV among women include multiple sex partners, alcohol use, intravenous drug use, sex in exchange for money, drugs, or shelter, and sex with high risk partners (e.g., men who have sex with men, injection drug users, or those who have concurrent sexual partners).³⁻⁹

Health researchers have conceptualized religion in a number of different ways. Religiosity generally refers to the “degree of adherence to the beliefs, doctrines and practices of a religion” [p. 522] and connotes participation in a community centered on such activities.^{10,11} Religiosity can be categorized into organizational religiosity, non-organizational religiosity, and spirituality (also referred to as intrinsic or subjective religiosity). Organizational religiosity is participation in activities with a community of fellow adherents, frequently within the context of a church, mosque or other religious setting (e.g., religious service attendance). Non-organizational religiosity is behavior that occurs apart from the organized religious community (e.g., personal prayer and reading/watching religious media). Spirituality has been conceptualized as perceptions and attitudes (in contrast to the other two measures that are more oriented toward behavior) regarding spirituality with or without participation in a religious community.¹²

This paper focuses on organizational religiosity, non-organizational religiosity, and spirituality of African American women and sexual risk behavior. Religion has strong effects in the lives of many African Americans including personal behavior, emotional well-being, and community cohesion.¹³ African Americans, particularly in the Southeastern U.S., are highly spiritual compared with other ethnic groups, identifying spiritual beliefs as important in daily life and reporting close relationships with God.¹⁰ In addition, African Americans report more frequent religious service attendance and involvement in church activities compared with other ethnic groups.¹⁴

Despite emerging collaborations between the research community and faith-based institutions in providing HIV-related services and HIV prevention messages,^{15,16} limited attention has been paid to the relationship between the religiosity of adult African American women, and their sexual behaviors and the risk characteristics of their sex partners. Among adult women in a nationally representative sample of the U.S., higher religiosity (measured by religious service attendance) was associated with fewer HIV risk behaviors.⁸ Religiosity was also associated with fewer sexual risk behaviors in African American adolescents¹⁷⁻¹⁹ and college students.²⁰ To date, we are not aware of any published studies on any aspect of religiosity among African American adult women in relation to their sexual partners' sexual risk characteristics.

The relationship of religiosity with sexual behaviors that confer risk for HIV infection can be understood using the proximate determinants framework, an analytic framework that has been adapted for HIV acquisition and subsequent related outcomes.²¹ Proximate determinants are behavioral and biological factors through which contextual factors, such as

economic and sociocultural determinants, influence risk for HIV transmission. Organizational religiosity, for example, is a sociocultural contextual factor in this model. The model posits that behavioral and biological proximate determinants affect the three critical components of the reproductive rate of HIV infection (i.e., exposure of susceptible individuals to infection, efficiency of transmission per contact, and duration of infection). Important proximate determinants include, for example, number of sex partners, coital frequency, condom use, and partner characteristics that facilitate HIV transmission. These proximate determinants may be influenced by contextual variables, including religion. We examined the relationships of religiosity and spirituality with risk behaviors for HIV acquisition among adult African American women in rural regions of Alabama and North Carolina. We hypothesized that higher spirituality would be associated with a reduced prevalence of engaging in high- risk behaviors and having high- risk partners, because a relationship with God or a higher power and the importance of acting on spiritual beliefs in daily life (identified by African American women as part of spirituality¹¹) may be associated with safer sexual behaviors. Similarly, we expected that higher non- organizational religiosity, which indicates personal participation in religious practice, would be associated specifically with a reduced prevalence of engaging in concurrent partnerships and with partners who have concurrent partnerships, because many religious traditions endorse monogamy. We hypothesized that high organizational religiosity, indicating participation in a religious community, would also increase the prevalence of having a sexual partner who has a lower sexual risk profile.

Methods

Participants and procedure

Data were drawn from a cross- sectional study of 1,013 African American women from two rural counties in northeastern Alabama and two contiguous rural counties in eastern North Carolina.²² The survey's primary focus was to characterize the sexual risk- taking behaviors of African American women in the rural Southeastern U.S.. Study site investigators applied and competed for a funding announcement through the Centers for Disease Control, and used publically available HIV and sexually transmitted infection data to identify counties with the highest rates of infection among African American women for survey administration. Women were recruited between October 2008 and September 2009 using multiple methods, including venue- based recruitment (e.g., at beauty salons, laundromats, shopping centers, churches, local community organizations, educational and training facilities, health clinics), advertisements in locally posted flyers, participant- referral with incentives, and word- of-mouth referral without incentives. Women were eligible to participate if they met all of the following criteria: (1) self- identified as African American; (2) were between 18–59 years of age (19–59 in Alabama because participants in Alabama were required to be 19 or older to give legal consent for study participation); (3) reported vaginal or anal intercourse with a man in the past 12 months; (4) not previously diagnosed as HIV- infected; (5) willing to be tested for HIV using rapid oral testing; (6) willing and able to give informed consent; and (7) able to understand English. There were no additional exclusion criteria. Eligibility criteria were assessed at venues using hand- held personal digital assistants for participants recruited at a venue or over the phone if the woman was

referred by another study participant. Women provided written informed consent prior to completing an audio computer- assisted self- interview (ACASI) and undergoing rapid HIV testing that included pre- and post- test counseling. The ACASI was administered in a private room in a study office or in a study mobile unit that contained two private areas for ACASI administration and a third area for HIV counselling and testing.

Review and approval of the study protocol was received from Institutional Review Boards at the study sites and of the U.S. Centers for Disease Control and Prevention and the U.S. Office of Management and Budget (control number 0920-0760).

Spirituality and religious measures

To measure organizational religiosity,^{10,12} participants were asked how frequently they attended religious services in the past 12 months; response options were never, once or twice per year, about once a month, and once per week or more frequently. Few participants reported never having attended religious services; thus, this category was combined with those who attended once or twice per year. To measure non- organizational religiosity,^{10,12} we combined responses to three statements, “You pray or meditate often,” “You often read religious books, magazines, or pamphlets,” and “You often watch or listen to religious programs on television.” Responses of strongly disagree, disagree, agree, or strongly agree were coded as 0–3 (maximum possible score=9). Responses were summed for each participant and the distribution was divided at the 33rd and 66th percentiles, generating three non- organizational religiosity groups: low (score = 5), medium (score=6–7), and high (score=8–9). To assess spirituality,^{10,12} we combined responses to two statements, “Your spiritual beliefs are the source of your whole approach to life,” and “You have a personal relationship with God” for which responses of strongly disagree, disagree, agree, or strongly agree were coded as 0–3, respectively (maximum possible score=6). Responses were summed for each participant and the distribution was divided at the 33rd and 66th percentiles, generating three spirituality groups: low (score = 4), medium (score=5), and high (score=6).

Sexual risk behavior

The primary outcomes for these analyses were the respondent’s report of sexual risk behaviors: having as many or more than the median number of sex partners during (1) one’s lifetime and (2) the last 12 months among the women in our sample (i.e., eight and one, respectively), (3) having condomless intercourse with two or more partners, and (4) having one or more concurrent sexual partnerships in the past 12 months. The one year cumulative prevalence of participant involvement in a concurrent partnership was defined according to one of the UNAIDS working group recommendations which defines concurrency as overlapping sexual partnerships in which sexual intercourse with one partner occurs between two acts of intercourse with another partner.²³

Participants were asked to provide the estimated months and years of first and last sexual encounters for their most recent sex partners (up to a maximum of three partners). Partnerships were considered concurrent if the month of first sexual encounter with one partner occurred before the month of last sexual encounter with an earlier partner (if one

partnership ended in a given month and another partnership started that same month, the partnerships were not considered concurrent). Participants were asked the frequencies (i.e., never, less than half the time, half of the time, most of the time, always) with which they used condoms over the past 12 months for vaginal and anal intercourse with each of their most recent partners. Condomless intercourse with two or more partners was defined as never having used condoms with at least two partners in the past 12 months for either vaginal or anal intercourse.

We asked the participants to report characteristics of each of their three most recent male sex partners. The measures were: (1) sexually transmitted infection (STI) in the past 12 months (yes = one or more partner had STI; no = no partner had STI), (2) partner ever been in prison or jail for more than 1 night (yes, no) (3) partner ever used drugs (yes, no; drug use included ever having smoked crack, or used cocaine, heroin, methamphetamine, speed, or any other injection drug), and (4) partner had concurrent sex partner(s) during the course of his relationship with the participant. This latter variable was assessed for each of their three most recent sex partners using the response scale: *definitely did not*, *probably did not*, *probably did*, or *definitely did* have sex with other men or women. Similar to other published studies,^{24–26} we considered the partner to have been involved in a concurrent partnership if the participant reported that at least one partner *definitely did* have sex with other women or men.

Covariates

Research sites were grouped by state: two counties in North Carolina and two in Alabama. Participants reported their age, marital status (single; never married; married; living together as married; separated; divorced; or widowed), and total household income before taxes (\$0–250, \$251–500, \$501–1,000, \$1,001–2,000, \$2,001–3,000, or over \$3,000 per month).

Statistical analysis

We estimated prevalence ratios (PRs) using log- binomial models. PRs are a more comprehensible estimand than prevalence odds ratios, and are appropriate in this setting where many of the outcomes were common.²⁷ We fit separate log binomial models for each exposure (i.e., organizational religiosity, non- organizational religiosity, and spirituality) and outcome (e.g., number of sex partners, participant concurrency, partner concurrency) to calculate PRs and 95% confidence limits (CIs). For the adjusted model of non-organizational religiosity and condomless sex with two or more partners we approximated the log- binomial model using a Poisson model with a robust variance.^{28,29} Observations with missing exposure, outcome, or covariates (if applicable) were excluded; missing totals for each variable, all of which were less than 10%, are reported in the footnotes of Table 1. We assessed potential confounders by using causal diagram graphs that represent posited causal relationships between exposures, outcomes, and covariates, and help identify a set of adjustment variables to obtain unbiased associations between the exposures and outcomes of interest.³⁰ Using these diagrams helped avoid some of the pitfalls, such as inappropriate adjustment for non- confounders, of statistical approaches.³¹ Using *a priori* knowledge, we adjusted for research site, age (modeled using a restricted quadratic spline,³² an efficient method of controlling for a continuous covariate that allows for non- linear associations

between age and the outcomes using a smoothed function with knots, or flex points, at ages 23, 29, 37 and 45), marital status (married *versus* not married), and income category (dichotomized at the median; results using all categories were similar). All analyses were conducted using SAS 9.3 (Copyright, SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA).

Results

The 1,013 participants enrolled in this study were evenly distributed between the Alabama and North Carolina sites (Table 1). The median age was 33 (interquartile range (IQR): 24, 42). The median income group was \$1,001–\$2,000 per month, and 56% were single, never married. Eighty- three percent (n=845) reported having ever been pregnant. Sixty- four percent (n=649) reported one sex partner in the past 12 months. For their most recent partnership, 57% of participants reported no condom use during vaginal sex (n=573), and of those who reported having anal sex in the past 12 months (n=212), 72% reported no condom use. Concurrent partnerships were identified in 24% of participants. Of participants that reported that their partner *definitely did* have sex with other men or women (n=213), only two reported their partner had sex with other men in the past 12 months. A majority of participants (84%) identified themselves as Christians, with Baptist as the most common affiliation reported (56%). As has been previously reported,²² one participant in Alabama newly tested positive for HIV.

Of the 1,003 participants who provided information on religious service attendance (i.e., organizational religiosity), 6% reported they never attended (n=64), 21% attended once or twice per year (n=212), 27% attended once per month (n=270), and 46% attended once a week or more often (n=457). Of the 1,000 participants who responded to all non-organizational religiosity items, participants reported strong agreement in the following proportions: 40% prayed or meditated often, 21% read religious materials, and 20% watched or listened to religious programming. Of the 1,001 participants who responded to all the spirituality items, 33% strongly agreed that their spiritual beliefs were the source of their whole approach to life and 51% of participants strongly agreed that they have a personal relationship with God. Most participants who strongly agreed with all the non-organizational religiosity measures or strongly agreed with the spirituality questions also attended religious services once a week or more often (Supplemental Table).

Table 2 shows the crude and adjusted PRs of participant risk behaviors by organizational religiosity, non- organizational religiosity, and spirituality. High organizational religiosity, compared with low, was associated with lower participation in concurrent partnerships (adjusted PR (aPR): 0.73, 95% CI: 0.56, 0.97), and a lower prevalence of multiple sex partners in the past 12 months (aPR: 0.84, 95% CI: 0.68, 1.04). High non-organizational religiosity, compared with low, was associated with fewer lifetime sex partners (aPR: 0.82, 95% CI: 0.69, 0.98), lower prevalence of multiple sex partners in the past 12 months (aPR: 0.58, 95% CI: 0.42, 0.80), and less participation in concurrent partnerships (aPR: 0.47, 95% CI: 0.30, 0.73) Women in the high spirituality group, compared with the low spirituality group, had fewer sex partners in the past 12 months (aPR: 0.69, 95% CI: 0.55, 0.88), less

participation in concurrent partnerships (aPR: 0.64, 95% CI: 0.47, 0.87), had a lower prevalence of never using condoms with at least two partners (aPR: 0.71, 95% CI: 0.47, 1.06), although this measure lacked precision due to the small proportion of participants who had at least two partners.

Table 3 shows crude and adjusted (for research site, age, marital status, and income category) PRs of risky sexual behaviors of the participant's partner. Women with high organizational religiosity, compared with low, had a lower prevalence of partners with concurrent partnerships (aPR: 0.75, 95% CI: 0.55, 1.01). All other partners' behaviors showed no association with any aspect of religiosity or spirituality.

Discussion

In this study of African American women in the Southeastern U.S., a substantial proportion of participants reported high levels of organizational religiosity, non-organizational religiosity, and spirituality. As we hypothesized, high organizational religiosity, high non-organizational religiosity, and high spirituality were associated in adjusted models with having fewer risky personal sexual behaviors in the past 12 months. Few women had partners with high risk behaviors, resulting in uncertainty in the associations between religiosity and spirituality with partners' risk characteristics. Further research is needed about the relationship between religiosity and spirituality with partners' risk characteristics.

Non-organizational religious activity was most strongly protectively associated with participants' own risk characteristics, spirituality was the next most protective, and organized religious activity was least protective, though the estimates for non-organizational religious activity and spirituality were not substantially different from each other. Going to church, the metric related to organizational religious activity, can be motivated by social, financial, and relational reasons in addition to interest in or adherence to the moral components of a religious tradition. Non-organized religious activities, particularly prayer, and spirituality are less likely to have an element of social pressure and may be related to internalization of religious and moral teachings.

The findings of this study support the contention that religiosity and spirituality are associated with behavioral proximate determinants of HIV acquisition. Numbers of sex partners, and partner participation in concurrent partnerships, characteristics associated with religiosity and spirituality in this study, have been associated with increased risk of acquiring HIV.³⁻⁸ However, more work is needed to understand the relationship between religiosity and spirituality with these determinants. One study among African American adult women found that higher self-esteem was associated with fewer sexual risk behaviors, and that higher religiosity was associated in turn with higher self-esteem.³³ Another potential explanation is that sexual partnerships typically occur among individuals with similar racial, economic, educational, and religious backgrounds.³⁴ Thus, women might be expected to partner with men who have similar levels of religiosity (particularly the more visible, organizational religiosity), and men with high religiosity may be more likely to have fewer sexual risk characteristics. However, the relationship between religiosity and sexual risk behaviors among African American heterosexual men is not well characterized, and the

extent to which sexual partnerships are assortative (i.e., selecting or seeking sexual partners similar to oneself) in intensity of religiosity is unknown.

Among African American adolescents and young adults, studies have found associations between higher religiosity and later sexual debut,^{17–19} less frequent sex,^{17,18} refusal of unprotected sex,¹⁷ and more frequent condom use.^{17,18} Unlike previous studies among adolescents and young adults,^{17,18} we did not find an association between religiosity and condom-less sex. However, there were tenuous protective associations between condomless sex with non-organized religiosity and spirituality. These associations were weak, which is consistent with higher negative perceptions about condom use among older (>27 years of age) women.³⁵ The current study also shows that religiosity and spirituality are protectively associated with personal sexual behavior more generally (i.e., number of sex partners in past 12 months and participation in concurrent partnerships). Our convenience sample exhibited a similar religious distribution as the National Survey of American Life,¹⁴ a nationally representative study of African Americans. However, women in our sample were younger, had lower income, and were more likely to be single than the participants in the National Survey.

Though drug and alcohol use are well established risk factors for risky sexual behavior,⁹ we did not adjust for these factors. We think it likely that religiosity and spirituality affect drug and alcohol use, and causally precede these factors. Since we are interested in the associations of different domains of religiosity even through these intermediates, adjusting for these alcohol and drug covariates would be inappropriate.³⁶

This study has several limitations. The study's recruitment strategy included a mixture of venue-based sampling, advertisement, and participant referral, and as such did not yield a random sample of a defined population. For example, half of the population in this study reported an annual family income of less than \$12,000, and low income is a known HIV risk factor.^{37,38} The cross-sectional design makes it difficult to assess the time order of exposures, covariates, and outcomes. In particular, this study cannot determine whether organizational religiosity, non-organizational religiosity, or spirituality is causally related to sexual practices. However, it seems more likely that religiosity affects sexual practices than the reverse. One of the few longitudinal studies in adolescents showed that religiosity delayed first sexual intercourse, but that the timing of first sexual intercourse did not subsequently affect religiosity.¹⁹ There were a limited number of questions asked about religiosity and spirituality, and these questions, while organized around similar domains to the Duke Religion Index,¹² were not validated. In addition, because data for these analyses are self-reported, it is possible that there is respondent bias that is dependent on religiosity. Participants may have been reluctant or uncomfortable to report behaviors that they considered immoral; this bias was minimized through use of ACASI, which has been shown to reduce social desirability bias in sexual behavior reporting.³⁹ Finally, participant reports of partner characteristics may be prone to error; participants may not be aware of the behavior of their partner. There are no currently validated measures of partner's concurrency.

There are a number of strengths of this study. First, all participants were African American women who were sexually active in the past year, an important group to target for HIV prevention messages. Though Alabama and North Carolina are not ranked highest in incident HIV diagnoses by state, at 20.9/100,000 people and 20.8/100,000 people, respectively,¹ these areas do represent the epicenter of heterosexual transmission among women in the Southeastern U.S..² Second, the use of ACASI questionnaire administration ensured consistent administration across all participants and may have elicited fewer inhibitions in answering personal questions.^{39–41} Third, missing data in this study were minimal.

Religion and spirituality are sources of resilience in the African American community and have historically been protective against a number of poor health outcomes. The high prevalence of organizational religiosity in this population is consistent with the current understanding that collaborations between public health workers and religious leaders can result in essential dissemination of information on HIV risk prevention.¹⁵ Should the associations observed here be replicated in other studies, the finding that religiosity and spirituality are associated with personal sexual risk behaviors, but are less strongly associated with characteristics of sex partners among adult African American women has implications for these collaborations. For example, resources could be developed in collaboration with religious leaders that specifically discuss HIV risks related to behavior of sex partners. The associations found in this study suggest the need for further exploration of the associations between protective sexual behaviors and religion and spirituality and the potential role of these factors in promoting safe sex in sexual partnerships.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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PARTICIPANT CHARACTERISTICS AMONG AFRICAN AMERICAN WOMEN FROM FOUR RURAL COUNTIES IN THE SOUTHEASTERN U.S., 2008–2009

Table 1

Characteristic ^a	Alabama site (n=512)		North Carolina site (n=501)		Total (n=1,013)	
	n	%	n	%	n	%
Age (median, IQR)	30 (23, 42)		35 (26, 43)		33 (24, 42)	
Marital status						
Single, never married	285	55.7	279	55.7	564	55.7
Married	109	21.3	101	20.2	210	20.7
Living together as married	33	6.5	16	3.2	49	4.8
Separated/divorced/widowed	83	16.2	105	21.0	188	18.6
Number of lifetime sex partners (median, IQR)	7 (5, 12)		8 (5, 15)		8 (5, 15)	
Number of sex partners in past 12 months (median, IQR)	1 (1, 2)		1 (1, 2)		1 (1, 2)	
Concurrent partnership	133	26.0	113	22.6	246	24.3
Religion						
Baptist	289	57.0	280	55.9	569	56.2
Born again Christian	46	9.1	58	11.6	104	10.3
Non-denominational	51	10.1	36	7.2	87	8.6
Pentecostal	32	6.3	21	4.2	53	5.2
Denominational Christian	23	4.6	7	1.4	30	3.0
Catholic	5	1.0	4	0.8	9	0.9
Muslim	0	0.0	2	0.4	2	0.2
Other	19	3.8	20	3.9	39	3.9
No religion at this time	41	8.1	73	14.6	114	11.3

^aThe following data were missing (n at: Alabama site, North Carolina site, Total): age (0, 0, 0), maritalstatus (0, 2, 2), number of lifetime sex partners (9, 4, 13), number of sex partners in past 12 months (2, 1, 3), date- derived concurrency (20, 15, 35), religion (5, 0, 5).

IQR = Interquartile range

Table 2

SEXUAL BEHAVIOR BY CATEGORIES OF SPIRITUALITY AND RELIGIOSITY AMONG AFRICAN AMERICAN WOMEN FROM FOUR RURAL COUNTIES IN THE SOUTHEASTERN U.S., 2008–2009

	Organizational Religious Activity ^a		Non-organizational Religious Activity ^b		Spirituality ^c	
	Crude PR (95% CI)	Adjusted ^d PR (95% CI)	Crude PR (95% CI)	Adjusted ^d PR (95% CI)	Crude PR (95% CI)	Adjusted ^d PR (95% CI)
	8+ lifetime sex partners					
Low	1	1	1	1	1	1
Med	0.98 (0.84, 1.15)	1.04 (0.90, 1.20)	1.01 (0.88, 1.17)	0.96 (0.84, 1.09)	0.95 (0.81, 1.11)	0.94 (0.81, 1.09)
High	0.89 (0.77, 1.03)	0.95 (0.83, 1.09)	0.93 (0.77, 1.11)	0.82 (0.69, 0.98)	0.91 (0.79, 1.05)	0.89 (0.78, 1.03)
	>1 sex partner in past year					
Low	1	1	1	1	1	1
Med	1.10 (0.90, 1.33)	1.13 (0.93, 1.37)	0.88 (0.74, 1.05)	0.94 (0.79, 1.12)	0.85 (0.69, 1.05)	0.92 (0.76, 1.13)
High	0.67 (0.54, 0.82)	0.84 (0.68, 1.04)	0.45 (0.33, 0.61)	0.58 (0.42, 0.80)	0.55 (0.44, 0.69)	0.69 (0.55, 0.88)
	Concurrency in past 12 months					
Low	1	1	1	1	1	1
Med	1.03 (0.80, 1.33)	1.09 (0.84, 1.41)	0.94 (0.75, 1.18)	0.99 (0.79, 1.26)	0.80 (0.60, 1.05)	0.83 (0.63, 1.10)
High	0.59 (0.45, 0.77)	0.73 (0.56, 0.97)	0.36 (0.23, 0.55)	0.47 (0.30, 0.73)	0.51 (0.38, 0.69)	0.64 (0.47, 0.87)
	No condoms with 2+ partners					
Low	1	1	1	1	1	1
Med	0.97 (0.66, 1.42)	1.06 (0.73, 1.53)	0.95 (0.68, 1.32)	0.81 (0.60, 1.10)	0.82 (0.56, 1.21)	0.81 (0.56, 1.16)
High	1.13 (0.79, 1.64)	1.00 (0.72, 1.38)	0.98 (0.58, 1.63)	0.64 (0.41, 1.02)	0.68 (0.43, 1.07)	0.71 (0.47, 1.06)

^aLow, medium, and high organizational religious activity was defined as church attendance never, once or twice a year, once or twice a month, and every week or more frequently, respectively.

^bLow, medium, and high non-organizational religious activity was defined as a combined metric of 5, 6–7, and 8–9, respectively.

^cLow, medium and high spirituality was defined as a combined metric 4, 5, and 6, respectively.

^dAdjusted for participant's research site, age, marital status, and income category.

Table 3

PARTNERS' SEXUAL BEHAVIOR BY CATEGORIES OF SPIRITUALITY AND RELIGIOSITY AND RELIGIOSITY AMONG AFRICAN-AMERICAN WOMEN FROM FOUR RURAL COUNTIES IN THE SOUTHEASTERN U.S., 2008– 2009

	Organizational Religious Activity ^a		Non-organizational Religious Activity ^b		Spirituality ^c	
	Crude PR (95% CI)	Adjusted ^d PR (95% CI)	Crude PR (95% CI)	Adjusted ^d PR (95% CI)	Crude PR (95% CI)	Adjusted ^d PR (95% CI)
Low	1	1	1	1	1	1
Medium	0.95 (0.71, 1.28)	0.94 (0.69, 1.28)	0.93 (0.71, 1.21)	0.93 (0.70, 1.23)	0.79 (0.57, 1.09)	0.77 (0.55, 1.08)
High	0.72 (0.54, 0.96)	0.75 (0.55, 1.01)	0.77 (0.53, 1.10)	0.78 (0.53, 1.16)	0.82 (0.62, 1.09)	0.87 (0.65, 1.17)
Low	1	1	Partner incarceration			
Medium	0.79 (0.66, 0.94)	0.86 (0.70, 1.06)	1.02 (0.85, 1.22)	1.02 (0.85, 1.23)	0.98 (0.80, 1.21)	1.00 (0.82, 1.22)
High	0.80 (0.65, 0.98)	0.92 (0.77, 1.11)	0.92 (0.73, 1.17)	1.01 (0.79, 1.29)	0.93 (0.77, 1.12)	1.02 (0.85, 1.23)
Low	1	1	Partner had an STD in past 12 months			
Medium	1.14 (0.63, 2.06)	1.08 (0.58, 2.01)	0.99 (0.60, 1.61)	1.42 (0.85, 2.39)	0.83 (0.47, 1.46)	0.81 (0.45, 1.48)
High	0.91 (0.52, 1.58)	1.31 (0.73, 2.33)	0.43 (0.19, 0.97)	0.77 (0.30, 1.96)	0.56 (0.31, 1.01)	0.81 (0.44, 1.48)
Low	1	1	Partner used drugs			
Medium	1.06 (0.68, 1.65)	1.07 (0.70, 1.65)	1.39 (0.94, 2.06)	1.19 (0.81, 1.76)	1.16 (0.79, 1.71)	1.13 (0.77, 1.65)
High	1.26 (0.87, 1.85)	1.21 (0.83, 1.77)	1.58 (1.01, 2.48)	1.03 (0.65, 1.64)	1.12 (0.78, 1.59)	1.02 (0.81, 1.46)

^aLow, medium, and high organizational religious activity was defined as church attendance never, once or twice a year, once or twice a month, and every week or more frequently, respectively.

^bAdjusted for participant's research site, age, marital status, and income category.

^cLow, medium, and high non-organizational religious activity was defined as a combined metric of 5, 6–7, and 8–9, respectively.

^dLow, medium and high spirituality was defined as a combined metric 4, 5, and 6, respectively.