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Examining the Relationships Between Religiosity, Spirituality, Internalized Homonegativity, and Sexual Risk Behaviors Among African-American Men Who Have Sex With Men: The Sexual Health In Faith Traditions (SHIFT) Study

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Examining the Relationships Between Religiosity, Spirituality, Internalized
Homonegativity, and Sexual Risk Behaviors Among African-American Men who Have
Sex with Men: The Sexual Health in Faith Traditions (SHIFT) Study

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DEDICATION

I dedicate this dissertation to my grandmother, Lydia Holley, one of the best teachers this world has ever known. It is because of your love, your nurturing, and your drive for excellence that I am able to experience this moment. I had always hoped that you would be here to enjoy it with me, but I know that you are rejoicing in Heaven even as I rejoice here on Earth.

I also dedicate this to my mother, who showed me how many odds can be overcome with faith, patience, and perseverance. You have been with me on every step of this journey, encouraging me with your words, prayers, and most importantly, your example. You are a testament to what God can accomplish when you yield yourself to Him. I love you.

Finally, I dedicate this to the 348 men who participated in this study. I am honored to be able to share your untold stories with the world. In particular, I lift up the young man who participated in my study, and told me after completing the survey, “I want to find love and be in a relationship, but I don’t want to go to hell for it.” I pray that this project can open the door for you to experience both the love of God and the love you seek on Earth, and realize that they are not mutually exclusive.

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ABSTRACT

Background: African-American men who have sex with men (AAMSM) are at disproportionate risk for HIV infection. Although the disparities in infection rates between AAMSM and MSM of other groups have been well-documented, little is known about the factors that contribute to the disparity, particularly psychosocial factors. One such factor, internalized homonegativity (IH), has been identified as a potential predictor of AAMSM engagement in risky sexual behaviors. However, little has been known about the ways in which IH manifests itself in the lives of AAMSM, or the role that sociocultural institutions, such as African-American faith communities, play in the development of IH among AAMSM. To examine these phenomena, the Sexual Health in Faith Traditions (SHIFT) Study was developed to examine the relationships between religiosity, spirituality, IH, and engagement in risky sexual behaviors among AAMSM.

Methods: Anonymous paper-and-pencil surveys were administered to 348 AAMSM living in the Deep South, recruited from Black Gay Pride celebration events, social media, and snowball sampling. First, the SHIFT Study examined the dimensional structure of IH among AAMSM as assessed by the Internalized Homonegativity Inventory (IHNI), a widely-used scale used to measure IH, using factor analysis. Second, regression analyses and structural equation models were used to investigate the relationships between the dimensions of IH, religiosity, spirituality, and sexual risk behaviors. **Results:** Whereas the original IHNI research showed evidence of a three-factor structure (Personal Homonegativity, Morality of Homosexuality, and Gay

Affirmation), exploratory factor analysis showed evidence of a two-factor structure for this sample, with the “Personal Homonegativity” and “Morality of Homosexuality” items loading onto the same factor, and the “Gay Affirmation” subscale remaining intact. Subsequent regression analyses and structural equation models showed that both dimensions of IH were significantly positively associated with an increased frequency of condom use in the last 3 months. Results also showed that religiosity was significantly positively associated with IH, while spirituality was significantly negatively associated with IH. While there were no significant direct effects between religiosity and condom use or spirituality and condom use, there were significant indirect effects, suggesting that IH mediates the relationships between religiosity, spirituality, and condom use.

Implications: the findings of the SHIFT Study provide insight for further investigation into the determinants of HIV risk for AAMSM. First, HIV prevention interventionists should explore the ways in which psychosocial factors, such as IH, may function differently among AAMSM, and take those differences into account in planning future interventions. Second, the influence of social, historical, and cultural aspects of the African-American experience, including the African-American faith experience, should also be considered in future intervention development.

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LIST OF ABBREVIATIONS

| | |
|--------------|--|
| HIV | Human Immunodeficiency Virus |
| AIDS | Acquired Immune Deficiency Syndrome |
| MSM | Men who have sex with men |
| AAMSM | African-American men who have sex with men |
| EFA | Exploratory factor analysis |
| IH | Internalized homonegativity |
| IHNI | Internalized Homonegativity Inventory |
| DSES | Daily Spiritual Experiences Scale |
| DUREL | Duke Religion Index |
| RCI-10 | Religious Commitment Inventory-10 |
| RVS | Religious Values Scale |
| PMH | Personal & Moral Homonegativity |
| GA | Gay Affirmation |

CHAPTER I: INTRODUCTION

Since its initial cases were diagnosed in 1981, Human Immunodeficiency Virus (HIV) infection has remained a public health concern in the United States. An estimated 1.1 million Americans are currently living with HIV, the virus that causes Acquired Immune Deficiency Syndrome (AIDS), and approximately 18% of those are unaware of their HIV status (CDC, 2013). Between 2006 and 2009, an estimated 50,000 new HIV infections were diagnosed annually in the U.S. (CDC, 2011). The HIV epidemic has not affected all groups in the U.S. equally; while infection rates among most groups have decreased, infection rates among African-American men who have sex with men (AAMSM) continue to rise. The increase in HIV infection rates among MSM between 2006 and 2009 was largely driven by a 48% increase in HIV infections among young AAMSM in those years (CDC, 2011). The rise in infection rates among AAMSM has prompted a national response that includes the development of new HIV prevention programs specifically targeting this population (CDC, 2011; White House, 2010).

Statement of the Problem

HIV transmission is largely driven by engagement in certain behaviors that carry with them a high risk of infection. Specifically, HIV transmission is primarily associated with high-risk sexual behaviors and injection drug use (CDC, 2012). In response, the majority of HIV prevention interventions that are commonly implemented rely on individual-level behavior change strategies, including increases in knowledge, changes in attitudes and beliefs toward HIV infection, and behavioral skills acquisition (CDC, 2011).

However, recent research has indicated that behavioral differences alone do not explain the differences in HIV rates between AAMSM and other MSM (Millett, Peterson, Wolitski, & Stall, 2006; Black AIDS Institute, 2012), and that additional empirical information is needed on the influence of psychological, social, and institutional factors on AAMSM engagement in risky sexual behaviors and sexual partner selection (Malebranche, 2003).

The African-American religious experience, commonly referred to as the “Black church,” is one of the oldest and most powerful institutions in African-American communities (Lincoln & Mamiya, 1990; Griffin, 2006; Schulte & Battle, 2004). Although primarily considered a sacred space, the Black church has also nurtured the development of non-religious civil rights and social justice organizations, including the National Association for the Advancement of Colored People (NAACP; Schulte & Battle, 2008). The Black church’s influence permeates African-American culture; African-Americans report greater levels of religious involvement than any other racial/ethnic group in the U.S. (Taylor, 1988), and even African-Americans who are not active in Black churches report that its teachings and tenets still inform their current belief system (Dyson, 2003). The African-American religious experience is not only important for its social and organizational influence; it also has been associated with a number of positive health outcomes, including chronic disease management and more positive mental health (Ellison, Hummer, Cormier, & Rogers, 2000; Musgrave, Allen, & Allen, 2002; Siegel & Schrimshaw, 2000; Holt, Shulz, & Wynn, 2009).

Although positive health outcomes have been associated with participation in African-American religious life, AAMSM have a different, often antagonistic,

relationship with the Black church. African-American sacred spaces are often launching pads for anti-homosexual rhetoric and sociocultural norms, labeling homosexuality and those who practice it as threats to the African-American families and manhood (Griffin, 2006; Douglas, 1999). Negative attitudes toward homosexuality, often referred to as “homophobia” or “homonegativity,” are manifested in forms ranging from verbal antagonism to invisible silence (Ward, 2005; Jeffries, Dodge, & Sandfort, 2008). Some researchers have even linked the homonegativity present in African-American faith communities to the growing HIV epidemic in African-American communities (Fullilove & Fullilove, 1999). However, despite the homonegative messages and norms, AAMSM continue to actively participate in African-American religious life (Griffin, 2006; Woodyard, Peterson, & Stokes, 2000; Jeffries, Dodge, & Sandfort, 2008; Pitt, 2010b).

The influence of sociocultural institutions like the Black church on the mental and sexual health of AAMSM underscores the importance of using a social ecological approach to understanding AAMSM’s HIV risk. Social ecological models provide a framework through which individual behaviors can be examined in the context of multiple levels of influences (McLeroy, Bibeau, Steckler, & Glanz, 1988). Using a social ecological framework, one can examine how sociocultural community norms and institutions can influence individual engagement in certain behaviors. Using an intersectional lens can help to further understand the relationships between these multiple levels of influence and behavior by locating the unique, interlocking systems, identities, and oppressions that help to shape their behavior (Bowleg, 2012). In the case of AAMSM, sociocultural influences and institutions (such as African-American faith communities, commonly referred to as the “Black church”) and the negative attitudes

expressed toward homosexuality (referred to as “homonegativity”) exhibited therein may play critical roles in the ways in which AAMSM view themselves and their sexuality, thus affecting their likelihood of engaging in certain high-risk sexual behaviors that can place them at risk of HIV infection.

In addition to identifying predictors of engagement in risky sexual behaviors, social ecological models can also help to inform the development of comprehensive HIV prevention interventions. In 1998, the Centers for Disease Control and Prevention convened a workgroup that developed a framework defining structural barriers and facilitators of HIV prevention, as well as listing potential supporters/inhibitors of HIV prevention (Sumartojo, 2000). The workgroup defined barriers and facilitators as factors that were “part of the context or environment surrounding individuals, but outside their direct control” (Sumartojo, 2000, p. S6). The workgroup then developed a two-dimensional framework of barriers and facilitators. The first dimension articulated four levels of barriers or facilitators: economic, policy, societal, and organizational. The second dimension was composed of the systems that enact and support each of the aforementioned types of structural barriers or facilitators: government; service organizations (e.g., community-based organizations); business or for-profit organizations; workforce organizations; faith communities or organizations; justice systems; media organizations; educational systems; and health care systems. Using this framework, one can claim that faith communities could play a critical role in either facilitating or hindering HIV prevention efforts, particularly with MSM. More specifically, faith communities that have homonegative policies or perpetuate stigma toward sexual

minority communities could have a deleterious effect on HIV prevention efforts to reach MSM.

The epidemic rates of HIV infection among AAMSM should demand the attention of public health researchers and interventionists. The fact that AAMSM represent the only demographic group in the U.S. experiencing increasing rates of infection should be a cause for concern, and that concern requires a robust and aggressive response. Due to the lack of empirical investigation of the psychosocial factors associated with engagement in sexual risk behaviors and subsequent HIV infection in this population, public health researchers have a responsibility to investigate these potential risk and protective factors, and incorporate them into effective, evidence-based HIV prevention interventions for AAMSM.

Purpose of the Study

The purpose of the Sexual Health in Faith Traditions (SHIFT) Study was to examine how religiosity, spirituality, perceived affirmativeness of a religious institution, and internalized homonegativity influence engagement in sexual risk behaviors among AAMSM living in the Deep South region of the United States. The SHIFT Study used quantitative methods to evaluate the relationship between the aforementioned concepts, with the hope that the findings could be used to inform the development of more culturally-specific, empirically-driven HIV prevention interventions for AAMSM.

The specific aims of this study were to:

- 1. Explore how different dimensions of internalized homonegativity are associated with sexual risk behaviors among AAMSM.**
- 2. Examine the ways in which religiosity and spirituality are differentially associated with sexual risk behaviors among AAMSM.**

3. Examine the associations between internalized homonegativity, religiosity, spirituality, perceived affirmativeness, and sexual risk behaviors among AAMSM.

The SHIFT Study provides an intersectional understanding of the psychosocial factors that may contribute to engagement in sexual risk behaviors. Many studies of sexual risk among MSM use small samples of AAMSM—samples that are not large enough to statistically examine variability within the sample. The SHIFT Study provided detailed information about a sample of men who are at the intersection of African-American and MSM, thus providing an opportunity to investigate the nuances of the AAMSM experience and how this experience relates to sexual health.

Ultimately, the results of the SHIFT Study can contribute to AAMSM HIV prevention efforts in two ways. First, the findings can be used by public health researchers and interventionists to aid in the development of more effective HIV prevention programming for AAMSM. Second, the results can be used to inform the development of a more robust discourse about sexuality, and HIV prevention in particular, within the sociocultural communities and institutions that frame and define the African-American experience.

The format of this dissertation includes: an extensive review of the extant literature (Chapter 2); a discussion of the research methodology employed in this study (Chapter 3); results for all research questions, including two manuscripts (Chapter 4); and a discussion of the findings and implications for future research (Chapter 5).

CHAPTER II: BACKGROUND AND SIGNIFICANCE

HIV/AIDS in the United States

Human Immunodeficiency Virus (HIV) infection is a major public health problem in the United States. According to the Centers for Disease Control and Prevention (CDC), an estimated 1.15 million people are living with HIV in the U.S., and an estimated 20% of those are unaware of their infection (CDC, 2013). Each year, approximately 50,000 Americans become infected with HIV (CDC, 2013). In 2010, HIV was identified as the 11th leading cause of death among Americans aged 15-24 years, and the 7th leading cause of death among the age group 25-44 years (Murphy, Zu, & Kochanek, 2012).

Distribution of HIV infections among Americans is not equal across all demographic groups. Americans in the 25-34 year age category reported the highest rate of HIV diagnoses in 2011 (CDC, 2013). In 2010, African-Americans¹ accounted for 46% of all new diagnoses of HIV infection, despite only comprising roughly 13% of the U.S. population (CDC, 2013). African-Americans had an estimated rate of diagnosis of HIV infection of 68.9 per 100,000—more than twice the rate of Hispanics/Latinos (27.5 per 100,000) and almost eight times the rate of Whites (8.7 per 100,000; CDC, 2013). In the year 2010, 39,945 males living in 46 states and 5 U.S.-dependent areas with confidential name-based HIV reporting were diagnosed with HIV infection; of those, an

¹ Throughout this document, the terms “African-American” and “Black” will be used interchangeably.

estimated 78% were infected through male-to-male sexual contact (CDC, 2013). For this reason, gay, bisexual, and other men who have sex with men (MSM) have been identified by the CDC as the population most severely affected by HIV (CDC, 2013).

HIV/AIDS is also unequally distributed across geographic regions in the U.S. The American South has higher rates of sexually transmitted infections, including HIV/AIDS, than any other U.S. region (CDC, 2013; Lichtenstein, 2003). The South, as a U.S. Census region, reported the highest rate of new HIV infections in 2009, at 22.3 per 100,000—greater than the rate for the Northeast (19.6/100,000) and more than double the rates of infection in the West (10.9/100,000) and the Midwest (10.0/100,000) (CDC, 2011). Of the 15 states in 2011 reporting the highest estimated rates of HIV diagnoses, 10 of them were located in the South (CDC, 2013). Moreover, the six states that constitute the “Deep South”—Louisiana, Mississippi, Alabama, Georgia, North Carolina, and South Carolina—ranked among the 12 states with the highest estimated HIV diagnosis rates in 2010 (CDC, 2013). The burden of HIV/AIDS also disproportionately affects African-Americans living in the South. According to Fleming et al. (2006), the South was the only region in the nation in which the number of AIDS cases among African-Americans outnumbered those of any other racial/ethnic group. Based on the epidemiological profiles of the HIV epidemic, significant attention and resources should be devoted to understanding and intervening on factors that may contribute to HIV infection in the South.

HIV/AIDS and AAMSM in the United States

African-American men who have sex with men (AAMSM) in the U.S. are at disproportionate risk for HIV infection. AAMSM are estimated to account for 9% of all

MSM in the U.S., but represent 38% of new HIV infections among MSM (Black AIDS Institute, 2012). An estimated 15,444 African-American men were diagnosed with HIV infection in 2010; of those, 10,838 (70%) were reported to have been infected through male-to-male sexual contact (CDC, 2013). African-American men also represented almost 38% of new infections among MSM in 2008 (CDC, 2013). According to a six-city study conducted by the HIV Prevention Trials Network, the rate of new HIV infections among AAMSM was 2.8% per year, a rate that is 50% higher than the infection rate for white MSM in the U.S. (HPTN, 2012). Even within the U.S. South, rates of HIV infection were higher among AAMSM than the rates for White or Hispanic MSM (Lieb, et al., 2011). The high reported incidence rates of HIV infection among AAMSM are comparable to HIV infection rates in developing countries (Mays, Cochran, & Zamudio, 2004).

In addition to experiencing disproportionately high infection rates, many AAMSM are unaware of their HIV status. A 2005 study tested 1,767 MSM from five large U.S. cities for HIV using the OraQuick rapid HIV test. One-quarter (25%) of the men in the study tested positive for HIV. When examined along racial and ethnic lines, 46% of AAMSM tested positive, compared to 21% of white MSM and 17% of Hispanic MSM. Of the 217 participants who were unaware of their HIV-positive status, 64% of them were African-American (CDC, 2005).

Explanations for Disproportionate HIV Infection Rates among AAMSM

Explanations for the differences in HIV rates between AAMSM and MSM of other racial/ethnic groups are varied. Unprotected anal intercourse (UAI) is one of the most identifiable risk factors associated with HIV infection among MSM (Goedert, et al.,

1985; Koblin, et al., 2006). A higher occurrence of UAI among AAMSM could account for a significant portion of the racial disparity in HIV infection rates. For example, low peer norms of condom use were associated with higher likelihood of both unprotected receptive anal intercourse (URAI) and unprotected insertive anal intercourse (UIAI), while not carrying condoms was associated with higher likelihood of URAI (Hart, Peterson, & Team, 2004). However, many studies found either no significant differences in UAI between AAMSM and MSM of other races, and in some cases found that AAMSM were comparatively less likely to engage in UAI or other high-risk sexual behaviors (Millett, Peterson, Wolitski, & Stall, 2006). Other possible explanations for AAMSM's disproportionate risk, including below-average rates of circumcision and the fact that AAMSM are less likely to identify as gay compared to White MSM, have also been challenged (Black AIDS Institute, 2012).

The fact that the literature on behavioral risk factors for HIV infection among AAMSM is equivocal suggests that there must be alternative explanations for the differences in HIV infection rates among MSM of different races. In the report, "Back of the Line: The State of AIDS Among Black Gay Men in America 2012," the Black AIDS Institute outlines potential factors that may contribute to increased HIV burden among AAMSM including: diminished access to health care and lower health service utilization; high prevalence of other sexually transmitted infections; sexual behavior patterns among young AAMSM, including earlier sexual debut and increased likelihood of having older sex partners; and social determinants of health, including poverty, unemployment, violence, homelessness, childhood sexual abuse, and incarceration.

Some researchers have highlighted the need for additional empirical information on the influence of psychological, social, and institutional factors on AAMSM engagement in risky sexual behaviors and sexual partner selection (Malebranche, 2003). Additional inquiry is needed to understand the underlying factors that influence the sexual behaviors of AAMSM and contribute to the disproportionate burden of HIV/AIDS in this population. Some of the factors influencing AAMSM risk for HIV infection may be psychosocial, yet heavily influenced by the foundational sociocultural structures of African-American life.

Internalized Homonegativity

Internalized homonegativity refers to the internalization of certain aspects of prejudice against homosexuality in a heterosexist society (Williamson, 2000). The term is derived from “internalized homophobia,” a concept first posited by Weinberg (1973), who described internalized homophobia as socially-induced dread and hostility toward one’s own homosexuality. Although the term has gained widespread acceptance and use, some academics have criticized the use of “homophobia” to describe resistance or opposition to homosexuals and homosexuality. Critics have asserted that the term is inaccurate because it conflates the targeted set of attitudes as both a disease and a socially-constructed set of cognitive characteristics (Wickberg, 2000). Other critics point out that the term “homophobia” refers more to a clinical fear and avoidance of homosexuality or homosexuals as opposed to a set of attitudes (Herek, 1994). The terms “homonegativism” and “homonegativity” have been offered as an alternative to “homophobia,” referring more specifically to a set of negative, socially-induced attitudes

toward homosexuality or homosexuals (Ross, Rosser, Neumaier, & Team, 2008). Still, many researchers continue to use the two terms interchangeably.²

Previous research has provided some evidence that internalized homophobia is associated with several negative health outcomes for lesbian, gay, bisexual, and transgender (LGBT) populations, including increased incidences of unprotected sexual intercourse (Williamson, 2000). Additionally, research has shown that racial differences exist in the manifestation of internalized homonegativity (Rosario, Schrimshaw, & Hunter, 2004). Shoptaw et al. (2009) found that, in a sample of 722 MSM and men who have sex with men and women (MSM/W) in Los Angeles, African-American participants reported higher levels of internalized homonegativity than any other racial/ethnic group. Glick and Golden (2010) used data from the national General Social Survey, an annual door-to-door survey of the demographics, attitudes, and behaviors of U.S. adults to examine trends and correlates of attitudes toward homosexuality. They found that internalized homophobia was more common among African-American men than white men, and that MSM who reported that homosexuality was “wrong” were less likely to get tested for HIV. Another study, conducted by O’Leary et al. (2007), recruited 456 HIV-seropositive MSM living in New York and San Francisco to examine predictors of HIV transmission risk behaviors. They found that the African-American men in the sample reported significantly higher levels of internalized homophobia than men in the European-American or “Other” racial groups (O’Leary, Fisher, Purcell, Spikes, & Gomez, 2007).

² Throughout the Background & Significance, the terms “internalized homophobia” and “internalized homonegativity” are used interchangeably, in reference to the studies and scholarly works cited in this chapter. However, “internalized homonegativity” will be the preferred term that will be used in subsequent chapters.

While there is a scarcity of research examining internalized homonegativity specifically within AAMSM populations, the extant studies of AAMSM have shown that internalized homophobia was positively associated with depression and anxiety (Graham, et al., 2011). A qualitative study by Stokes and Peterson (1998) with 76 AAMSM ages 18-29 found that internalized homonegativity was associated with engagement in risky sexual behaviors. Participants noted that fear of being perceived as gay or bisexual could lead to less interest in HIV/AIDS or avoiding condom use discussions with sexual partners. They also said that homophobic men were less likely to have steady, monogamous relationships, which in turn led to more sexual partners. They also reported that, when self-esteem is low, attracting someone can be reinforcing; thus, sex could be used to fill a void, alleviate feelings of loneliness, or fulfill desires for companionship (Stokes & Peterson, 1998)

In addition to its association with sexual risk behaviors, internalized homophobia can also deter MSM from participating in community-based HIV prevention programs and interventions. Huebner et al. (2002) conducted a study of 595 gay and bisexual men in the Phoenix, Arizona metropolitan area to examine the relationships between internalized homophobia, disclosure of sexual identity, and awareness of a local community-based HIV prevention organization and its prevention services. The authors found that internalized homophobia was negatively associated with the degree to which gay and bisexual men were “out,” or open about their sexuality. Internalized homophobia was also negatively associated with the number of HIV prevention services the men had heard of (Huebner, Davis, Nemeroff, & Aiken, 2002). A second study was conducted by the same authors of 89 gay and bisexual men who participated in a single-

session, group-level HIV prevention intervention. Results showed that men with higher levels of internalized homophobia reported lower levels of condom use self-efficacy at the end of the session, even when controlling for pre-intervention self-efficacy levels (Huebner, Davis, Nemeroff, & Aiken, 2002).

Based on these findings, internalized homonegativity should be considered a vital component of HIV prevention research among MSM. However, few studies in the literature have examined internalized homonegativity among AAMSM, particularly its underlying dimensional structure. Due to sociocultural and historical differences, internalized homonegativity may function differently among AAMSM than among other racial/ethnic MSM populations. Extant measures of internalized homonegativity have not been widely used in AAMSM populations; thus, little is known about the validity of these measures in AAMSM populations. Given the critical role that internalized homonegativity can play in HIV risk among AAMSM, it is important to understand the specific ways in which IH operates within this population. One approach would be to conduct a critical analysis of one of the most commonly-used instruments to measure IH—the Internalized Homonegativity Inventory (IHNI).

Measuring IH: Different Populations, Different Dimensions

The IHNI, was developed by Mayfield (2001), who defined internalized homonegativity as “the constellation of negative attitudes that gay men possess toward homosexuality in general and toward homosexual features in themselves.” Moreover, the author has distinguished between the terms homophobia and homonegativity; according to Mayfield, homophobia refers more to clinical fear and avoidance of homosexuals as opposed to the cultural attitudes that lead to the devaluation of non-heterosexuals

(Mayfield, 2001). Mayfield articulated the need for a new scale by pointing out content validity problems in previous scales, such as the Internalized Homophobia Scale, which includes items that don't clearly address the construct (e.g., "I worry about becoming unattractive"). To develop the scale, Mayfield initially generated a pool of 40 items based on personal homonegativity and global homonegativity. After an expert review, the pool grew to 42 items that used a 6-point Likert-type scale (1=Strongly Disagree to 6=Strongly Agree). The IHNI was administered to 241 gay men living in the U.S. over a six-month period. These participants were recruited from gay bars, churches with primarily gay and lesbian memberships, an adult bookstore, LGBT pride festivals, gay campus organizations, gay choirs, and the Internet. Respondents were mostly white (88.7%), living in the Midwest (64.4%), HIV-negative (82.4%), and lower middle class (45.7% earning between \$20,000 and \$50,000). Respondents also completed the Gay Identity Questionnaire, Extroversion and Emotional Stability Mini-Markers, the Nungesser Homosexuality Attitudes Inventory (NHAI), and the Marlowe-Crowne Social Desirability Scale. Following factor analyses utilizing oblique rotations, 23 items were retained across three subscales: Personal Homonegativity (11 items), Gay Affirmation (7 items), and Morality of Homosexuality (5 items). Internal consistency reliability was .91 for the entire 23-item inventory, and .70 or greater in each of the three subscales. The IHNI was found to be positively correlated with NHAI scores, providing evidence of convergent validity.

The IHNI has been used in previous studies to assess levels of internalized homonegativity among AAMSM. Shoptaw et al. (2009) used the IHNI in a study to examine internalized homonegativity among poor, urban, ethnic minority MSM living in

Los Angeles, California. The study found that Cronbach's alpha coefficients for the total IHNI, Personal Homonegativity, Gay Affirmation, and Morality of Homosexuality subscales were 0.91, 0.90, 0.83, and 0.76, respectively. Higher IHNI scores were associated with being African-American and with self-identifying as straight or any label indicating bisexuality (Shoptaw, et al., 2009). Another study using the IHNI with HIV-positive MSM in Los Angeles found a high degree of IHNI internal consistency (Cronbach's alpha = 0.90), with higher IHNI scores being associated with higher prevalence of unrecognized HIV infection (Young, Shoptaw, Weiss, Munjas, & Gorbach, 2009).

Previous research has associated internalized homonegativity with negative sexual health outcomes and reduced efficacy of HIV prevention interventions among MSM. However, further research is needed to investigate whether internalized homonegativity operates differently among AAMSM than it does among other racial/ethnic MSM populations. A better understanding of how internalized homonegativity functions among AAMSM will enable interventionists to enhance the effectiveness of HIV prevention interventions for this disproportionately-affected population.

A more nuanced understanding of internalized homonegativity may also enable researchers to examine any unique social and cultural factors related to the African-American experience that contribute to the development of internalized homonegativity among AAMSM. It is important to examine the possibility that, while internalized homonegativity may exert some influence on AAMSM sexual risk behaviors, it may in turn be influenced by other sociocultural factors. Two factors that should be investigated

are religiosity and spirituality, as they play critical roles in African-American history and contemporary culture.

African-Americans and Religious Life

Religion has traditionally played a critical role in the lives of African-Americans. The African-American religious experience, commonly referred to as the “Black church,” is considered to be a cultural experience that links African-American ethnicity, connection to the American South, working-class socioeconomic status, and conservative sociopolitical ideology (Schulte & Battle, 2004). Lincoln and Mamiya (1990) argued that “the core values of black culture, like freedom, justice, equality, an African heritage, and racial parity at all levels of human intercourse, are raised to ultimate levels and legitimated in the black sacred cosmos...given birth and nurtured in the womb of the Black Church (p.7).” Griffin (2006) states in *Their Own Receive Them Not: African American Lesbians and Gays in Black Churches*, “The black church has functioned as the center of black people’s lives from its origins as an invisible institution during chattel slavery to its present day as a highly visible institution. Being one of the few institutions owned by black people for black people, the black church, at its best, has not only served as a house of worship, but has also provided social status, hope, and stability for the millions of Africans who have lived in America (p. 55).” This notion of the Black church as the nucleus of African-American history and culture is also evidenced in the Black church’s role in the development of non-religious organizations, such as the National Association for the Advancement of Colored People (NAACP), that have advocated for civil rights and social justice (Schulte & Battle, 2004).

Previous research has shown that African-Americans report more frequent attendance at religious services, higher rates of prayer and affective religious behaviors, and feel more strongly about their religious beliefs than white Americans (Taylor, 1988). In an analysis of several national samples, including the 1972 National Election Study, the 1976 Gallup Poll, and the 1972-1977 General Social Survey, African-Americans were “more likely to: (1) pray frequently, (2) believe that God sends misfortunes as punishments for sins, (3) attend church frequently, (4) indicate the Bible is the word of God, (5) feel that their religious beliefs are important, (6) report that they have had a religious experience, and (7) indicate that they were ‘born again’” than their white counterparts, with racial differences being more prominent than gender, age, income, occupation, or education effects (Taylor, 1988, p. 115). Even African-Americans who no longer extol religious principles still often report that they have been profoundly influenced by the religious ideology in which they were raised, and that these doctrines continue to influence their current beliefs (Dyson, 2003).

Religiosity and Spirituality

Before entering into a review of the roles that religiosity and spirituality play in African-American lived experiences and AAMSM HIV risk, it is necessary to define and disentangle these related, yet distinct concepts. Distinguishing between religiosity and spirituality in research has been challenging. For example, Zinnbauer et al. (1997) defined religiosity as a set of personal beliefs (e.g., belief in God/higher power) along with organizational or institutional beliefs (e.g., church membership, attendance, adherence to the belief system of a church or organized religion). In contrast, Tan (2005) defined spirituality as “the sense of meaning, purpose, and morality that individuals

espouse regarding their lives.” A study by Mattis (2000) found that African-American women distinguished religiosity and spirituality across three key areas: (1) spirituality refers to an internalization and expression of values, whereas religiosity is an embrace of prescribed beliefs and ritual practices; (2) religiosity is a tool, or a means for achieving the outcome of spirituality; (3) religion is associated with doctrines and rituals, whereas spirituality is more of a relational phenomenon.

Despite the challenges inherent in distinguishing between the two concepts, the impacts of religiosity and spirituality on health are increasingly becoming a popular topic of study. As researchers attempt to understand the sociocultural factors that influence morbidity and mortality, increased attention has been given to the roles of religiosity and spirituality in health (Holt, Shulz, & Wynn, 2009). Many studies suggest that religiosity has a positive effect on health. Koenig, McCullough, and Larson (2001) point to evidence suggesting that there is a positive association between religiosity and health-related outcomes and disease states. A number of studies indicate that religious involvement is moderately associated with better health status, most notably heart disease, hypertension, stroke, some forms of cancers, and gastrointestinal disease (Ellison & Levin, 1998). Strong evidence also exists that religious involvement and spirituality are positively associated with desirable mental health outcomes. For example, Ellison et al. (1998) report that African-Americans in a prospective 3-year study who reported high religious involvement (e.g., attending religious services more than once per week, receiving significant guidance from religion in their daily lives) reported lower psychological distress and were less likely to be diagnosed with major depressive disorders. The benefits of religiosity and spirituality on mental health can also be found

in the LGBT community. For example, a study of gay and lesbian individuals living in the Midwestern U.S. found that spirituality was a significant predictor of having higher self-esteem, lower internalized homophobia, and feeling less alienated from others (Tan, 2005).

While many studies have examined the connections between religiosity, spirituality, and health, less attention has been given to religiosity and spirituality's associations with sexual health in particular. Moreover, the majority of the studies that have been conducted in this area have focused on adolescents and young adults. For example, adolescents who are more involved in religious activities are less likely to engage in premarital sexual activities (Thornton & Camburn, 1989) and delay sexual debut (Hardy & Rafaelli, 2003). A study by Zaleski and Schiaffino (2000) recruited 231 college freshmen to examine the relationships between religiosity, sexual activity, and condom use. The findings suggested that higher rates of both intrinsic and extrinsic religiosity were associated with less sexual activity regardless of the participant's gender; however, results also showed that higher religiosity was associated with less frequent condom use (Zaleski & Schiaffino, 2000). Another study was conducted by Holder et al. (2000) with 141 youth who presented as patients to an urban teaching hospital. Results showed that those who were not voluntarily sexually active reported significantly higher religious importance scores than those who were sexually active. Similarly, those who reported higher scores on the "spiritual friend interconnectedness" scale, an indicator of receiving social support from spiritual friends, were also more likely to not engage in voluntary sexual activity (Holder, Durant, Harris, Daniel, Obeidallah, & Goodman, 2000). A longitudinal study of 705 African-American high school students from 9th to

12th grade found that, among females, decreased religious participation from 9th to 12th grades was associated with increased participation in sexual intercourse during the same time frame (Steinman & Zimmerman, 2004). Similarly, a study of 15,362 adolescents aged 12-17 found that African-American females in the sample reported higher levels of religiosity than their Latina and European-American counterparts, and that religiosity was a significant negative predictor of sexual activity (Perkins, Luster, Villarruel, & Small, 1998).

African-American religiosity has also been associated with positive health outcomes. For example, African-Americans who attended church more frequently experienced lower rates of mortality than those who did not attend frequently (Ellison, et al., 2000). Musgrave et al. (2002) reported that African-American and Puerto Rican women living with HIV/AIDS cited spirituality as a key component of their ability to live healthy lives; however, they emphasized aspects of religious activity, specifically citing prayer, television ministries, and Bible reading as markers of their spirituality.

A study by Holt et al. (2009) used a qualitative approach to understand the role of religiosity in the health of African-Americans. The sample was composed of 400 African-American men and women over the age of 40 living in Alabama. Participants cited the role of God in one's health almost as frequently as they cited specific health-related behaviors. They identified God's direct impact on their health, God's ability to heal, and His ability to keep them healthy. They also discussed the importance of prayer and their faith in God as impacting their health. They indicated a belief that if they obeyed God and/or the Bible, their health would remain favorable. They also indicated that church attendance contributed to their health.

Previous research has provided evidence that there are positive associations between religiosity, spirituality, and health among African-Americans. However, these positive associations may not function similarly for certain groups of African-Americans, particularly AAMSM. In fact, because of homonegative stances often espoused in African-American faith traditions, AAMSM may be at increased risk for some negative health outcomes, including HIV infection (Rosario, Yali, Joyce, & Gwadz, 2006).

African-American Religious Life and Homonegativity

Although there are benefits to involvement in African-American religious life reported in the literature, AAMSM are not always able to fully experience those benefits. In Christianity, many African-American churches espouse homonegative stances that stifle the growth of their AAMSM members. Some of these homonegative positions are based on Biblical interpretations of homosexuality as “sinful,” based on a small number of passages in the Bible that reference homosexual behavior. However, these homonegative positions may also be based in historical realities and sociocultural norms.

One influential factor that could help explain the manifestation of homonegativity in African-American religious structures is the historical view of Black sexuality on the part of white American culture. From exploitation of Black sexuality through slavery and the Jim Crow era to current mainstream media depictions of Black men as hypersexual, the spectre of sexual deviance has followed African-Americans even as they struggle to resist it (Ward, 2005). Following slavery, African-American sexuality was demonized as a means to justify physical violence at the hands of whites against African-Americans. Black men were commonly portrayed as sexual predators who sought to rape white women. Similarly, Black women were widely classified as hypersexual as a way for

white men to justify raping them. In order to distance themselves from these representations and subsequently avoid such violence, African-Americans adopted a very conservative construction of sexuality that included negative attitudes toward homosexuality and even denial of the existence of Black homosexuals (Griffin, 2006). The idea of the “chaste” black body was considered proof of African-American respectability in the eyes of the majority culture, which asserted that Blacks’ “savage instincts” rendered them incapable of conforming to puritanical sexual standards (Griffin, 2006). African-American faith communities have similarly adopted strict conservative sexual codes of conduct that emphasize sexual abstinence until marriage and heteronormativity. All of the historically Black church denominations “promote a theological view that homosexuality is sinful and that the only legitimate sexual expression is toward the opposite sex in marriage.” (Griffin, 2006, p. 57)

Biblical scripture passages are often used to justify homonegativity within Black churches. Biblical scripture has been referred to as “...the cornerstone of homophobia in the Black community” (Douglas, 1999, p. 90). For example, Leviticus 18:22 states that “a man should not lie with another man as he would with a woman, for it is an abomination.” However, these passages are few in number and often used out of their historical context in order to legitimate the claims mentioned above. Griffin (2006) asserts that African-American Christian communities selectively choose scriptural information that “confirms what is already believed (based on teachings and interpretations of that community) and offers validation while viewing other biblical injunctions as irrelevant to their present status (p. 52).” Similarly, Douglas (1999) refers to the existence of a “canon within a canon,” in which certain Biblical texts and stories

passed down through the Black oral tradition become favorites and often-recited. Despite more widespread access to the written Bible, these texts are still held as more authoritative than others. For example, scriptural references that have been used to justify racial oppression, such as in the apostle Paul's writings about slaves being obedient to their masters, are devalued, while passages alluding to homosexual behavior are held as absolute (Douglas, 1999).

As a result of these theological and sociohistorical factors, contemporary Black communities—particularly those of faith—have developed three widely-held views of homosexuality. Some view homosexuality as a “white thing,” a phenomenon that was not native to African communities, but rather was transported to Africa with the arrival of Europeans (Douglas, 1999). Another view is that homosexuality is a threat to the Black family. This notion asserts that overly strong Black mothers, or “matriarchs,” effeminize Black men, stripping them of their masculinity and thus undermining the nuclear Black family (Douglas, 1999). A third view of homosexuality in the Black community, related to the previous view, is that it is a threat to Black manhood. This is based on the argument that male homosexuality is associated with effeminate behavior, further stripping the rights of privilege from Black men who don't fit into narrow constrictions of Black masculinity (Douglas, 1999).

Regardless of the origins of homonegativity in African-American churches, its effects on non-heterosexual African-Americans—in this case, AAMSM—are pernicious. Homophobia is manifested in Black churches to varying degrees, ranging from verbal hostility to silence (Ward, 2005). Pastors, preachers, or church leaders may publicly engage in verbal ridicule of homosexual men using derogatory terms and situating them

as a threat to Black masculinity and survival of the race, with little to no resistance—and often, encouragement—from parishioners. Qualitative studies have indicated that many churches’ anti-homosexual messages have contributed to a hierarchy of “sin,” or a perception that being a homosexual is more egregious than other transgressions, such as adultery or participation in the drug trade (Fullilove & Fullilove, 1999). Other churches adopt a culture of silence on homosexuality, privately encouraging AAMSM to participate in the religious community as long as there are no outward acknowledgments or expressions of their sexuality (Jeffries, Dodge, & Sandfort, 2008). This notion of private welcome in the face of public ridicule has been described as the “open closet,” or a phenomenon in which non-heterosexuals are encouraged to take part in the religious experience at the expense of their non-heterosexual identity (Fullilove & Fullilove, 1999).

Some researchers have suggested that homophobia among African-American churches, and by extension African-American communities, has contributed to the dramatic spread of HIV/AIDS among African-Americans. Fullilove and Fullilove (1999) argued that, because discussion of HIV/AIDS is often linked to discussions about sexuality in general and homosexuality in particular, many churches have shied away from engagement in HIV prevention, testing, treatment, and care activities out of a reluctance to acknowledge the existence of homosexuality in African-American populations.

It is important to note that, while homonegative messages are commonly heard within African-American faith communities, not all of these institutions are perceived as equally homonegative. African-American LGBT individuals take part in religious

communities that accept and affirm their non-heterosexuality, including such Christian denominations as the Unity Fellowship Church or Metropolitan Community Church. These kinds of religious communities were established to provide an alternative to the homonegativity demonstrated in other, more conservative religious institutions. In addition to these newer faith communities, there are many mainline African-American congregations that have become more accepting, and even affirming, of non-heterosexuality (Comstock, 2001).

In 2000, the Black Pride Survey was administered to 2,645 Black LGBT individuals at nine Black Gay Pride festivals across the country, constituting one of the largest studies of Black LGBT individuals in the country (Battle, et al., 2002). The results of the 2000 Black Pride Survey found that, while 54% of respondents reported that their church/religion viewed homosexuality as “wrong and sinful,” there were also 24% who felt their church was accepting of homosexuality (Battle, et al., 2002). The same report also indicated that 63% of respondents whose church was fully accepting of homosexuality reported that this view constantly influenced their daily lives. Conversely, 65% of those who reported their church viewed homosexuality as sinful also reported that those views had no influence on their daily lives (Battle, et al., 2002). These findings indicate that there is a wide range of perspectives on homosexuality found within African-American faith communities, and that they cannot all be classified under the same homonegative category. Indeed, this notion suggests that any study of the relationships between religiosity, spirituality, and negative health outcomes for AAMSM needs to be accompanied by some measure of the perceived affirmativeness of the religious institution to which participants may belong.

Religiosity & Spirituality among AAMSM

Because of the widespread homonegative experiences often associated with participation in traditional African-American religious organizations or communities, it may seem logical to believe that AAMSM would eschew religion and spirituality altogether. However, research suggests that AAMSM, despite the homonegative messages they may receive, maintain high levels of involvement in African-American religious life (Griffin, 2006; Woodyard, Peterson, & Stokes, 2000; Jeffries, Dodge, & Sandfort, 2008; Pitt, 2010a). Levels of AAMSM church participation ranged from being a laymember to taking active part in church ministries and auxiliaries, and in some cases serving as preachers or pastors (Pitt, 2010a). AAMSM have reported that participation in African-American religious life affirmed their identities as African-American males in response to multiple oppressions experienced in the larger society, and gave them opportunities to bring their talents and skills to the service of their communities (Woodyard, Peterson, & Stokes, 2000). Studies have shown that gay male identity was positively associated with level of private religious life (Cutts & Parks, 2009), and that, in addition to personal involvement in church, AAMSM indicated that they were aware of many of their fellow AAMSM who were also involved in church, even identifying church as a place to meet other non-heterosexual Black men (Jeffries, Dodge, & Sandfort, 2008).

While AAMSM identify a number of benefits to participation in African-American religious life, an awareness of the homonegative attitudes and messages that are espoused in many of their religious communities still exists. Some AAMSM reported that church leaders were aware of many of the men's same-sex behavior and attractions, and would quietly welcome them into the church, but the church leaders' public

homonegativity led to confusion and psychological distress (Woodyard, Peterson, & Stokes, 2000). When faced with homonegative messages from the pulpit, many AAMSM expressed feelings of guilt, condemnation, embarrassment, and alienation, to the point that they sometimes began to internalize those negative messages (Woodyard, Peterson, & Stokes, 2000). Griffin (2006) wrote that the homophobia sanctioned by the Black church has become internalized by many AAMSM, who begin to harbor beliefs within themselves that they are “inherently sinful because they are sexually attracted to the same sex.” (p. 149) Some men actively sought to be “cured” of their non-heterosexuality, becoming depressed when these efforts failed (Pitt, 2010a). Others attempted to compartmentalize their sexual identities, making efforts to “pass” as heterosexual while in church but still committed to a homosexual identity outside the church (Pitt, 2010a). Still others recognized the value of having other religious AAMSM colleagues to whom they could turn for support. Some Christian AAMSM coped with receiving anti-gay messages by opting not to focus on the message; rather, they attempted to delegitimize the speaker, pointing out the speaker’s lack of knowledge about Biblical principles, moral failings, and/or suspect focus and motivations for using such anti-gay rhetoric (Pitt, 2010b).

In light of the homonegative experiences in their religious communities, many AAMSM indicated that a personal sense of spirituality provided them with the resilience to neutralize anti-gay messages and accept their sexual orientation, calling on affirming messages such as “God loves me,” “God made me this way,” or “Only God can judge me” as a coping mechanism (Jeffries, Dodge, & Sandfort, 2008; Miller, 2007; Woodyard, Peterson, & Stokes, 2000). Miller (2007) conducted qualitative interviews with African-

American gay men between the ages of 35 and 50 who had been diagnosed with AIDS and considered religion to be an important aspect of their lives. In this study, almost all of the men interviewed chose to leave their Christian religious institution as a result of anti-gay sermons from clergy that were voiced in regular worship services or funeral services for Black gay men who had died from AIDS-related complications (Miller, 2007).

Although literature is growing on the relationships between AAMSM religiosity and psychological outcomes (Pitt, 2010a; Pitt, 2010b; Graham, et al., 2011; Jeffries, Dodge, & Sandfort, 2008), little has been reported about the relationship between religiosity and sexual risk behaviors. Woodyard, Peterson, and Stokes (2000) reported that AAMSM same-sex activity was often experienced in secrecy, with participants attributing a decrease in their number of same-sex contacts to their church involvement. However, these results do not provide information about the use of protection in same-sex sexual encounters, and may not be generalizable to a larger sample of AAMSM.

Although the disproportionate impact of HIV infection among AAMSM has been well-documented in the literature, there is little information available about the underlying factors that contribute to their increased risk. Further, even less is known about the associations between these underlying factors, and the unique ways in which they manifest themselves among AAMSM. To address these challenges, the Sexual Health in Faith Traditions (SHIFT) Study was developed to investigate the influences of religiosity, spirituality, and internalized homonegativity on HIV risk behaviors among AAMSM.

The specific aims of this study were to:

- 1. Explore how different dimensions of internalized homonegativity are associated with sexual risk behaviors among AAMSM.**
- 2. Examine the ways in which religiosity and spirituality are differentially associated with sexual risk behaviors among AAMSM.**
- 3. Examine the associations between internalized homonegativity, religiosity, spirituality, perceived affirmativeness, and sexual risk behaviors among AAMSM.**

Conceptual Framework

The SHIFT Study utilized a multidisciplinary approach to investigate the relationships between religiosity, spirituality, internalized homonegativity, and sexual risk behaviors. The frameworks used in this study—the Social Ecological Model and intersectionality—reflect the importance of examining determinants of health at multiple levels of influence, and understanding that the mechanisms by which these relationships operate may differ based on the unique interlocking experiences formed by race, gender, and sexuality.

A social-ecological, intersectional approach can be a useful framework for understanding factors affecting HIV infection across multiple levels of influence. While the decision to engage in risky sexual behaviors is largely viewed as an individual one, there are many cultural, structural, and environmental factors that can influence the decision-making process. A clear understanding of these factors can lead to the development of more effective, sustainable prevention interventions (Latkin & Knowlton, 2005). Likewise, acknowledgment of how the intersections of race, class, gender, and sexual orientation produce unique structural inequalities for AAMSM can aid researchers in creating more effective, culturally-specific HIV prevention interventions targeting AAMSM (Bowleg, 2012). The current study utilized both a social ecological framework

and an intersectional lens to examine factors related to increased HIV risk among AAMSM.

Social Ecological Models

McLeroy et al. (1988) discuss some of the dangers of viewing health behavior change through a primarily individual lens. They posit that an emphasis on individual responsibility in health behavior change ignores the importance of an individual's environment, which is beyond the individual's ability to control. There are often structural factors that play a pivotal role in determining individual health behaviors, which include the physical environment, sociocultural norms, and public policy (Latkin & Knowlton, 2005). An individualistic approach to health behavior change also ignores the relationship between individual behavior and social norms, and can facilitate a victim-blaming approach to negative health outcomes (McLeroy, Bibeau, Steckler, & Glanz, 1988).

Bronfenbrenner (1979) developed a conceptual framework that emphasizes the importance of both individual and environmental determinants of behavior. Bronfenbrenner's model classifies environmental influences on behavior into four levels of influence: microsystem, mesosystem, exosystem, and macrosystem. The *microsystem* includes interpersonal interactions, such as those within a family, work environment, or social networks. The *mesosystem* is considered to be the series of interrelations among the microsystems, such as school, family, and church. The *exosystem* is composed of societal forces in the larger social system in which the individual exists (e.g., unemployment rates). The final level, the *macrosystem*, is composed of the societal and cultural beliefs and values that exert an influence on both the microsystem and

mesosystem, such as cultural norms about sexual activity. Bronfenbrenner claimed that these systems not only influence an individual's behavior, but also influence each other in reciprocal relationships.

McLeroy et al. (1988) borrowed from Bronfenbrenner's work in order to produce a type of ecological model that could be applied to health behavior change as the specific outcome of interest. This model proposes that health behavior is determined by five distinct types of factors: 1) *Intrapersonal factors*, which include individual characteristics such as knowledge, attitudes, behavior, self-efficacy, self-image, and developmental history; 2) *Interpersonal factors*, which are related to the formal and informal social networks in which individuals participate, including work, family, church, and friendship networks; 3) *Institutional factors*, which are considered to be factors that exist within social institutions that have distinct organizational characteristics, such as formal or informal mandates, rules, or regulations; 4) *Community factors*, which refer to the relationships among organizations, institutions, and informal networks, which work to form a kind of culture in which the individual operates; and finally, 5) *public policy*, which refers to laws and policies that exist at the local, state, and federal levels. Taken together, these five levels of factors can help to explain the determinants of certain patterns of behavior, and also provide multiple levels at which health behavior change interventions can be developed and implemented.

Social-ecological models have been used in various populations to identify factors that may influence engagement in risky sexual behaviors. For example, Larios et al. (2009) used the Social Ecological Model to identify factors influencing condom use in a sample of female sex workers in Mexico. The study found evidence that both individual

factors (e.g., alcohol use, self-efficacy) and structural factors (e.g., condom access) influenced female sex workers' reported number of unprotected sexual encounters in the previous 30 days (Larios, et al., 2009). Social ecological approaches have also provided the framework for studies of adolescent sexual behavior. For example, Metzler et al. (1994) found that associating with deviant peers, poor parental monitoring, and parent availability were all significant predictors of engagement in risky sexual behaviors. Similarly, Brewster et al. (1993) found that a number of community-level factors were significantly related to age of sexual debut, including level of educational attainment in the community, rates of female divorce and separation in the community, rate of housing turnover, and number of family planning clinics per 1,000 population (Brewster, Billy, & Grady, 1993).

Intersectionality

In order to effectively reduce new HIV infections among AAMSM, the recognition of HIV risk and protective factors across multiple levels of influence should be coupled with the ability to view these factors through an intersectional lens. Intersectionality is a theoretical framework that emphasizes the importance of understanding how multiple social categories “intersect” at the micro-level of experience, revealing macro-level systems of oppression, privilege, and discrimination at the social-structural level (Bowleg, 2012). Contemporary understandings of intersectionality emerged from the work of Kimberle Crenshaw's (1991) efforts to articulate how legal policies related to violence against women often did not take into account the unique experiences of women of color. That is, women of color experienced multiple levels of oppression based not just on their gender, but also on their race, that contributed to

unique and multiply oppressive circumstances that limited their ability to leave violent relationships and seek assistance. Therefore, battered women's shelters serving women of color could not simply afford to address the issues of domestic violence; they also had to be equipped to address the other forms of oppression and discrimination (i.e., unemployment, poverty, racial discrimination) the women experienced based on the interlocking identities of race and gender (Crenshaw, 1991). Crenshaw claimed that "where systems of race, gender, and class domination converge, as they do in the experiences of battered women of color, intervention strategies based solely on the experiences of women who do not share the same class or race backgrounds will be of limited help to women who because of race and class face different obstacles" (Crenshaw, 1991, p. 1246). Intersectionality, by extension, exposes the invisibility of certain groups within larger social identity frameworks; for example, the exclusion of African-American women from mainstream feminist discourse, focused largely on white women, or from anti-racism discourse, which centered on issues related to African-American men (Bowleg, 2012).

The invisibility of certain groups, of which Crenshaw wrote, is apparent in the dearth of HIV prevention interventions that have been specifically developed for AAMSM. The disproportionate burden of HIV infection among AAMSM has been well-documented in the literature. However, despite the high level of HIV infection risk among AAMSM, very few HIV prevention interventions have been specifically developed for AAMSM. In 1999, the CDC published the Compendium of Evidence-Based HIV Prevention Interventions. The Compendium identifies HIV behavioral interventions that have been rigorously evaluated and have demonstrated efficacy in

reducing HIV incidence or HIV-related risk behaviors, or in promoting safer behaviors (CDC, 2009). The interventions were identified by the CDC's Prevention Research Synthesis Project as representing the strongest HIV behavioral interventions in the literature to date. As of 2011, 74 HIV risk reduction evidence-based behavioral interventions were included in the Compendium, with each classified as either "best-evidence" or "good-evidence" (CDC, 2012). Of those 74 interventions, 39 targeted or largely included African-Americans, and 14 targeted or largely included MSM.

However, despite the epidemiological data classifying AAMSM as a population at high risk for HIV infection, only two of the interventions in the Compendium were designed specifically to intervene on the HIV risk of AAMSM: "Many Men, Many Voices" (also known as 3MV) and "d-up: Defend Yourself!" Both of these interventions incorporate the importance of sociocultural factors in shaping social norms about condom use and individual patterns of condom use. It is lamentable, however, that only two interventions currently exist that recognize the unique particularities of men who find themselves at the intersection of being Black and gay or bisexual.

Although "3MV" and "d-up: Defend Yourself!" intervention curricula do identify sociocultural factors that contribute to HIV infection, such as racism and homophobia, these factors are explored at little depth, while much of the focus is on the impartation of skills for risk reduction behaviors. Further, one of the interventions, "d-up," is an adaptation of a previously-existing HIV prevention intervention designed more generally for MSM, and was designed to be implemented in bars or other social venues in which MSM congregated; this greatly limits the opportunities for AAMSM to engage in the intervention, since AAMSM frequently have fewer public venues to attend than their

white counterparts. Based on the scarcity of AAMSM HIV prevention interventions and the limitations in scope and availability, additional research is needed to inform the development of interventions that can more specifically speak to the uniqueness and complexities of the lives of AAMSM. The SHIFT Study is uniquely

Bowleg (2012) posits that, while intersectionality may have grown out of other disciplines, it has critical implications for health disparities research and the development of effective public health interventions. She identifies three core tenets of intersectionality that are key to public health: 1) social identities are not independent, but rather multiple and intersecting; 2) individuals from groups that have been historically oppressed or marginalized are the starting point; and 3) multiple micro-level identities intersect with macro-level social and structural factors (i.e., racism, sexism, heterosexism) to produce disparate health outcomes (Bowleg, 2012). These tenets can be applied to the purpose of the SHIFT Study, as well. AAMSM exist at the intersection of being African-American, male, and MSM—each of which carries its own unique characteristics and oppressions, but becomes something more than the sum of its parts when they manifest together in the same body. Central to that experience is the multiple historic oppressions that have been imposed upon African-Americans generally, African-American males in particular, and sexual minority people in the U.S. Finally, the individual experiences of religiosity, spirituality, and internalized homonegativity are framed by social climates (e.g., perceptions of African-American male masculinity, acceptability of homosexuality in African-American communities) and institutional policies and practices (e.g., church doctrinal opposition to the morality of homosexuality). Both Crenshaw’s and Bowleg’s contributions to the understanding of

intersectionality as an analytical framework can have major implications for the provision of HIV prevention interventions among AAMSM, and to the importance of the SHIFT Study.

Conceptual Model

Figure 1 illustrates the conceptual model for the SHIFT Study. The study will examine internalized homonegativity, religiosity, and spirituality as possible predictors of engagement in sexual risk behaviors among AAMSM. The study also seeks to examine the strength of the relationship between religiosity and spirituality among AAMSM, and whether internalized homonegativity mediates the relationships between religiosity, spirituality, and sexual risk behaviors in the target population. Finally, the moderating effect of a religious organization's perceived affirmativeness on the relationships between religiosity, internalized homonegativity, and sexual risk behaviors among AAMSM will be examined.

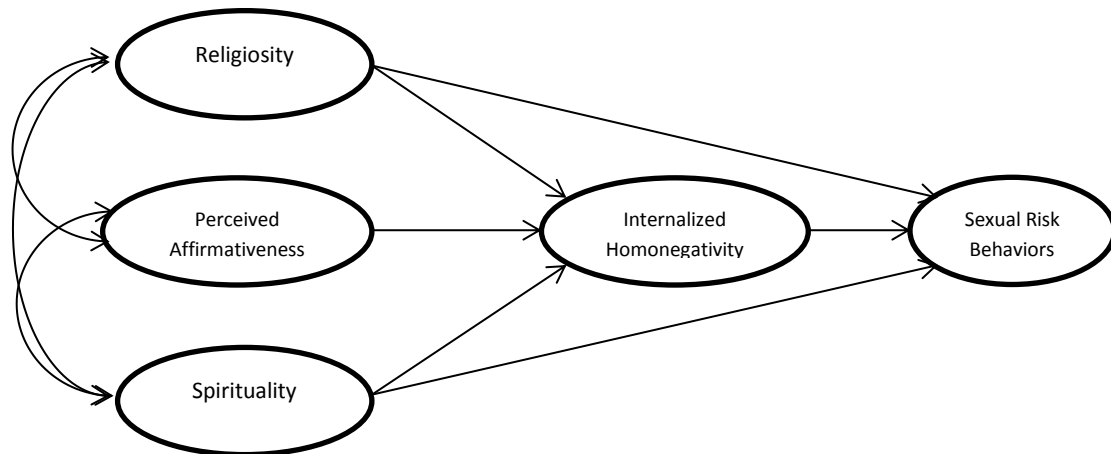


Figure 2.1. Conceptual Model for the SHIFT Study

Contribution to the Literature

The SHIFT Study contributes to the scientific literature on AAMSM in a number of ways. Research on the relationships between religiosity, spirituality, internalized homonegativity, and sexual risk behaviors among AAMSM has been limited. Many of the aforementioned studies have examined the relationships between religiosity/spirituality and psychological outcomes (including internalized homonegativity), and between internalized homonegativity and sexual risk behaviors; however, few studies have examined these constructs simultaneously among AAMSM, nor have they examined the influence of the perceived affirmativeness of the religious organizations/institutions to which AAMSM belong on those relationships.

Much of the research that has been conducted among AAMSM is limited in its generalizability. AAMSM representation in quantitative studies has been largely limited to small subsamples of larger MSM or lesbian, gay, and bisexual sampling frames, with insufficient ability to analyze variation within the subsample (Mays, Cochran, & Zamudio, 2004). Of the few studies specifically examining AAMSM and sexual risk behaviors, the preponderance of them have been urbanocentric, focusing on larger cities in the northeastern, midwestern, or western U.S. with larger AAMSM populations (Dodge, Jeffries, & Sandfort, 2008; Jeffries, Dodge, & Sandfort, 2008; Stokes & Peterson, 1998; Woodyard, Peterson, & Stokes, 2000). As such, little is known about AAMSM living in the southern U.S., a region in which 10 of the 12 states with the highest HIV diagnosis rates in 2009 were located (CDC, 2011) and which also has higher proportions of HIV diagnoses in smaller metropolitan (50,000-499,999 people) and nonmetropolitan (<50,000 people) areas than the Midwest, West, or Northeast (CDC,

2009). These studies have also been mostly qualitative, which yield rich and detailed data, but include low numbers of participants with limited transferability (Dodge, Jeffries, & Sandfort, 2008; Jeffries, Dodge, & Sandfort, 2008; Pitt, 2010a; Pitt, 2010b; Stokes & Peterson, 1998; Woodyard, Peterson, & Stokes, 2000). Lastly, recruitment for these studies has focused on bars, clubs, and parks known to be “cruising” areas, or places where MSM can meet anonymous sex partners (Jeffries, Dodge, & Sandfort, 2008; Stokes & Peterson, 1998; Woodyard, Peterson, & Stokes, 2000). Targeting these areas is convenient, but excludes a significant number of AAMSM who may not participate in such activities or frequent these locations (Stueve, O'Donnell, Duran, San Doval, & Blome, 2001).

The present study addresses these limitations by using a variety of recruitment techniques to engage a larger, more diverse sample of AAMSM living in the Deep South, a region with severely high rates of HIV infection. The results of the study could be used to inform the development of more culturally-sensitive, effective HIV prevention interventions for AAMSM. Ultimately, these results can contribute to the emergence of a new discourse of sexuality and sexual health within African-American faith communities—one that uses empirically-sound research findings as a platform from which to address the roots of stigma and homonegativity in African-American faith traditions, their effects on health, and develop new strategies for HIV prevention within African-American communities.

CHAPTER III: METHODS

The purpose of the Sexual Health in Faith Traditions (SHIFT) Study was to use quantitative methods to investigate the relationships between religiosity, spirituality, internalized homonegativity, and sexual risk behaviors among AAMSM living in the Deep South. Quantitative data analysis was determined to be a viable, yet largely-underutilized, method to examine the research questions given the paucity of reported quantitative studies focusing exclusively on the lived experiences of AAMSM and factors influencing their risk of HIV infection (cf. Stokes & Peterson, 1998; Woodyard, Peterson, & Stokes, 2000; Balaji, et al., 2011).

The specific aims of this study were to:

- 1. Explore how different dimensions of internalized homonegativity are associated with sexual risk behaviors among AAMSM.**
- 2. Examine the ways in which religiosity and spirituality are differentially associated with sexual risk behaviors among AAMSM.**
- 3. Examine the associations between internalized homonegativity, religiosity, spirituality, perceived affirmativeness, and sexual risk behaviors among AAMSM.**

Sample

The sample for this study included AAMSM aged 18 years and older who lived in the Deep South region of the U.S. Specifically, to be included in the study, a participant had to meet the following criteria: (1) self-identify as an African-American man; (2) report that he had sex with a man at least once in the past 12 months, or self-identify as

gay or bisexual; (3) be aged 18 years or older; and (4) reside in one of the states in the U.S. classified as the “Deep South”: Alabama, Georgia, Louisiana, Mississippi, North Carolina, or South Carolina.

Measures

Data for this study were collected using self-administered “paper and pencil” surveys (see Appendix A). The survey included 77 items measuring sociodemographic characteristics, religiosity, spirituality, perceived affirmativeness, internalized homonegativity, and sexual risk behaviors. The following is a detailed description of the survey measures.

Sociodemographic Characteristics

Sociodemographic variables in the survey were generated by the PI and included age (in years), highest educational level attained, income, sexual identity, HIV status, and degree of masculinity/femininity.

Sexual identity was measured by one item, “How do you describe yourself?” Response options were “gay/homosexual,” “same-gender-loving,” “bisexual,” “straight/heterosexual,” and “other.” Those who chose “other” were given space to write their own description.

HIV status was measured by one item, “Have you ever tested positive for HIV?” Response options were “yes,” “no,” and “I have never been tested for HIV.”

Degree of masculinity/femininity was measured by one item, “Which statement best describes you?” Response options were “extremely masculine,” “masculine,” “equally masculine and feminine,” “feminine,” and “extremely feminine.”

Internalized Homonegativity

Internalized homonegativity was measured using the 23-item Internalized Homonegativity Inventory (IHNI; Mayfield, 2001). Per Mayfield's (2001) original research, the IHNI is divided into three subscales: Personal Homonegativity (11 items), Gay Affirmation (7 items), and Morality of Homosexuality (5 items). Responses were scored on a 6-point Likert-type scale, from 1= "Strongly Disagree" to 6= "Strongly Agree." Mayfield (2001) reported an internal consistency reliability of .91 for the entire 23-item inventory, and .70 or greater for each of the three subscales. The IHNI was found to be positively correlated with scores on the Nungesser Homosexual Attitudes Inventory (Nungesser, 1983), providing evidence of convergent validity. The IHNI has been used in previous studies to assess levels of internalized homonegativity among AAMSM, with reliability coefficients ranging from .76 to .91 (Shoptaw, et al., 2009; Young, et al., 2009).

Religiosity

Religiosity was measured using a scale adapted from the Religious Values Survey (RVS), the Religious Commitment Inventory-10 (RCI-10), and the Duke Religion Index (DUREL).

Religious Values Survey (RVS)

The RVS was developed by Worthington (1988) for use in counseling psychology and was based on the theory that highly religious clients would be more likely to evaluate their world on religious dimensions based on their religious values (Worthington, et al., 2003). The RVS is a 62-item scale that measures religiosity across seven subscales, scored using a 5-point Likert scale, with responses ranging from 1= "not at all true of

me” to 5= “totally true of me.” The SHIFT Study utilized three items from the original RVS’s “Authority of Scripture” (AAS) subscale. This dimension of religiosity was deemed important in the study because homophobia in African-American communities is believed to be partly related to literal interpretations of religious scripture (Ward, 2005). The three items from this subscale that loaded most significantly onto the “Authority Afforded Scripture” factor in the original RVS factor analysis were included in the survey instrument.

Religious Commitment Inventory-10 (RCI-10)

One of the subscales from the original RVS was religious commitment, defined as “the degree to which a person adheres to his or her religious values, beliefs, and practices and uses them in daily living” (Worthington, et al., 2003, p.85). Subsequent research refined the religious commitment inventory from 20 items to 17, and ultimately to 10, scored using a 5-point Likert scale, with responses ranging from 1= “not at all true of me” to 5= “totally true of me” (Worthington, et al., 2003). The RCI-10 exhibited good internal consistency reliability ($\alpha = .93$), and provided evidence of convergent and discriminant validity (Worthington, et al., 2003).

Duke Religion Index (DUREL)

The DUREL is a five-item scale that measures religiosity across three major dimensions (Koenig, Patterson, & Meador, 1997). The first scale item measures organizational religiosity, asking, “How often do you attend church or other religious meetings?” Response options range from 1= “More than once a week” to 6= “Never.” The second item measures nonorganizational religiosity, asking, “How often do you spend time in private religious activities, such as prayer, meditation, or private Bible

study?” Response options range from 1= “More than once a day” to 6= “Rarely or never.” The remaining three items measure intrinsic religiosity, but were excluded from the survey because they were considered to be too closely related to the items included in the RCI-10.

Perceived Affirmativeness of Religious Institution

One item developed by the PI was used to measure the perceived affirmativeness of the participant’s religious institution. The item, “In general, how accepting is your local church or religious group of homosexuality?” was scored on a four-point Likert scale with the following response items: 1= “not accepting at all,” 2= “somewhat accepting,” 3= “mostly accepting,” and 4= “completely accepting.”

Spirituality

To measure spirituality, the Daily Spiritual Experiences Scale (DSES) was used. The DSES is a 16-item scale developed to address “reported ordinary experiences of spirituality such as awe, joy that lifts one out of the mundane, and a sense of deep inner peace” (Underwood & Teresi, 2002, p. 22). Fifteen of the 16 items in the DSES are scored using a modified 6-point Likert scale, in which responses range from 1= “many times a day” to 6= “never or almost never.” The final item, “In general, how close do you feel to God?” has four response options: 1= “not close at all,” 2= “somewhat close,” 3= “very close,” and 4= “as close as possible.” Lower scores on the DSES indicate a higher occurrence of daily spiritual experiences; however, for the SHIFT Study, all items were reverse-coded so that higher scores indicated a higher occurrence of daily spiritual experiences. The DSES has been used to measure spirituality in a number of populations,

including a national sample of women experiencing arthritis pain, with internal consistencies between .90 and .95 (Underwood & Teresi, 2002).

Sexual Risk Behaviors

Sexual risk behaviors were measured using an adapted version of an instrument developed by the Latino Commission on AIDS (Vega, Spieldenner, DeLeon, Nieto, & Stroman, 2010). Items in this section measured number of sex partners in the previous 12 months and previous 3 months, different types of high-risk sexual partners (e.g., anonymous, injection drug user, HIV-positive, unknown status, exchanges sex for money), and the types of high-risk sexual encounters they had experienced (e.g., met on Internet, while using alcohol, while using drugs, in exchange for money or food) in the previous 3 months. In addition to these, the PI developed items to measure concurrency of sexual relationships and age of sexual initiation.

Frequency of condom use for insertive and receptive anal intercourse in the last 3 months was assessed using two items adapted from the National Household Survey of Drug Abuse (SAMHSA, 1997). Participants were asked about their frequency of condom use for insertive and receptive anal intercourse in the last 3 months, respectively.

Response options were presented on a 4-point Likert-type scale, from 1= “Every time” to 4= “Never,” with an additional response option for those who reported that they had not had anal intercourse in the last 3 months. These items were reverse-coded for analysis, such that higher values indicated higher frequency of condom use.

Procedure

Provision for Human Subjects

In order to ensure the protection of human subjects, the SHIFT Study protocol was submitted to and approved by the Institutional Review Board of the University of South Carolina's Office of Research Compliance on June 15, 2011. At the request of the Institutional Review Board, study participants were not asked to sign the informed consent forms, but were provided with a copy for their personal records. This change was made so that there were no name-based markers by which participants could be identified, minimizing the risk of disclosure of any participant's identity.

Two data collection assistants provided data collection support for the SHIFT Study. Both data collection assistants completed the Social and Behavioral Responsible Conduct of Research basic training offered online by the Collaborative Institutional Training Initiative (CITI) prior to data collection. In addition to completing the online training module, data collection assistants participated in a SHIFT Study orientation, at which time the PI provided them with information on how to approach potential study participants, obtain consent, administer the survey, and secure the completed surveys.

Sample Recruitment

Study participants were recruited using several recruitment strategies:

Reactive Recruitment

A reactive recruitment technique was used for potential study participants who wished to opt into the study. Flyers (see Appendix B) that contained basic information about the study, including the study's purpose and target population, and the PI's contact information (phone and email), were distributed through community-based HIV prevention organizations, AIDS service organizations, LGBT-serving organizations, LGBT-friendly businesses, and LGBT email listservs. Social media platforms, including

a Facebook page and Twitter account, were developed as means to recruit potential participants. The Facebook page (<http://www.facebook.com/SHIFTstudy>) was used in a variety of ways, including posting upcoming dates and times for data collection, live-blogging at events during which data collection was taking place, and posting online articles and videos related to the subject matter of the study. The purpose of including links to related articles and videos was to increase visitors' interaction and engagement with the Facebook page, encouraging them to comment on the postings and share them with other potential participants. As of May 30, 2013, 66 Facebook users "liked" the study's page; although not all visitors were eligible to participate in the study, they were encouraged to share the information with other people who might be eligible.

The Twitter account (@theSHIFTstudy) was used in conjunction with the Facebook account to engage potential participants. Short messages, or "tweets," were posted intermittently to notify potential participants of opportunities to opt into the study. The PI posted tweets describing the study and encouraged followers to visit the Facebook page and/or participate in the study. Posts on the Facebook page were simultaneously tweeted. As of May 30, 2013, 54 Twitter users followed @theSHIFTstudy. Both social media platforms were also used as dissemination tools to provide information about the results of the study and further engage social media users in conversation about the study's implications for future research.

Proactive Recruitment at Black Gay Pride Celebrations

A purposive convenience sample was recruited at Black Gay Pride celebrations in the Deep South. Black Gay Pride celebrations are cultural festivals designed specifically to showcase and celebrate the lives of African-American LGBT people. In 2012, 36

Black Gay Pride celebrations took place in the U.S., Canada, and the United Kingdom (International Federation of Black Prides, 2012). In this study, participants were recruited from five Black Gay Pride celebrations held in 2011: South Carolina Black Pride (Columbia, SC), June 23-26, 2011; Charlotte, NC Black Gay Pride (Charlotte, NC), July 14-17, 2011; Triangle Black Pride (Raleigh, NC), July 28-August 1, 2011; Atlanta Black Gay Pride (Atlanta, GA), September 2-5, 2011; and Jackson Black Pride (Jackson, MS), November 17-20, 2011.

The PI contacted Black Gay Pride organizers in order to receive permission to collect data and secure table space at each Black Gay Pride celebration. The PI and the data collection team, composed of doctoral students from the University of South Carolina's Arnold School of Public Health, recruited participants into the study at various events that took place as a part of each Black Gay Pride celebration, which included town hall forums, exhibitions, and workshops. At each event, one member of the research team remained at the table to recruit participants, while additional team members interacted with Pride attendees who potentially met the inclusion criteria. When wireless Internet access was available, the PI live-blogged about the exhibition events and the SHIFT Study on Facebook and Twitter in an effort to encourage other potential participants to visit the table and opt into the study.

Purposive Snowball Sampling

A purposive snowball sampling technique was used to recruit study participants from religious communities and organizations in the southeastern U.S. Snowball sampling is an appropriate technique for use in identifying study participants from populations that are not easily accessible (Faugier & Sargeant, 2008). The PI used

existing contacts within religious communities and organizations to identify members of the target population who met the inclusion criteria who were affiliated with religious communities and organizations in selected geographic locations in the catchment area. The contacts were asked to provide information about the study to members of their networks in the hope that they would opt into the study.

In two Southern cities that did not have Black Gay Pride celebrations, the PI held small social gatherings, or “survey parties,” to recruit participants. In Greenville, South Carolina, and Greensboro, North Carolina, HIV prevention professionals who were members of the target population were approached about hosting “survey parties.” These community gatekeepers then invited other members of the target population to come to the gathering and take part in the study. Upon attendees’ completion of the survey, informal debriefings took place in which participants could share their thoughts and reflections about the content areas of the survey.

Data Collection

Pilot Testing

Prior to data collection, survey items from the DUREL, RCI-10, “Authority of Scripture” subscale from the RVS, and DSES were pre-tested through cognitive interviews conducted with members of the target population. These items were chosen for cognitive interviewing because no previous studies had validated these scales with AAMSM populations; therefore, the PI wanted to ensure that there was some evidence of content validity for each of the measures. Participants were initially recruited from an organization called “Reach Out and Advocate for Respect,” also known as R.O.A.R. R.O.A.R. is a component of South Carolina Black Pride, Inc. that focuses on leadership

development and social involvement opportunities for sexual minority people of color aged 30 years or younger living in South Carolina. After an initial phone call or email describing the nature of the study, a mutually agreed-upon location and time were chosen during which to conduct the one-on-one interviews. R.O.A.R. members who participated in the cognitive interviewing process also recommended others who would be interested in participating. A total of seven AAMSM participated in the cognitive interviews to help finalize the survey instrument.

Prior to the start of the interview, each participant was given a copy of the religiosity and spirituality items to complete individually. The interview began once the participant had completed both sets of items. Although participants answered every printed question in each scale, they were not verbally probed on each question. Questions deemed by the PI to have potentially ambiguous wording or meaning were included in the cognitive interview. However, the PI also solicited input from interviewees regarding questions or concerns about other scale items on which the PI did not directly probe. Interviews ranged in length from 30 minutes to one hour. Each interview was recorded using a digital audio recorder, and the interviewer also took notes for each interview. Participation in the cognitive interviews was not incentivized; rather, these participants volunteered based on the alignment between R.O.A.R.'s mission and the SHIFT Study's purpose.

In general, participants felt more comfortable with the items and response options of the DSES than with the RCI-10. Participants indicated that the temporal response options (e.g., "Never") seemed to be a more reasonable way to think about religiosity/spirituality than the RCI-10's response options (e.g., "Not at all true of me").

However, participants felt that neither of the scales presented any major challenges to them when selecting their responses.

Based on feedback received from the cognitive interviews, one modification was made to the SHIFT Study survey. This change was related to the directionality of the response options in the DSES. While the RCI-10 was oriented such that higher levels of each item were associated with higher numbers (e.g., 1= “Not at all true of me”), the DSES was oriented such that higher levels of each item were associated with lower numbers (e.g., 1= “Many times a day”). Participants felt that having both scales oriented in the same direction (higher numbers = higher levels) would assist future respondents in the ease of completing the instrument. This suggested change was incorporated into the SHIFT Study survey instrument.

Survey Administration

Data were collected using printed surveys administered by the PI or a trained member of the data collection team. Before administering the survey, the data collector provided a brief verbal summary of the survey’s purpose and an estimate of the time required to complete it (10-15 minutes on average). Once a potential participant expressed an interest in the study, the data collector administered a brief screening tool attached to the front of each survey. If the participant met all the required inclusion criteria, the data collector provided him with a copy of the informed consent form, outlining the purpose, potential risks, and benefits of the survey. The informed consent form also contained the PI’s contact information and information about the incentive. Participants were not required to sign an informed consent form in order to participate.

The participant then received a printed survey to complete. Data collectors were allowed to read aloud any items in which the participant had difficulty comprehending. However, the data collectors were instructed not to interpret items for the participant; each participant was encouraged to answer the questions to the best of his ability according to his own interpretations. After the survey was completed, the data collector placed the survey in a sealable file folder. Then, the data collector provided each participant with \$5 cash as an incentive for their participation. Cash was deemed an appropriate incentive because of its utility; participants would immediately be able to use it to purchase food, drinks, or other items at Black Gay Pride events. For accounting purposes, each participant initialed a form indicating receipt of the incentive.

For participants who opted into the study or were recruited through snowball sampling, the PI met each contact in a mutually agreed-upon location at a time that was convenient for the potential participant. The PI followed the data collection protocols described previously for Black Gay Pride events. Upon completion of the survey, the study participant was asked to share information about the study with at least 3-5 other members of the target population who might be interested in participating in the study. The PI provided each study participant with a phone number and email address, which new potential participants could use to contact the PI for more information and to schedule a time to complete the survey. All data were collected between June 25, 2011 and December 31, 2011.

Data Management

All completed surveys, regardless of data collection method, were collected and stored by the PI in a locked file cabinet. Surveys were organized by date of data

collection and recruitment type. Survey data were entered into Statistical Packages for the Social Sciences (SPSS) version 20 (IBM Corp., 2011) by the PI and a member of the research team. To maintain confidentiality, the data files were stored on a password-protected computer accessible only by the PI. The PI cleaned and recoded the data as necessary and conducted all analyses.

Data Analysis

Descriptive statistics were computed for sociodemographic characteristics. These characteristics included age, highest educational level attained, income, sexual identity, HIV status, and degree of masculinity/femininity. Bivariate correlation analyses were conducted to assess the strength and direction of the relationships between religiosity, spirituality, and internalized homonegativity. Sample size calculations were conducted using Power Analysis and Sample Size 2008 software. A sample size of $n=296$ would achieve 99% power at a 0.05 significance level to detect differences in sexual risk behaviors between groups. The standardized effect size is 0.5 (medium effect). Statistical significance was constituted by a confidence level of 95% and a p-value of .05.

Specific analyses for each research question are as follows:

Specific Aim 1: Explore how different dimensions of internalized homonegativity are associated with sexual risk behaviors among AAMSM.

RQ1: What are the underlying dimensions of internalized homonegativity among AAMSM?

The 23 items of the Internalized Homonegativity Inventory (IHNI) were subjected to exploratory factor analysis (EFA). Prior to performing the EFA, the data were assessed for suitability for factor analysis using the Kaiser-Meyer-Olkin value (greater

than .6 preferred) and Bartlett's test of sphericity. After determining suitability, a principal components analysis (PCA) with Direct Oblimin rotation was conducted. The PCA technique was selected because it does not require normality in the data, and the Direct Oblimin rotation was chosen because it was hypothesized that the underlying factors would be related, thus justifying the use of an oblique rotation.

Three procedures were used to estimate the correct number of factors to extract. These procedures included: 1) Kaiser's criterion, i.e. the number of factors with an eigenvalue greater than 1; 2) Catell's scree test (Catell, 1966), i.e. the number of factors above the "elbow" of a scree plot, or the point at which the slope of the eigenvalue graph transitions from primarily vertical to primarily horizontal; and 3) Horn's parallel analysis (Horn, 1965), i.e. observed eigenvalues were compared to the eigenvalues from a randomly generated data set of the same size, and eigenvalues that were greater than the corresponding eigenvalues from the randomly generated data set were used to determine the number of factors for extraction.

Multiple factor solutions were evaluated based on the number of factors indicated by each extraction procedure listed above. Each factor solution was evaluated for fit based on evidence of simple structure (Thurstone, 1947), with the goal being that each IHNI item loaded significantly onto only one factor with little to no cross-loading across factors, and each factor had at least three items significantly loading onto it. Once an optimal factor solution was identified, internal consistency reliability coefficients were calculated for the full IHNI and each subscale.

RQ2: How are these dimensions of internalized homonegativity associated with sexual risk behaviors among AAMSM?

After investigating the factor structure of the IHNI within the sample, regression analysis was used to determine whether the identified dimensions of internalized homonegativity were significant predictors of participants' engagement in sexual risk behaviors, controlling for covariates in the model. Covariates included age, highest educational level attained, annual income, relationship status, sexual identity, HIV status, and degree of masculinity/femininity. Relationship status and sexual identity were treated as categorical variables. HIV status was treated as a dichotomous yes/no variable, while all other independent variables were treated as continuous.

Because of the number of sexual risk behavior measures, a variety of regression analysis techniques were used according to the way in which each behavior was measured. Binary logistic regression was used to analyze the predictive value of the independent variables on the dichotomous dependent variables. Ordinal logistic regression was used to model the frequency of condom use for insertive and receptive anal intercourse, due to the fact that, while the response options are categorical, their order (1= "Never" to 4= "Every time") is meaningful. For the numbers of sexual partners, negative binomial regression was used. This technique was used because the numbers of sexual partners, much like other forms of count data, were over-dispersed; the conditional variances of the dependent variables exceeded the conditional means. Negative binomial regression accounts for this overdispersion (Gardner, Mulvey, & Shaw, 1995).

The dependent variables for RQ2 analyses were: number of sexual partners in the past 12 months and 3 months; number of male sexual partners in the last 12 months and 3 months; concurrency of sexual partners in the last 3 months, types of high-risk sexual

partners in the last 3 months, and high-risk sexual situations in the last 3 months, and frequency of condom use when engaging in both insertive and receptive anal sex in the past 3 months. Numbers of sexual partners were treated as count data. Concurrency, high-risk sexual partners, and high-risk sexual situations variables were transformed into dichotomous yes/no variables. Respondents who answered “don’t know” to high-risk sexual partners or situations were excluded from analysis. For items measuring frequency of condom use in the last 3 months for insertive or receptive anal sex, respondents answering that they had not engaged in that behavior in the last 3 months were excluded from analysis. The individual dependent variables were regressed onto the set of independent variable separately, as opposed to calculating an index score of sexual risk. A summary of the dependent variables, type of data, and analysis technique used can be found in Table 3.1.

Specific Aim 2: Examine the ways in which religiosity and spirituality are differentially associated with sexual risk behaviors among AAMSM.

RQ3: Are religiosity and spirituality associated among AAMSM?

The relationship between religiosity (continuous variables as measured by the RCI-10 and the “Authority of Scripture” subscale of the RVS) and spirituality (continuous variable as measured by the DSES) was investigated using a Pearson product-moment correlation coefficient.

RQ4: Is religiosity significantly associated with sexual risk behaviors among AAMSM?

Regression analysis was used to determine whether religiosity was a significant predictor of participants’ engagement in sexual risk behaviors, controlling for covariates in the model. Covariates included age, highest educational level attained, annual income,

relationship status, sexual identity, HIV status, and degree of masculinity/femininity.

Relationship status and sexual identity were treated as categorical variables. HIV status was treated as a dichotomous yes/no variable, while all other independent variables were treated as continuous. Please refer to **Table 3.1** for a summary of the dependent variables, types of data, and analysis technique used.

Table 3.1. Dependent variables and analysis technique, (Research Questions 2, 4, & 5)³

| Dependent Variable (DV) | Type of Data | Analysis |
|--|--------------------|---|
| Number of sex partners in the last 12 months | Continuous/count | Negative binomial regression |
| Number of sex partners in the last 3 months | Continuous/count | Negative binomial regression |
| Concurrency of sexual partners in the last 3 months | Dichotomous yes/no | Binary logistic regression |
| Types of high-risk sexual partners in the last 3 months (IDU, HIV-positive, anonymous, partner exchanging sex for money or drugs) | Dichotomous yes/no | Binary logistic regression |
| Types of high-risk sexual situations in the last 3 months (sex w/ alcohol use, sex w/ drug use, sex w/ internet partner, sex in exchange for money or drugs) | Dichotomous yes/no | Binary logistic regression |
| Frequency of condom use for insertive anal sex in the last 3 months | Ordinal | Ordinal logistic regression/multinomial logistic regression |
| Frequency of condom use for receptive anal sex in the last 3 months | Ordinal | Ordinal logistic regression/multinomial logistic regression |

³ Note: Separate regression models were conducted for each of the following independent variables: internalized homonegativity, religiosity, and spirituality. Covariates included age, highest educational level attained, annual income, relationship status, sexual identity, HIV status, and degree of masculinity/femininity.

RQ5: Is spirituality significantly associated with sexual risk behaviors among AAMSM?

Regression analysis was used to determine whether spirituality was a significant predictor of participants' engagement in sexual risk behaviors, controlling for covariates in the model. Covariates included age, highest educational level attained, annual income, relationship status, sexual identity, HIV status, and degree of masculinity/femininity. Relationship status and sexual identity were treated as categorical variables. HIV status was treated as a dichotomous yes/no variable, while all other independent variables were treated as continuous. Please refer to **Table 3.1** for a summary of the dependent variables, types of data, and analysis technique used.

Specific Aim 3: Examine the associations between internalized homonegativity, religiosity, spirituality, perceived affirmativeness, and sexual risk behaviors among AAMSM.

RQ6: Does internalized homonegativity mediate the associations between religiosity, spirituality, and condom use among AAMSM?

Latent variable structural equation modeling (SEM) was conducted using Mplus version 5.2 (Muthén & Muthén, 2008). SEM is a statistical technique that allows researchers to explore the relationships between latent (unobserved) variables in a specified theoretical model (Schumacker & Lomax, 2004). SEM uses both a measurement (confirmatory factor) model and a structural (path) model to evaluate the validity of a theoretical model using latent variables (Schumacker & Lomax, 2004). SEM is useful in that it estimates measurement error and removes it from the relationships between the theoretical constructs, allowing for a more accurate portrayal of the strengths and directions of those relationships (Kline, 2011). In SEM, latent variables

that are not predicted by any other variables are considered exogenous, or latent independent variables (Schumacker & Lomax, 2004). Conversely, latent variables that are predicted by other latent variables are considered to be endogenous, or latent dependent, variables (Schumacker & Lomax, 2004).

The first step in evaluating a structural equation model is to examine model fit, and four fit indices were used in the SHIFT Study. A chi-square test was used to assess absolute model fit. The chi-square statistic is calculated based on the differences between the observed and reproduced covariance matrix. A chi-square statistic with an associated *p*-value greater than .05 is indicative of good model fit. However, a significant chi-square statistic may not necessarily provide evidence for poor model fit, as the chi-square test is sensitive to sample size (Schumacker & Lomax, 2004). In addition to the chi-square test, the Bentler comparative fit index (CFI; Bentler, 1980), the Non-Normed Fit Index (NNFI), also known as the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), and the root mean square error of approximation (RMSEA; Browne & Cudek, 1993) were used to assess model fit. CFI and TLI values of .95 or greater and RMSEA values of .06 or lower are generally considered indicators of acceptable model fit; however, these cut-offs are considered as guidelines and are not absolute. For example, some researchers have indicated that CFI and TLI values greater than .90 and RMSEA values of less than .08 can be indicators of adequate model fit (Kenny, 2012).

To allow for the possibility of different relationships among the variables of interest, the outcome variables—frequency of condom use for insertive and receptive anal intercourse in the last 3 months—were modeled separately. In the proposed models, religiosity and spirituality were considered exogenous variables, while the previously-

identified dimensions of internalized homonegativity—Personal & Moral Homonegativity and Gay Affirmation—were treated as endogenous variables, hypothesized to be mediators of the relationships between the exogenous variables and the outcome variable, frequency of condom use in the last 3 months. Scores from the 10 RCI-10 items were used as indicators of religiosity, the 16 DSES items were indicators of spirituality, and the 23 IHNI items were used as indicators of the dimensions of internalized homonegativity as identified in Specific Aim 1. **Figure 3.1** depicts the path model to be tested using SEM.

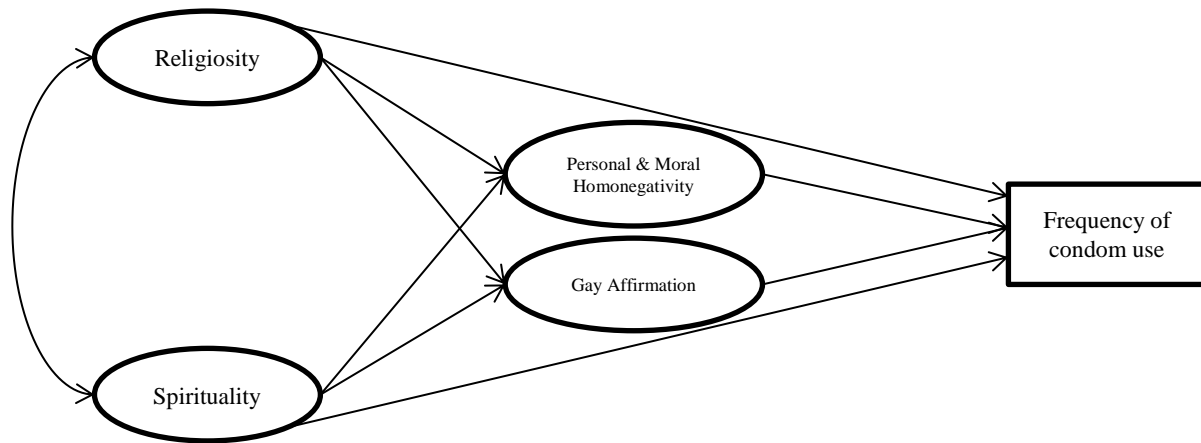


Figure 3.1 Path diagram illustrating the pathways between religiosity, spirituality, internalized homonegativity, and condom use

A weighted least squares estimation method was used due to the non-normality of some indicator items. In order to identify the model, one indicator item for each latent variable was fixed at 1. Because frequency of condom use for insertive and receptive anal intercourse were measured using responses to one survey item respectively, they were treated as manifest or observed variables in the models. A full estimation maximum likelihood (FIML) approach was used in order to account for missing data among the independent variables. FIML uses a casewise likelihood function using only those

variables that are observed for a given case. Thus, it requires a less restrictive missing-at-random assumption, allowing for unbiased parameter estimates, and yields more efficient estimates than what would be calculated from either listwise or pairwise deletion (Enders & Bandalos, 2001).

RQ7: Does the perceived affirmativeness of a religious group influence the associations between religiosity, spirituality, internalized homonegativity, and sexual risk behaviors among AAMSM?

Multinomial logistic regression was used to examine the relationships between condom use (insertive and receptive, respectively) and religiosity, spirituality, the dimensions of internalized homonegativity, and perceived affirmativeness. Frequency of condom use in the last 3 months was treated as a categorical variable with four levels: 1= “Never,” 2= “Some times,” 3= “Most times,” and 4= “Every time.” The response option “Never” was used as the reference group. An interaction term (religiosity x perceived affirmativeness) was also included to test perceived affirmativeness as a moderator. Covariates included age, highest educational level attained, annual income, relationship status, sexual identity, HIV status, and degree of masculinity/femininity. Relationship status and sexual identity were treated as categorical variables. HIV status was treated as a dichotomous yes/no variable, while all other independent variables were treated as continuous. All of the independent variables were entered into the model in one step. Analyses were conducted using SPSS v.20 (IBM Corp., 2011).

Dissemination Plan

Research that is conducted with the intent of improving community health outcomes must be disseminated in such a way that multiple stakeholder groups are able to

access it, engage with it, and use it to inform their community practice. In accordance with this philosophy, the results of the SHIFT Study will be shared in a variety of ways. The PI will share the results of the SHIFT Study with the research community through the preparation of manuscripts submitted to peer-reviewed journals. Abstracts for oral and poster presentations will be submitted to professional conferences and symposia, including the American Public Health Association's annual meeting, the Society for Social Work Research conference, and the South Carolina STD/HIV conference.

One area of great interest is the dissemination of results to the communities that contributed to the success of the project and will be impacted most directly by the research findings. To that end, the PI will offer to present study findings at the various symposia and expositions that take place as part of annual Black Gay Pride celebrations. The PI will also share the study results with the community at-large by posting study updates through the social media channels used for participant recruitment. This will give community members the opportunity to engage with the results, provide additional insights for discussion, and subsequently inform the development of new research questions for future investigation.

Finally, the institutional influence of the African-American religious experience on the psychological and sexual health of AAMSM underscores the importance of sharing these results in African-American faith communities. In addition to sharing findings with AAMSM communities, the study results can and should be shared with African-American faith leaders, both clergy and laity. Given the growing discourse on sexuality and health within faith communities, these findings can be used to provide an empirical perspective to addressing the challenges of reconciling theological questions,

public health needs, and overall community norms within African-American communities.

In summary, the SHIFT Study used a variety of quantitative methods to evaluate the relationships between religiosity, spirituality, internalized homonegativity, and sexual risk behaviors among a sample of AAMSM in the Deep South. The study results will provide a unique look at the lived experiences of AAMSM and factors that may influence the risk of HIV infection among AAMSM.

CHAPTER IV: RESULTS

Introduction

The results of the SHIFT Study are presented in two ways. First, a traditional results chapter presents the results of a large number of analyses conducted in order to address the specified research questions. The traditional results chapter concludes with two manuscripts that have been prepared for submission to peer-reviewed journals. The first manuscript describes the methods, results, and conclusions related to Specific Aim 1, Research Questions 1 and 2. The second manuscript describes the methods, results, and conclusions related to Specific Aim 3, Research Question 6.

Although a variety of sexual risk behaviors were assessed in the study, both manuscripts focus on frequency of condom use during insertive and receptive anal intercourse in the last 3 months. These two behaviors were chosen to be the outcomes discussed in the manuscripts because much of the sexual health literature has identified unprotected anal intercourse as a primary risk behavior for HIV infection among AAMSM.

Frequencies and Descriptive Statistics

Data were collected between June 2011 and December 2011. A total of 349 men were eligible to complete the survey based on the screening criteria; however, one respondent was removed from analysis due to subsequently reporting an age younger than 18.

Table 4.1 presents the sociodemographic characteristics of the sample. The mean age of participants was 28.24 years, with a standard deviation of 8.49. Almost half (46%) of the men in the sample were aged 18-25. More than a third (35.1%) of the men

Table 4.1. Sociodemographic characteristics of SHIFT Study participants (n=348)

| | n | % |
|---|-----|------|
| State of residence (n=345) | | |
| Georgia | 72 | 20.7 |
| Louisiana | 4 | 1.1 |
| Mississippi | 87 | 25.0 |
| North Carolina | 90 | 25.9 |
| South Carolina | 92 | 26.4 |
| Highest educational level completed (n=346) | | |
| High school diploma/GED or less | 61 | 17.6 |
| Some college but no degree | 122 | 35.1 |
| Associate's or bachelor's degree | 95 | 27.3 |
| Some graduate school or adv. degree | 68 | 19.5 |
| Annual income (n=345) | | |
| Less than \$10,000 | 76 | 21.8 |
| \$10,000-\$24,999 | 76 | 21.8 |
| \$25,000-\$39,999 | 97 | 27.9 |
| \$40,000-\$49,999 | 47 | 13.5 |
| \$50,000 or more | 49 | 14.2 |
| Relationship status (n=345) | | |
| Single | 210 | 60.3 |
| Dating | 85 | 24.4 |
| Married/long-term relationship with man | 43 | 12.4 |
| Married/long-term relationship with woman | 2 | 0.6 |
| Separated | 5 | 1.4 |
| Sexual identity (n=329) | | |
| Gay/Homosexual | 241 | 69.3 |
| Same-Gender-Loving | 28 | 8.0 |
| Bisexual | 47 | 13.5 |
| Straight/Heterosexual | 3 | 0.9 |
| Other | 10 | 2.9 |
| Masculinity/Femininity (n=339) | | |
| Extremely masculine/masculine | 141 | 40.5 |
| Equally masculine and feminine | 164 | 47.1 |
| Extremely feminine/feminine | 34 | 9.8 |
| Ever tested positive for HIV | | |
| Yes | 71 | 20.4 |
| No | 258 | 74.1 |
| I have never been tested for HIV | 9 | 2.6 |

reported having some college education but no degree, and almost three-fourths (71.5%) reported an annual income of less than \$40,000. The majority of men reported a gay/homosexual identity (69.3%) and reported a “single” relationship status (60.3%). Most men classified themselves as being equally masculine and feminine (47.1%) or masculine (36.8%).

The religious affiliations of participants are reported in **Table 4.2**. More than four-fifths (87.1%) of participants identified Christianity as their major religious affiliation. Of those who identified as Christian, 50.8% identified as Baptist, 18.2% as non-denominational, 11.5% as Pentecostal, and 11.5% as Methodist.

Table 4.2. Religious characteristics of SHIFT Study participants (n=348)

| Religious affiliation | n | % |
|--|-----|------|
| Christianity | 303 | 87.1 |
| Buddhism | 3 | 0.9 |
| Confucianism | 1 | 0.3 |
| Atheist | 6 | 1.7 |
| Agnostic | 10 | 2.9 |
| Other | 11 | 3.2 |
| Christian denominational affiliation (n=303) | | |
| Catholic | 13 | 4.4 |
| Baptist | 154 | 50.8 |
| Methodist | 27 | 7.8 |
| Pentecostal | 38 | 12.5 |
| Non-denominational | 55 | 18.2 |
| Other | 11 | 3.6 |
| Did not respond | 5 | 1.7 |
| Perceived acceptance of homosexuality in religious group | | |
| Not accepting at all | 81 | 23.3 |
| Somewhat accepting | 119 | 34.2 |
| Mostly accepting | 38 | 10.9 |
| Completely accepting | 50 | 14.4 |
| I do not belong to a church or religious group | 56 | 16.1 |

Note: The column totals may not sum to 100% due to missing values.

Sexual Health Outcomes

Table 4.3 summarizes the frequencies for the sexual health outcomes examined in the study. Almost one-quarter (23.3%) of participants reported having concurrent sexual

partners in the past 3 months. Almost half (48.3%) of participants reported using a condom every time they engaged in anal intercourse as the insertive partner, and 45.1% reported using a condom every time they engaged in anal intercourse as the receptive partner in the last 3 months. More than three-fourths (77%) had been tested for HIV in the last 12 months, and 20.4% reported ever having tested positive for HIV.

Table 4.3. Sexual health characteristics of SHIFT Study participants (n=348)

| | n | % |
|--|-----|------|
| Ever had sex (n=341) | | |
| Yes | 335 | 96.3 |
| No | 6 | 1.7 |
| Ever had sex with a man (n=338) | | |
| Yes | 334 | 96.0 |
| No | 4 | 1.1 |
| Concurrent sexual relationships in last 3 months (n=335) | | |
| Yes | 81 | 23.3 |
| No | 254 | 73.0 |
| Frequency of condom use in last 3 months, insertive anal sex | | |
| Every time | 168 | 48.3 |
| Most times | 51 | 14.7 |
| Some times | 28 | 8.0 |
| Never | 38 | 10.9 |
| I have not done this in last 3 months | 47 | 13.5 |
| Frequency of condom use in last 3 months, receptive anal sex | | |
| Every time | 157 | 45.1 |
| Most times | 45 | 12.9 |
| Some times | 27 | 7.8 |
| Never | 34 | 9.8 |
| I have not done this in last 3 months | 71 | 20.4 |
| Tested for HIV in last 12 months | | |
| Yes | 268 | 77.0 |
| No | 74 | 21.3 |
| Ever tested positive for HIV | | |
| Yes | 71 | 20.4 |
| No | 258 | 74.1 |
| I have never been tested for HIV | 9 | 2.6 |

Note: The column totals may not sum to 100% due to missing values.

Descriptive statistics regarding the types of high-risk sexual partners are presented in **Table 4.4**. The most frequently-encountered types of high-risk sexual partners were sex with someone who was HIV-positive (16.1%) and sex with someone who was anonymous (13.2%).

Table 4.4. Descriptive statistics of high-risk sexual partners in the last 3 months (n=348)

| | n | % |
|---|-----|------|
| Sex with an injecting drug user | | |
| Yes | 3 | 0.9 |
| No | 307 | 88.2 |
| Don't know | 24 | 6.9 |
| Sex with someone who was HIV-positive | | |
| Yes | 56 | 16.1 |
| No | 247 | 71.0 |
| Don't know | 30 | 8.6 |
| Sex with an anonymous person | | |
| Yes | 46 | 13.2 |
| No | 272 | 78.2 |
| Don't know | 13 | 3.7 |
| Sex with someone who was exchanging sex for money, drugs, or food | | |
| Yes | 13 | 3.7 |
| No | 316 | 90.8 |
| Don't know | 4 | 1.1 |

Note: The column totals may not sum to total due to missing values.

Table 4.5 summarizes the descriptive statistics for engagement in certain types of high-risk sexual situations in the last 3 months. Almost half (43.7%) of participants reported having sex within 3 hours of using alcohol, and 21.3% reported having sex within 3 hours of using illegal drugs. More than a quarter (27.6%) reported having sex with someone they met on the Internet in the last 3 months.

Specific Aim 1: Explore how different dimensions of internalized homonegativity are associated with sexual risk behaviors among AAMSM.

The mean score for the IHNI was 48.16 (SD = 20.73), and the range of possible scores is 23-138. This mean is below the scale's midpoint of 80.5. The scale exhibited evidence of high internal consistency, with a Cronbach's alpha of 0.92.

Table 4.5. Descriptive statistics of high-risk sexual situations in the last 3 months (n=348)

| | n | % |
|---|-----|------|
| Sex within 3 hours of using alcohol | | |
| Yes | 152 | 43.7 |
| No | 180 | 51.7 |
| Don't know | 5 | 1.4 |
| Sex within 3 hours or using illegal drugs | | |
| Yes | 74 | 21.3 |
| No | 259 | 74.4 |
| Don't know | 1 | 0.3 |
| Sex with someone met on the Internet | | |
| Yes | 96 | 27.6 |
| No | 237 | 68.1 |
| Don't know | 2 | 0.6 |
| Sex in exchange for money, drugs, or food | | |
| Yes | 15 | 4.3 |
| No | 316 | 90.8 |
| Don't know | 2 | 0.6 |

Note: The column totals may not sum to total due to missing values.

The relationships between internalized homonegativity (as measured by the IHNI) and continuous sociodemographic variables were investigated using Pearson product-moment correlation coefficients. There were significant negative correlations between internalized homonegativity and age ($r=-.172$, $n=259$, $p=.006$) and between internalized homonegativity and education level ($r=-.146$, $n=260$, $p=.019$), with higher age and education being associated with lower levels of internalized homonegativity.

One-way analyses of variance were used to measure differences in mean IHNI scores by relationship status and sexual identity. There was no significant difference in

IHNI scores by relationship status: $F(4, 254) = 1.94, p=.11$. No significant difference was detected in IHNI scores by sexual identity: $F(4, 244) = 1.22, p=.30$.

An independent-samples t-test was conducted to examine differences in mean IHNI scores by HIV status. There was no significant difference in scores for those who were HIV-positive ($M=50.15, SD=20.71$) and HIV-negative ($M=47.51, SD=20.81; t(247) = -.826, p=.41$).

RQ1: What are the underlying dimensions of internalized homonegativity among AAMSM?

The 23 items of the IHNI were subjected to principal components analysis (PCA). Due to missing data, the analytical sample size for the PCA was 261. Before performing the PCA, the data were assessed for suitability for factor analysis. The Kaiser-Meyer-Olkin value was .935, which was greater than the recommended value of .6, and Bartlett's test of sphericity reached significance ($p<.001$), supporting the factorability of the data.

Principal components analysis identified the presence of three components with eigenvalues greater than 1, accounting for 40.1%, 14.1%, and 5.4% of the variance, respectively. The scree plot, however, provided evidence of a two-factor solution, with an "elbow" occurring around the third component. The parallel analysis provided further evidence for a two-factor solution, with only two observed eigenvalues exceeding the randomly generated eigenvalues in the corresponding data set.

The two-factor solution explained 54.2% of the variance, with Factor 1 contributing 40.1% and Factor 2 contributing 14.1%. The rotated two-factor solution

provided evidence of simple structure, with both factors showing strong loadings and all scale items loading significantly onto only one factor. Factor loadings greater than .3 were considered to be significant. Sixteen of the 23 items loaded onto Factor 1, with factor loadings ranging from .49 to .83. Seven of the 23 items loaded onto Factor 2, with factor loadings ranging from .50 to .81. There was a weak positive correlation between the two factors ($r=.224$). The factor loadings for the two-factor solution can be found in

Table 4.6.

Table 4.6. Internalized Homonegativity Inventory (IHNI) items and subscale factor loadings (n=261)

| Item number | Item text | Factor loading |
|---|--|----------------|
| <i>Factor 1: Personal and moral homonegativity (16 items)</i> | | |
| 15 | Sometimes I get upset when I think about being attracted to men. | .83 |
| 16 | In my opinion, homosexuality is harmful to the order of society. | .82 |
| 17 | Sometimes I feel that I might be better off dead than gay. | .82 |
| 19 | I believe it is morally wrong for men to be attracted to each other. | .82 |
| 5 | I feel ashamed of my homosexuality. | .82 |
| 7 | When I think about my attraction towards men, I feel unhappy. | .80 |
| 20 | I sometimes feel that my homosexuality is embarrassing. | .80 |
| 3 | When I think of my homosexuality, I feel depressed. | .79 |
| 4 | I believe that it is morally wrong for men to have sex with other men. | .77 |
| 18 | I sometimes resent my sexual orientation. | .76 |
| 23 | I believe it is unfair that I am attracted to men instead of women. | .73 |
| 13 | I am disturbed when people can tell I'm gay. | .66 |
| 14 | In general, I believe that gay men are more immoral than straight men. | .57 |
| 11 | I wish I could control my feelings of attraction toward other men. | .56 |
| 10 | When people around me talk about homosexuality, I get nervous. | .56 |
| 2 | I believe it is OK for men to be attracted to other men in an emotional way, but it's not OK for them to have sex with each other. | .49 |
| <i>Factor 2: Gay affirmation (7 items)</i> | | |
| 9 | I see my homosexuality as a gift. | .81 |
| 6 | I am thankful for my sexual orientation | .80 |
| 21 | I am proud to be gay. | .79 |
| 1 | I believe being gay is an important part of me. | .67 |
| 22 | I believe that public schools should teach that homosexuality is normal. | .66 |
| 12 | In general, I believe that homosexuality is as fulfilling as heterosexuality. | .63 |
| 8 | I believe that more gay men should be shown in TV shows, movies, and commercials. | .50 |

Table 4.7 summarizes the psychometric properties of the IHNI and its subscales. The two-factor solution exhibited good internal consistency reliability, with a Cronbach's alpha of .92 for the entire IHNI, and Cronbach's alpha values of .93 and .83 for Factor 1 and Factor 2, respectively. The factors were significantly intercorrelated ($r = .301$, $N=261$), $p<.001$, and both factors were significantly correlated with the IHNI.

Table 4.7. Descriptive statistics and Pearson correlations for internalized homonegativity and its component factors

| Property | IHNI | Personal & moral homonegativity | Gay affirmation |
|---|--------|---------------------------------|-----------------|
| N | 261 | 276 | 313 |
| Mean | 48.16 | 32.03 | 16.78 |
| SD | 20.73 | 17.13 | 7.66 |
| Range | 23-108 | 16-96 | 7-42 |
| Skewness | 1.03 | 1.60 | .78 |
| Internal consistency (Cronbach's alpha) | .92 | .93 | .83 |
| Correlations | | | |
| IHNI | ----- | | |
| Personal & moral homonegativity | .30 | ----- | |
| Gay affirmation | .61 | .94 | ----- |

Note: $N = 261$ for correlations. All correlations shown are significant at $p<.001$.

RQ2: How are these dimensions of internalized homonegativity associated with sexual risk behaviors among AAMSM?

Binary logistic regression was used to determine the impact of the two extracted components of internalized homonegativity and a number of demographic factors on the likelihood of having concurrent sexual relationships in the last 3 months and having been tested for HIV in the last 12 months. The full model containing all predictors of concurrency was not statistically significant, $\chi^2 (11, N=221) = 7.316$, $p=.773$. None of the independent variables made a statistically significant contribution to the model.

Table 4.8 summarizes the results of the regression analysis for concurrency of sexual relationships.

Table 4.8. Logistic regression predicting likelihood of having had concurrent sexual relationships in the last 3 months (n=221)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|--------|-------|-------|----|------|------------|
| Age | .023 | .024 | .911 | 1 | .340 | 1.023 |
| Education | .054 | .118 | .206 | 1 | .650 | 1.055 |
| Income | -.093 | .142 | .433 | 1 | .511 | .911 |
| Relationship status | | | | | | |
| Single | | | 1.023 | 2 | .600 | |
| Dating | -.097 | .377 | .066 | 1 | .798 | .908 |
| Married/LTR with a man | -.562 | .556 | 1.019 | 1 | .313 | .570 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | .517 | 2 | .772 | |
| Same-gender-loving | .305 | .517 | .348 | 1 | .555 | 1.357 |
| Bisexual | -.185 | .543 | .116 | 1 | .734 | .831 |
| Masculinity | .014 | .240 | .003 | 1 | .955 | 1.014 |
| IHNI-GA | -.023 | .024 | .929 | 1 | .335 | .977 |
| IHNI-PMH | .002 | .010 | .045 | 1 | .833 | 1.002 |
| HIV status | .623 | .389 | 2.572 | 1 | .109 | 1.865 |
| Constant | -1.580 | 1.220 | 1.678 | 1 | .195 | .206 |

* denotes significance at the level $p < .05$

Table 4.9 summarizes the results of regression analysis for the likelihood of having been tested for HIV in the last 12 months. The full model containing all predictors of having been tested for HIV in the last 12 months was significant, $\chi^2(11, N=225) = 53.825, p < .001$, indicating that the model was able to distinguish between those who had and had not been tested for HIV. The Hosmer-Lemeshow goodness of fit test provided evidence of good model fit. The model as a whole explained between 21.3% and 33% of the variance in testing, and correctly classified 84.9% of cases. The only predictor making a statistically significant contribution to the model was HIV status, with an odds ratio of .094. This indicated that those who reported a positive HIV status were more likely to not have been tested for HIV within the last year, controlling for all other factors in the model.

Binary logistic regression was also used to determine the impact of the two extracted components of internalized homonegativity and the same demographic factors on the likelihood of having certain kinds of high-risk sexual partners in the last 3 months.

(NOTE: Because of the small number of respondents who reported having sex with an injecting drug user or with someone exchanging sex for money, drugs, or food, no regression analysis could be conducted.)

Table 4.9. Logistic regression predicting likelihood of having been tested for HIV in the last 12 months (n=225)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|--------|-------|--------|----|------|------------|
| Age | -.033 | .026 | 1.559 | 1 | .212 | .968 |
| Education | -.101 | .137 | .538 | 1 | .463 | .904 |
| Income | .006 | .166 | .001 | 1 | .973 | 1.006 |
| Relationship status | | | | | | |
| Single | | | 1.075 | 2 | .584 | |
| Dating | .435 | .481 | .821 | 1 | .365 | 1.546 |
| Married/LTR with a man | .432 | .613 | .497 | 1 | .481 | 1.541 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 2.471 | 2 | .291 | |
| Same-gender-loving | -.888 | .565 | 2.469 | 1 | .116 | .411 |
| Bisexual | -.092 | .635 | .021 | 1 | .885 | .912 |
| Masculinity | -.186 | .286 | .423 | 1 | .515 | .830 |
| IHNI-GA | -.053 | .028 | 3.621 | 1 | .057 | .948 |
| IHNI-PMH | .010 | .013 | .658 | 1 | .417 | 1.011 |
| HIV status* | -2.370 | .426 | 30.938 | 1 | .000 | .094 |
| Constant | 4.581 | 1.508 | 9.223 | 1 | .002 | 97.601 |

* denotes significance at the level $p < .05$

Table 4.10 summarizes the results of the logistic regression analysis identifying predictors of the likelihood of having had sex with a HIV-positive person in the last 3 months. The full model containing all predictors of having sex with an HIV-positive person in the last 3 months was significant, $\chi^2 (11, N=200) = 59.879, p < .001$, indicating that the model was able to distinguish between those who did and did not report having sex with someone who was HIV-positive in the last 3 months. The Hosmer-Lemeshow goodness of fit test provided evidence of good model fit. The model explained between 26% and 41% of the variance in the outcome variable, and correctly classified 85.5% of the cases. The two significant predictors in the model were respondents' age and HIV

status. HIV status was the strongest predictor, producing an odds ratio of 13.02, indicating that those who were HIV-positive were more about 13 times more likely to have had sex with another HIV-positive person than those who had not tested positive for HIV. Age was also a significant predictor, with the likelihood of having had sex with a HIV-positive person increasing with age.

Table 4.10. Logistic regression predicting likelihood of having had sex with a HIV-positive person in the last 3 months (n=200)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|--------|-------|--------|----|-------|------------|
| Age* | .064 | .031 | 4.155 | 1 | .042 | 1.066 |
| Education | .242 | .157 | 2.385 | 1 | .123 | 1.273 |
| Income | -.151 | .191 | .620 | 1 | .431 | .860 |
| Relationship status | | | | | | |
| Single | | | .000 | 2 | 1.000 | |
| Dating | .002 | .535 | .000 | 1 | .997 | 1.002 |
| Married/LTR with a man | .007 | .697 | .000 | 1 | .992 | 1.007 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | .707 | 2 | .702 | |
| Same-gender-loving | -.121 | .723 | .028 | 1 | .867 | .886 |
| Bisexual | -.724 | .868 | .696 | 1 | .404 | .485 |
| Masculinity | .075 | .346 | .048 | 1 | .827 | 1.078 |
| IHNI-GA | -.005 | .033 | .025 | 1 | .875 | .995 |
| IHNI-PMH | -.012 | .015 | .693 | 1 | .405 | .988 |
| HIV status* | 2.567 | .478 | 28.879 | 1 | .000 | 13.022 |
| Constant | -4.715 | 1.828 | 6.650 | 1 | .010 | .009 |

* denotes significance at the level $p < .05$

The regression model predicting having had sex with an anonymous sex partner in the last 3 months was significant, $\chi^2(11, N=212) = 21.493, p=.029$, indicating that the model was able to distinguish between respondents who did and did not report having sex with an anonymous sex partner. The Hosmer-Lemeshow goodness of fit test provided evidence of good model fit; however, the model only explained between 10% and 17% of the variance. None of the independent variables were significant predictors. These results are summarized in **Table 4.11**.

Table 4.11. Logistic regression predicting likelihood of having had sex with an anonymous person in the last 3 months. (n=212)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|---------|----------|-------|----|------|------------|
| Age | .001 | .030 | .001 | 1 | .973 | 1.001 |
| Education | .128 | .141 | .823 | 1 | .364 | 1.137 |
| Income | -.044 | .177 | .062 | 1 | .803 | .957 |
| Relationship status | | | | | | |
| Single | | | 3.503 | 2 | .173 | |
| Dating | -.302 | .470 | .413 | 1 | .521 | .739 |
| Married/LTR with a man | -2.004 | 1.098 | 3.332 | 1 | .068 | .135 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 1.708 | 2 | .426 | |
| Same-gender-loving | -1.410 | 1.079 | 1.708 | 1 | .191 | .244 |
| Bisexual | -19.724 | 7619.349 | .000 | 1 | .998 | .000 |
| Masculinity | .089 | .290 | .095 | 1 | .758 | 1.093 |
| IHNI-GA | -.017 | .031 | .289 | 1 | .591 | .984 |
| IHNI-PMH | .003 | .011 | .058 | 1 | .810 | 1.003 |
| HIV status | .819 | .496 | 2.725 | 1 | .099 | 2.269 |
| Constant | -2.067 | 1.478 | 1.956 | 1 | .162 | .127 |

* denotes significance at the level $p < .05$

Binary logistic regression was used to determine the impact of the components of internalized homonegativity and other demographic variables on the likelihood that respondents would report having engaged in certain high-risk sexual situations in the last 3 months. . (NOTE: Because of the small number of respondents who reported having had sex for money, drugs, or food, no regression analysis could be conducted.)

The regression model predicting the likelihood of having had sex within 3 hours of consuming alcohol in the last 3 months was not significant, $\chi^2 (11, N=220) = 19.70$, $p=.050$. The Hosmer-Lemeshow goodness of fit test approached significance ($p=.052$), indicating evidence of poor model fit. However, there were two independent variables that were significant predictors. Participants' income produced an odds ratio of 1.339, indicating that those with higher income were more likely to have used alcohol prior to having sex. Participants' age recorded an odds ratio of .939, meaning that those who were older were slightly less likely to have had sex after alcohol use. **Table 4.12** summarizes the results of this logistic regression analysis.

Table 4.12. Logistic regression predicting likelihood of having had sex within 3 hours of using alcohol in the last 3 months (n=220)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|-------|-------|-------|----|------|------------|
| Age* | -.063 | .024 | 7.031 | 1 | .008 | .939 |
| Education | .018 | .107 | .028 | 1 | .868 | 1.018 |
| Income* | .292 | .129 | 5.095 | 1 | .024 | 1.339 |
| Relationship status | | | | | | |
| Single | | | .882 | 2 | .643 | |
| Dating | -.144 | .336 | .184 | 1 | .668 | .866 |
| Married/LTR with a man | .346 | .473 | .534 | 1 | .465 | 1.413 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 1.290 | 2 | .525 | |
| Same-gender-loving | .314 | .502 | .392 | 1 | .531 | 1.369 |
| Bisexual | -.399 | .455 | .770 | 1 | .380 | .671 |
| Masculinity | -.371 | .219 | 2.867 | 1 | .090 | .690 |
| IHNI-GA | -.004 | .021 | .037 | 1 | .846 | .996 |
| IHNI-PMH | -.012 | .009 | 1.906 | 1 | .167 | .988 |
| HIV status | .623 | .372 | 2.806 | 1 | .094 | 1.865 |
| Constant | 2.073 | 1.098 | 3.561 | 1 | .059 | 7.946 |

* denotes significance at the level $p < .05$

The regression model predicting the likelihood of having sex within 3 hours of using illegal drugs in the last 3 months was not significant, $\chi^2 (11, N=222) = 19.137$, $p = .059$. However, HIV status was identified as a significant predictor, producing an odds ratio of 3.052. This indicates that respondents who reported being HIV-positive were more than 3 times more likely to have had sex within 3 hours of using illegal drugs than those who did not report being HIV-positive, controlling for other factors in the model.

Table 4.13 summarizes these results.

The regression model predicting the likelihood of having had sex with someone the participant met on the Internet was statistically significant, $\chi^2 (15, N=222) = 33.129$, $p = .001$, indicating that the model was able to differentiate between respondents who reported or did not report having had sex with someone they met via the Internet.

However, none of the predictors included in the model were significant predictors. These results are summarized in **Table 4.14**.

Table 4.13. Logistic regression predicting likelihood of having had sex within 3 hours of using illegal drugs in the last 3 months (n=222)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|--------|-------|-------|----|------|------------|
| Age | -.025 | .028 | .781 | 1 | .377 | .975 |
| Education | .003 | .131 | .000 | 1 | .983 | 1.003 |
| Income | -.214 | .159 | 1.799 | 1 | .180 | .808 |
| Relationship status | | | | | | |
| Single | | | 3.592 | 2 | .166 | |
| Dating | -.277 | .418 | .438 | 1 | .508 | .758 |
| Married/LTR with a man | .840 | .532 | 2.498 | 1 | .114 | 2.317 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | .025 | 2 | .988 | |
| Same-gender-loving | .040 | .594 | .005 | 1 | .946 | 1.041 |
| Bisexual | .081 | .544 | .022 | 1 | .881 | 1.085 |
| Masculinity | .210 | .257 | .666 | 1 | .414 | 1.233 |
| IHNI-GA | .034 | .024 | 1.982 | 1 | .159 | 1.035 |
| IHNI-PMH | .007 | .010 | .503 | 1 | .478 | 1.007 |
| HIV status* | 1.262 | .411 | 9.413 | 1 | .002 | 3.531 |
| Constant | -1.785 | 1.323 | 1.819 | 1 | .177 | .168 |

* denotes significance at the level $p < .05$

Table 4.14. Logistic regression predicting likelihood of having had sex with an Internet sex partner in the last 3 months (n=222)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|---------|----------|-------|----|------|------------|
| Age | .017 | .025 | .476 | 1 | .490 | 1.018 |
| Education | .058 | .119 | .235 | 1 | .628 | 1.059 |
| Income | -.093 | .146 | .403 | 1 | .525 | .912 |
| Relationship status | | | | | | |
| Single | | | 2.044 | 2 | .360 | |
| Dating | -.521 | .364 | 2.044 | 1 | .153 | .594 |
| Married/LTR with a man | -20.829 | 7588.525 | .000 | 1 | .998 | .000 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 4.308 | 2 | .116 | |
| Same-gender-loving | -1.195 | .686 | 3.033 | 1 | .082 | .303 |
| Bisexual | -.665 | .515 | 1.666 | 1 | .197 | .514 |
| Masculinity | -.293 | .244 | 1.443 | 1 | .230 | .746 |
| IHNI-GA | .011 | .023 | .236 | 1 | .627 | 1.011 |
| IHNI-PMH | -.003 | .010 | .103 | 1 | .748 | .997 |
| HIV status | .561 | .412 | 1.856 | 1 | .173 | 1.752 |
| Constant | -.313 | 1.223 | .065 | 1 | .798 | .731 |

* denotes significance at the level $p < .05$

Negative binomial regression was used to evaluate the predictive value of the identified components of internalized homonegativity and selected demographic variables

on the number of total sex partners and male sex partners in the last 12 months and 3 months.

The mean number of total sex partners (male and female) in the last 12 months was 3.90, with a standard deviation of 4.92. The model containing all predictor variables was significant, $\chi^2(11, N=205) = 25.385, p=.008$. The model also exhibits evidence of good fit, with a Pearson chi-square-to-degrees of freedom ratio of .897. Only two of the predictor variables were significant. Those who reported being married to or in a long-term relationship with a man reported fewer sex partners in the last 12 months, while respondents who reported a positive HIV status reported more sex partners, controlling for all other variables in the model. A summary of this regression analysis can be found in **Table 4.15**.

Table 4.15. Negative binomial regression predicting number of sexual partners in the last 12 months (n=205)

| Predictor variable | B | Standard error | Rate ratio | 95% Confidence Interval | |
|---|--------------|----------------|--------------|-------------------------|--------------|
| | | | | Lower | Higher |
| Age | -.008 | .0129 | .992 | .968 | 1.018 |
| Education | .102 | .0618 | 1.108 | .981 | 1.250 |
| Income | -.041 | .0765 | .960 | .826 | 1.115 |
| Relationship status (ref = "single") | | | | | |
| Dating | -.324 | .1942 | .723 | .494 | 1.058 |
| Married/LTR with a man* | -.903 | .2718 | .405 | .238 | .691 |
| Sexual identity (ref = "Gay/homosexual") | | | | | |
| Same-gender-loving | -.195 | .2797 | .823 | .476 | 1.424 |
| Bisexual | -.111 | .2564 | .895 | .541 | 1.479 |
| Masculinity | -.107 | .1204 | .898 | .709 | 1.137 |
| IHNI-GA | .003 | .0123 | 1.003 | .979 | 1.028 |
| IHNI-PMH | .001 | .0053 | 1.003 | .990 | 1.011 |
| HIV status (ref = "negative")* | .589 | .2056 | 1.802 | 1.204 | 2.697 |

* denotes significance at the level $p < .05$

The mean number of male sex partners in the last 12 months was 3.92, with a standard deviation of 4.889. The model containing all predictor variables was significant,

χ^2 (11, N=207) = 25.932, p=.007. The model also exhibits evidence of good fit, with a Pearson chi-square-to-degrees of freedom ratio of .896. Once again, only two of the predictor variables were significant. Those who reported being married to or in a long-term relationship with a man reported fewer male sex partners in the last 12 months, while respondents who reported a positive HIV status reported more male sex partners, controlling for all other variables in the model. **Table 4.16** summarizes the results of this regression analysis.

Table 4.16. Negative binomial regression predicting number of male sexual partners in the last 12 months (n=210)

| Predictor variable | B | Standard error | Rate ratio | 95% Confidence Interval | |
|---|--------------|----------------|--------------|-------------------------|--------------|
| | | | | Lower | Higher |
| Age | -.008 | .0130 | .992 | .967 | 1.018 |
| Education | .091 | .0606 | 1.095 | .972 | 1.233 |
| Income | -.029 | .0766 | .971 | .836 | 1.128 |
| Relationship status (ref = "single") | | | | | |
| Dating | -.356 | .1931 | .701 | .480 | 1.023 |
| Married/LTR with a man* | -.923 | .2716 | .397 | .233 | .676 |
| Sexual identity (ref = "Gay/homosexual") | | | | | |
| Same-gender-loving | -.193 | .2785 | .825 | .478 | 1.424 |
| Bisexual | -.282 | .2553 | .754 | .457 | 1.244 |
| Masculinity | -.081 | .1208 | .922 | .727 | 1.168 |
| IHNI-GA | .006 | .0119 | 1.006 | .982 | 1.030 |
| IHNI-PMH | -.001 | .0052 | .999 | .989 | 1.009 |
| HIV status (ref = "negative")* | .564 | .1996 | 1.757 | 1.188 | 2.598 |

* denotes significance at the level p<.05

Ordinal logistic regression was initially used to identify predictors of frequency of condom use for insertive and receptive anal intercourse, respectively, in the last three months. However, both models violated the test of parallel lines, thus justifying the use of multinomial logistic regression.

The multinomial logistic regression model for frequency of condom use during insertive intercourse, including all predictors was significant, χ^2 (33, n=189) = 51.065,

indicating that the model was able to distinguish between respondents who reported varying levels of condom use frequency. Based on pseudo R-square values, the model was able to explain between 11.8% and 26.3% of the variance in the data. According to the likelihood ratio tests, two predictor variables were significant to the overall model. The Gay Affirmation subscale of the IHNI ($\chi^2 = 8.143$, $p=.043$) and relationship status ($\chi^2 = 16.097$, $p=.013$) were both significant predictors in the model.

As summarized in **Table 4.17**, one of the predictor variables were also significant in distinguishing the likelihood of specific levels of condom use. Those who reported “never” using condoms during insertive anal intercourse were used as the reference group. Age (OR=1.125) was significant in distinguishing between the likelihood of reporting using condoms “some times” for insertive anal intercourse. The “Personal and Moral Homonegativity” subscale scores (OR=1.053) and a relationship status of “Married/long-term relationship with a man” (OR=.146) were significant predictors of using condoms “most times” for insertive anal intercourse as compared to those who “never” used condoms. Three variables were significant predictors of condom use “every time” during insertive anal intercourse: the “Gay Affirmation subscale” of the IHNI (OR=.1.109), the “Personal & Moral Homonegativity” subscale of the IHNI (OR=1.057), and a relationship status of “married/long-term relationship with a man” (OR=.111). This indicates that a greater sense of gay affirmation was associated with increased likelihood of using condoms “every time” for insertive anal intercourse. Interestingly, however, a greater sense of personal and moral homonegativity was also associated with an increased likelihood of using condoms “every time.” In contrast, being in a long-term relationship

Table 4.17. Multinomial logistic regression predicting frequency of condom use during insertive anal intercourse in the last 3 months (n=189)

| Frequency of condom use (ref = "never") | Variable | B | S.E. | Wald | df | p | Odds Ratio | |
|--|--|---------------|-------------|---------------|----------|-------------|--------------|-------|
| Some times | Age* | .118 | .051 | 5.348 | 1 | .021 | 1.125 | |
| | Education | -.278 | .240 | 1.340 | 1 | .247 | .757 | |
| | Income | -.340 | .290 | 1.377 | 1 | .241 | .712 | |
| | Relationship status (ref = "Single") | | | | | | | |
| | Dating | .218 | .762 | .082 | 1 | .775 | 1.244 | |
| | Married/LTR with a man | -1.503 | .971 | 2.396 | 1 | .122 | .223 | |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| | Same-gender-loving | .107 | 1.334 | .006 | 1 | .936 | 1.113 | |
| | Bisexual | -1.035 | 1.206 | .736 | 1 | .391 | .355 | |
| | Masculinity | -.085 | .480 | .031 | 1 | .859 | .919 | |
| | IHNI GA | -.081 | .050 | 2.670 | 1 | .102 | 1.085 | |
| | IHNI PMH | .050 | .028 | 3.251 | 1 | .071 | 1.051 | |
| | HIV status | .379 | .764 | .246 | 1 | .620 | 1.461 | |
| | Intercept | -1.214 | 2.146 | .320 | 1 | .571 | | |
| | Most times | Age | .070 | .049 | 2.054 | 1 | .152 | 1.072 |
| | | Education | -.286 | .208 | 1.887 | 1 | .170 | .752 |
| Income | | -.165 | .241 | .472 | 1 | .492 | .848 | |
| Relationship status (ref = "Single") | | | | | | | | |
| Dating | | -1.037 | .691 | 2.249 | 1 | .134 | .355 | |
| Married/LTR with a man* | | -1.927 | .811 | 5.648 | 1 | .017 | .146 | |
| Sexual identity (ref = "Gay/homosexual") | | | | | | | | |
| Same-gender-loving | | 1.399 | .971 | 2.075 | 1 | .150 | 4.053 | |
| Bisexual | | .058 | .741 | .006 | 1 | .938 | 1.059 | |
| Masculinity | | -.357 | .407 | .771 | 1 | .380 | .700 | |
| IHNI GA | | -.077 | .042 | 3.334 | 1 | .068 | 1.080 | |
| IHNI PMH* | | .052 | .025 | 4.240 | 1 | .039 | 1.053 | |
| HIV status | | -.037 | .662 | .003 | 1 | .956 | .964 | |
| Intercept | | 1.124 | 1.816 | .383 | 1 | .536 | | |
| Every time | | Age | .062 | .043 | 2.076 | 1 | .150 | 1.064 |
| | | Education | -.334 | .178 | 3.522 | 1 | .061 | .716 |
| | Income | .003 | .207 | .000 | 1 | .990 | 1.003 | |
| | Relationship status (ref = "Single") | | | | | | | |
| | Dating | -.066 | .555 | .014 | 1 | .905 | .936 | |
| | Married/LTR with a man* | -2.202 | .684 | 10.367 | 1 | .001 | .111 | |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| | Same-gender-loving | .913 | .892 | 1.048 | 1 | .306 | 2.492 | |
| | Bisexual | -.524 | .646 | .658 | 1 | .417 | .592 | |
| | Masculinity | -.653 | .356 | 3.376 | 1 | .066 | .520 | |
| | IHNI GA* | -.103 | .038 | 7.487 | 1 | .006 | 1.109 | |
| | IHNI PMH* | .055 | .024 | 5.469 | 1 | .019 | 1.057 | |
| | HIV status | -.671 | .587 | 1.307 | 1 | .253 | .511 | |
| | Intercept | 3.093 | 1.586 | 3.804 | 1 | .051 | | |

* denotes significance at the level $p < .05$

with a man was associated with a much lower likelihood of using condoms “every time” for insertive anal intercourse.

The multinomial logistic regression model for frequency of condom use during receptive anal intercourse was also statistically significant, χ^2 (33, N = 170) = 66.429, $p < .001$, indicating that the model was able to differentiate between respondents who reported varying levels of condom use frequency. The model was able to explain between 17.8% and 36.4% of the variance in the data, based on the McFadden, Nagelkerke, and Cox and Snell pseudo R-square values. According to the likelihood ratio tests, three predictor variables were significant overall within the model: the Gay Affirmation subscale of the IHNI ($\chi^2=9.528$, $p=.023$), relationship status ($\chi^2=14.813$, $p=.022$), and HIV status ($\chi^2=8.123$, $p=.044$).

Again, some of the predictor variables emerged as significant in distinguishing the likelihood of specific levels of condom use during receptive anal intercourse, as shown in **Table 4.18**. Those who “never” used condoms were used as the reference group. None of the predictors were significant to the likelihood of using condoms “some times” for receptive anal intercourse. Degree of masculinity (OR=2.924) was significant in predicting the likelihood of engaging in condom use “most times” as opposed to “never,” such that lower levels of reported masculinity were associated with a greater likelihood of using condoms “most times.” Finally, four predictor variables were significant in predicting the likelihood of engaging in condom use “every time”: education (OR=.624), the “Gay Affirmation” subscale of the IHNI (OR=.1.134), the “Personal and Moral Homonegativity” subscale of the IHNI (OR=1.077), and a relationship status of “married/long-term relationship with a man” (OR=.158). These results suggest that

Table 4.18. Multinomial logistic regression predicting frequency of condom use during receptive anal intercourse in the last 3 months (n=170)

| Frequency of condom use (ref = "never") | Variable | B | S.E. | Wald | df | p | Odds Ratio |
|--|--|---------------|-------------|--------------|----------|-------------|--------------|
| Some times | Age | .076 | .058 | 1.704 | 1 | .192 | 1.079 |
| | Education | -.107 | .271 | .156 | 1 | .693 | .898 |
| | Income | -.472 | .339 | 1.942 | 1 | .163 | .623 |
| | Relationship status (ref = "Single") | | | | | | |
| | Dating | 1.429 | .938 | 2.319 | 1 | .128 | 4.174 |
| | Married/LTR with a man | -.265 | 1.029 | .067 | 1 | .796 | .767 |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | |
| | Same-gender-loving | .445 | 1.184 | .141 | 1 | .707 | 1.561 |
| | Bisexual | -.969 | 1.293 | .562 | 1 | .454 | .380 |
| | Masculinity | .673 | .585 | 1.325 | 1 | .250 | 1.961 |
| | IHNI GA | -.102 | .056 | 3.289 | 1 | .070 | 1.107 |
| | IHNI PMH | .067 | .037 | 3.312 | 1 | .069 | 1.070 |
| | HIV status | .971 | .840 | 1.337 | 1 | .248 | 2.640 |
| | Intercept | -2.338 | 2.556 | .837 | 1 | .360 | |
| | Most times | Age | .001 | .059 | .000 | 1 | .984 |
| Education | | -.336 | .244 | 1.902 | 1 | .168 | .714 |
| Income | | -.260 | .298 | .759 | 1 | .384 | .771 |
| Relationship status (ref = "Single") | | | | | | | |
| Dating | | -.596 | .887 | .451 | 1 | .502 | .551 |
| Married/LTR with a man | | -1.377 | .897 | 2.356 | 1 | .125 | .252 |
| Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| Same-gender-loving | | .681 | 1.121 | .369 | 1 | .544 | 1.976 |
| Bisexual | | -.118 | .861 | .019 | 1 | .891 | .889 |
| Masculinity* | | 1.073 | .506 | 4.493 | 1 | .034 | 2.924 |
| IHNI GA | | -.070 | .050 | 1.992 | 1 | .158 | 1.073 |
| IHNI PMH | | .058 | .034 | 2.883 | 1 | .090 | 1.060 |
| HIV status | | .895 | .759 | 1.388 | 1 | .239 | 2.446 |
| Intercept | | .843 | 2.192 | .148 | 1 | .700 | |
| Every time | | Age | .039 | .053 | .532 | 1 | .466 |
| | Education* | -.471 | .216 | 4.755 | 1 | .029 | .624 |
| | Income | -.161 | .263 | .373 | 1 | .541 | .851 |
| | Relationship status (ref = "Single") | | | | | | |
| | Dating | .540 | .756 | .509 | 1 | .475 | 1.716 |
| | Married/LTR with a man* | -1.843 | .791 | 5.431 | 1 | .020 | .158 |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | |
| | Same-gender-loving | .502 | 1.012 | .246 | 1 | .620 | 1.652 |
| | Bisexual | -.981 | .778 | 1.588 | 1 | .208 | .375 |
| | Masculinity | .408 | .460 | .789 | 1 | .374 | 1.504 |
| | IHNI GA* | -.126 | .046 | 7.443 | 1 | .006 | 1.134 |
| | IHNI PMH* | .074 | .033 | 4.960 | 1 | .026 | 1.077 |
| | HIV status | -.422 | .691 | .372 | 1 | .542 | .656 |
| | Intercept | 3.246 | 1.974 | 2.704 | 1 | .100 | |

* denotes significance at the level $p < .05$

higher education levels and being in a long-term relationship with a man were associated with lower likelihood of using condoms “every time,” while higher levels of gay affirmation and higher levels of personal and moral homonegativity were associated with a higher likelihood of using condoms “every time” as opposed to “never,” controlling for other variables in the model.

Specific Aim 2: Examine the ways in which religiosity and spirituality are differentially associated with sexual risk behaviors among AAMSM.

Religiosity

The mean score for the RCI-10 was 31.68 (SD = 10.87), which is slightly higher than the midpoint of 30. The scale exhibited evidence of high internal consistency, with a Cronbach’s alpha of 0.94. The mean for the Authority Afforded Scripture subscale of the RVS was 9.81 (SD = 3.81), slightly higher than the subscale’s midpoint of 9. The mean score for frequency of church attendance was 3.81 (SD = 1.47), indicating that respondents, on average, attended church or religious services between “a few times a year” and “a few times a month.” The mean score for frequency of engagement in private religious activity was 3.46 (SD = 1.88), indicating that respondents, on average, engaged in private religious activity between “a few times a year” and “a few times a month.”

One-way analyses of variance were used to measure differences in mean RCI-10 scores by relationship status, sexual identity, and recruitment technique. No significant differences were found in mean RCI-10 scores for either of these demographic variables.

An independent-samples t-test was conducted to examine differences in mean RCI-10 scores by HIV status. No significant differences were found between those who

reported a negative (N=230, M=31.52, SD=10.81) diagnosis and those who reported a positive (N=64, M=33.52, SD=10.93) diagnosis, $t(df=292) = -1.306, p=.19$.

One-way analyses of variance were used to measure differences in mean AAS subscale scores by relationship status, sexual identity, and recruitment technique. No significant differences were found in mean AAS scores for either of these demographic variables.

An independent-samples t-test was conducted to examine differences in mean AAS scores by HIV status. No significant differences were found between those who reported a negative (N=257, M=9.72, SD=3.81) diagnosis and those who reported a positive (N=68, M=10.41, SD=3.77) diagnosis, $t(df=323) = -1.327, p=.32$.

RQ3: Are religiosity and spirituality associated among AAMSM?

The relationships between RCI-10, AAS subscale, and DSES scores were investigated using Pearson product-moment correlation coefficients and are reported in **Table 4.19**. There was a strong, positive correlation between the RCI-10 and DSES ($r=.675, n=214, p<.001$), indicating that higher scores of religious commitment were associated with higher scores in spirituality. Similarly, DSES scores were also significantly, positively correlated with AAS scores ($r=.544, n=224, p<.001$).

RQ4: How is religiosity associated with sexual risk behaviors among AAMSM?

Binary logistic regression was used to determine the impact of religiosity and a number of demographic factors on the likelihood of having concurrent sexual relationships in the last 3 months and having been tested for HIV in the last 12 months.

Table 4.19. Descriptive statistics and Pearson correlations for religiosity, spirituality, internalized homonegativity, and continuous demographic variables (Cases deleted pairwise)

| | n | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|-----|-------|-------|-------|------------------------------|------------------------------|------------------------------|------------------------------|----------------------|------------------------------|------------------------------|
| 1.Age | 345 | 28.24 | 8.49 | ----- | .421* <.001 343 | .480* <.001 342 | -.182* .001 336 | -.172* .006 259 | .103 .123 224 | .005 .925 308 | -.075 .170 341 |
| 2.Highest educational level | 346 | 4.98 | 1.69 | ----- | | .553* <.001 343 | -.115* .034 337 | -.146* .019 260 | -.031 .639 226 | -.064 .260 310 | -.179* .001 342 |
| 3.Annual income | 345 | 2.81 | 1.43 | ----- | | | -.113* .039 336 | -.101 .104 260 | .052 .442 225 | -.006 .915 309 | -.139* .01 341 |
| 4.Masculinity | 339 | 2.67 | .771 | ----- | | | | .003 .967 257 | .111 .10 222 | .131* .022 304 | .078 .155 335 |
| 5.IHNI scale score | 261 | 48.16 | 20.73 | ----- | | | | | .072 .325 189 | .207* .001 246 | .261* <.001 260 |
| 6.DSES scale score | 226 | 74.02 | 17.21 | ----- | | | | | | .675* <.001 214 | .544* <.001 224 |
| 7. RCI-10 scale score | 311 | 31.68 | 10.87 | ----- | | | | | | | .746* <.001 308 |
| 8. Authority Afforded Scripture subscale score | 344 | 9.81 | 3.81 | ----- | | | | | | | ----- |

The full model containing all predictors of concurrency was statistically significant, $\chi^2(11, n=253) = 23.529, p=.015$. The model exhibited R^2 values between 8.9% and 13.2%, and correctly predicted 76.3% of cases. Those who reported being HIV-positive (OR=2.45) were more likely to report having concurrent sexual relationships in the last three months. **Table 4.20** summarizes the results of the regression analysis for concurrency of sexual relationships.

Table 4.20. Logistic regression predicting likelihood of having had concurrent sexual relationships in the last 3 months (n=253)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|----------|---|------|------|----|---|------------|
|----------|---|------|------|----|---|------------|

| | | | | | | |
|------------------------|-------|-------|-------|---|------|-------|
| Age | .026 | .022 | 1.411 | 1 | .235 | 1.027 |
| Education | .034 | .113 | .089 | 1 | .766 | 1.034 |
| Income | -.162 | .141 | 1.330 | 1 | .249 | .850 |
| Relationship status | | | | | | |
| Single | | | 1.727 | 2 | .422 | |
| Dating | .086 | .359 | .057 | 1 | .812 | 1.089 |
| Married/LTR with a man | -.648 | .529 | 1.496 | 1 | .221 | .523 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | .569 | 2 | .752 | |
| Same-gender-loving | .335 | .539 | .386 | 1 | .535 | 1.398 |
| Bisexual | -.161 | .463 | .121 | 1 | .728 | .851 |
| Masculinity | .181 | .232 | .612 | 1 | .434 | 1.199 |
| RCI-10 | -.027 | .022 | 1.522 | 1 | .217 | .974 |
| AAS Subscale | -.088 | .062 | 2.059 | 1 | .151 | .915 |
| HIV status* | .895 | .371 | 5.815 | 1 | .016 | 2.448 |
| Constant | -.579 | 1.041 | .309 | 1 | .578 | .560 |

Table 4.21 summarizes the results of regression analysis for the likelihood of having been tested for HIV in the last 12 months. The full model containing all predictors was significant, $\chi^2(11, n=261) = 50.965, p < .001$, indicating that the model was able to distinguish between those who had and had not been tested for HIV. The Hosmer-Lemeshow goodness of fit test provided evidence of good model fit. The model as a whole explained between 17.7% and 28.3% of the variance in testing, and correctly classified 84.7% of cases. Those who reported a positive HIV status were less likely to have been tested for HIV within the last year (OR=.128), controlling for all other factors in the model.

Binary logistic regression was also used to determine the impact religiosity and the same sociodemographic factors on the likelihood of having certain kinds of high-risk sexual partners in the last 3 months. (NOTE: Because of the small number of

Table 4.21. Logistic regression predicting likelihood of having been tested for HIV in the last 12 months (n=261)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|----------|---|------|------|----|---|------------|
|----------|---|------|------|----|---|------------|

| | | | | | | |
|------------------------|---------------|-------------|---------------|----------|-------------|-------------|
| Age | -.034 | .023 | 2.200 | 1 | .138 | .967 |
| Education | -.077 | .125 | .377 | 1 | .539 | .926 |
| Income | -.112 | .151 | .554 | 1 | .457 | .894 |
| Relationship status | | | | | | |
| Single | | | .227 | 2 | .893 | |
| Dating | -.094 | .424 | .049 | 1 | .825 | .911 |
| Married/LTR with a man | .198 | .552 | .129 | 1 | .720 | 1.219 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 2.840 | 2 | .242 | |
| Same-gender-loving | -.892 | .554 | 2.590 | 1 | .108 | .410 |
| Bisexual | .159 | .556 | .082 | 1 | .775 | 1.172 |
| Masculinity | -.350 | .262 | 1.786 | 1 | .181 | .705 |
| RCI-10 | .047 | .025 | 3.530 | 1 | .060 | 1.048 |
| AAS Subscale | -.086 | .071 | 1.479 | 1 | .224 | .918 |
| HIV status* | -2.055 | .386 | 28.297 | 1 | .000 | .128 |
| Constant | 4.229 | 1.271 | 11.079 | 1 | .001 | 68.675 |

* denotes significance at the level $p < .05$

respondents who reported having sex with an injecting drug user or with someone exchanging sex for money, drugs, or food, no regression analysis could be conducted.)

Table 4.22 summarizes the results of the logistic regression analysis identifying predictors of the likelihood of having had sex with a HIV-positive person in the last 3 months. The full model containing all predictors was significant, $\chi^2 (11, n=232) = 59.775$, $p < .001$, indicating that the model was able to distinguish between those who did and did not report having sex with someone who was HIV-positive in the last 3 months. The Hosmer-Lemeshow goodness of fit test provided evidence of good model fit. The model explained between 22.7% and 36.5% of the variance in the outcome, and correctly classified 84.5% of the cases. The two significant predictors in the model were respondents' age and HIV status. HIV status was the strongest predictor, producing an odds ratio of 9.43, indicating that those who were HIV-positive were more than 9 times more likely to have had sex with another HIV-positive person than those who had not tested positive for HIV. Age was also a significant predictor, with the likelihood of having had sex with a HIV-positive person increasing slightly with age (OR=1.06).

Table 4.22. Logistic regression predicting likelihood of having had sex with a HIV-positive person in the last 3 months (n=232)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|--------|-------|--------|----|------|------------|
| Age* | .055 | .026 | 4.468 | 1 | .035 | 1.056 |
| Education | .213 | .142 | 2.250 | 1 | .134 | 1.237 |
| Income | -.093 | .172 | .290 | 1 | .590 | .911 |
| Relationship status | | | | | | |
| Single | | | .149 | 2 | .928 | |
| Dating | -.128 | .485 | .070 | 1 | .792 | .880 |
| Married/LTR with a man | .131 | .624 | .044 | 1 | .834 | 1.140 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | .951 | 2 | .622 | |
| Same-gender-loving | -.340 | .770 | .195 | 1 | .658 | .712 |
| Bisexual | -.563 | .618 | .828 | 1 | .363 | .570 |
| Masculinity | .041 | .300 | .018 | 1 | .892 | 1.042 |
| RCI-10 | .025 | .028 | .754 | 1 | .385 | 1.025 |
| AAS Subscale | -.072 | .082 | .760 | 1 | .383 | .931 |
| HIV status* | 2.244 | .424 | 28.021 | 1 | .000 | 9.431 |
| Constant | -4.783 | 1.490 | 10.307 | 1 | .001 | .008 |

* denotes significance at the level $p < .05$

The regression model predicting having had sex with an anonymous sex partner in the last 3 months was significant, $\chi^2 (11, n=241) = 27.081, p=.004$, indicating that the model was able to distinguish between respondents who did and did not report having sex with an anonymous sex partner. The Hosmer-Lemeshow goodness of fit test provided evidence of good model fit. The model only explained between 10.6% and 18.7% of the variance in the sample, but correctly classified 86.3% of cases. Four of the independent variables were significant predictors: Authority Afforded Scripture subscale scores (OR=.85), reporting a relationship status of “Married or in a long-term relationship with a man” (OR=.099), a bisexual identity (OR=.201) and reporting a positive HIV diagnosis (OR=3.84). Those reporting higher AAS subscale scores, being bisexual, or being in a long-term relationship with a man were significantly less likely to have had sex with an anonymous partner, while those who reported a positive HIV diagnosis were more likely to have had sex with an anonymous partner. These results are summarized in **Table 4.23**.

Table 4.23. Logistic regression predicting likelihood of having had sex with an anonymous person in the last 3 months. (n=246)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|--------------------------------|--------|-------|-------|----|------|------------|
| Age | .008 | .027 | .096 | 1 | .757 | 1.008 |
| Education | .044 | .138 | .101 | 1 | .750 | 1.045 |
| Income | -.040 | .173 | .053 | 1 | .818 | .961 |
| Relationship status | | | | | | |
| Single | | | 4.436 | 2 | .109 | |
| Dating | -.164 | .456 | .129 | 1 | .719 | .849 |
| Married/LTR with a man* | -2.317 | 1.102 | 4.417 | 1 | .036 | .099 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 5.542 | 2 | .063 | |
| Same-gender-loving | -1.472 | 1.128 | 1.703 | 1 | .192 | .229 |
| Bisexual* | -1.605 | .789 | 4.144 | 1 | .042 | .201 |
| Masculinity | .099 | .288 | .119 | 1 | .731 | 1.104 |
| RCI-10 | .009 | .027 | .122 | 1 | .727 | 1.009 |
| AAS Subscale* | -.163 | .079 | 4.287 | 1 | .038 | .850 |
| HIV status* | 1.276 | .474 | 7.231 | 1 | .007 | 3.582 |
| Constant | -1.026 | 1.312 | .612 | 1 | .434 | .358 |

* denotes significance at the level $p < .05$

Binary logistic regression was used to determine the impact of the components of religiosity and other demographic variables on the likelihood that respondents would report having engaged in certain high-risk sexual situations in the last 3 months. (NOTE: Because of the small number of respondents who reported having had sex for money, drugs, or food, no regression analysis could be conducted.)

The regression model predicting the likelihood of having had sex within 3 hours of consuming alcohol in the last 3 months was significant, $\chi^2 (11, n=254) = 21.939$, $p = .025$, indicating that the model is able to distinguish between respondents who did or did not have sex while using alcohol within the last 3 months. The Hosmer-Lemeshow goodness of fit test provided evidence of good model fit. The model was able to explain between 8.3% and 11.1% of variance in the sample, and correctly classified 60.2% of cases. There were two independent variables that were significant predictors.

Participants' income produced an odds ratio of 1.37, indicating that those with higher

income were more likely to have used alcohol prior to having sex. Participants' age recorded an odds ratio of .956, meaning that those who were older were slightly less likely to have had sex after alcohol use. **Table 4.24** summarizes the results of this logistic regression analysis.

Table 4.24. Logistic regression predicting likelihood of having had sex within 3 hours of using alcohol in the last 3 months (n=254)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|-------|------|-------|----|------|------------|
| Age* | -.045 | .021 | 4.667 | 1 | .031 | .956 |
| Education | -.001 | .099 | .000 | 1 | .991 | .999 |
| Income* | .313 | .125 | 6.317 | 1 | .012 | 1.368 |
| Relationship status | | | | | | |
| Single | | | 1.313 | 2 | .519 | |
| Dating | .069 | .311 | .049 | 1 | .825 | 1.071 |
| Married/LTR with a man | .499 | .435 | 1.313 | 1 | .252 | 1.647 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | .252 | 2 | .882 | |
| Same-gender-loving | .074 | .502 | .022 | 1 | .882 | 1.077 |
| Bisexual | -.174 | .381 | .209 | 1 | .648 | .840 |
| Masculinity | -.240 | .200 | 1.449 | 1 | .229 | .786 |
| RCI-10 | -.026 | .019 | 1.961 | 1 | .161 | .974 |
| AAS Subscale | -.011 | .053 | .043 | 1 | .836 | .989 |
| HIV status | .559 | .342 | 2.671 | 1 | .102 | 1.749 |
| Constant | 1.629 | .939 | 3.006 | 1 | .083 | 5.096 |

* denotes significance at the level $p < .05$

The regression model predicting the likelihood of having sex within 3 hours of using illegal drugs in the last 3 months was significant, $\chi^2 (11, n=256) = 30.765, p=.001$. The Hosmer-Lemeshow goodness of fit test showed evidence of adequate model fit. The model was able to predict between 11.3% and 17.2% of the variation, and correctly classified 80.1% of cases. Three of the predictor variables were significant. Respondents who reported being HIV-positive (OR=3.98) were nearly 4 times more likely to have had sex within 3 hours of using illegal drugs than those who did not report being HIV-positive, and those who reported higher scores on the Authority Afforded Scripture subscale of the RVS (OR=1.25) were roughly 25% more likely to report having sex

within 3 hours of using drugs, controlling for other factors in the model. Those who reported higher scores on the RCI-10, conversely, were less likely (OR=.927) to have engaged in sex with illegal drug use. **Table 4.25** summarizes these results.

Table 4.25. Logistic regression predicting likelihood of having had sex within 3 hours of using illegal drugs in the last 3 months (n=256)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|-------|-------|--------|----|------|------------|
| Age | -.030 | .025 | 1.369 | 1 | .242 | .971 |
| Education | .006 | .120 | .002 | 1 | .960 | 1.006 |
| Income | -.149 | .146 | 1.038 | 1 | .308 | .862 |
| Relationship status | | | | | | |
| Single | | | 2.644 | 2 | .267 | |
| Dating | -.031 | .381 | .007 | 1 | .935 | .969 |
| Married/LTR with a man | .764 | .488 | 2.444 | 1 | .118 | 2.146 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | .355 | 2 | .837 | |
| Same-gender-loving | .302 | .584 | .267 | 1 | .605 | 1.352 |
| Bisexual | .171 | .458 | .139 | 1 | .709 | 1.186 |
| Masculinity | .219 | .242 | .821 | 1 | .365 | 1.245 |
| RCI-10* | -.076 | .024 | 10.103 | 1 | .001 | .927 |
| AAS Subscale* | .221 | .069 | 10.243 | 1 | .001 | 1.247 |
| HIV status* | 1.382 | .389 | 12.597 | 1 | .000 | 3.982 |
| Constant | -.968 | 1.137 | .726 | 1 | .394 | .380 |

* denotes significance at the level $p < .05$

The regression model predicting the likelihood of having had sex with someone the participant met on the Internet was statistically significant, $\chi^2(11, N=256) = 36.631$, $p < .001$, indicating that the model was able to differentiate between respondents who reported or did not report having had sex with someone they met via the Internet. The model correctly classified 70.3% of cases. However, the Hosmer and Lemeshow goodness-of-fit test was significant, providing evidence of poor model fit, and the model only explained between 13.3% and 18.8% of variance in the sample. Only one of the predictors included in the model was significant. Those who reported a relationship status of “married/long-term relationship with a man” were less likely to report having

sex with a partner identified from the Internet (OR=.042). These results are summarized in **Table 4.26**.

Table 4.26. Logistic regression predicting likelihood of having had sex with an Internet sex partner in the last 3 months (n=263)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|--------------------------------|--------|-------|--------|----|------|------------|
| Age | .017 | .022 | .628 | 1 | .428 | 1.018 |
| Education | .071 | .109 | .426 | 1 | .514 | 1.074 |
| Income | -.083 | .135 | .380 | 1 | .537 | .920 |
| Relationship status | | | | | | |
| Single | | | 10.989 | 2 | .004 | |
| Dating | -.562 | .340 | 2.744 | 1 | .098 | .570 |
| Married/LTR with a man* | -3.167 | 1.057 | 8.980 | 1 | .003 | .042 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 4.469 | 2 | .107 | |
| Same-gender-loving | -1.337 | .693 | 3.725 | 1 | .054 | .263 |
| Bisexual | -.435 | .414 | 1.102 | 1 | .294 | .647 |
| Masculinity | -.273 | .218 | 1.574 | 1 | .210 | .761 |
| RCI-10 | .031 | .021 | 2.270 | 1 | .132 | 1.032 |
| AAS Subscale | -.114 | .060 | 3.637 | 1 | .056 | .892 |
| HIV status | .683 | .368 | 3.451 | 1 | .063 | 1.981 |
| Constant | -.245 | 1.015 | .058 | 1 | .809 | .783 |

* denotes significance at the level $p < .05$.

Negative binomial regression was used to evaluate the predictive value of spirituality and selected demographic variables on the number of total sex partners and male sex partners in the last 12 months and 3 months.

The mean number of total sex partners (male and female) in the last 12 months was 4.01, with a standard deviation of 4.98. The model containing all predictor variables was significant, $\chi^2(11, N=232) = 34.412, p < .001$. The model also exhibits evidence of adequate fit, with a Pearson chi-square-to-degrees of freedom ratio of .861. Two of the predictor variables were significant. Those who reported being married to or in a long-term relationship with a man reported fewer sex partners in the last 12 months (OR=.418), while respondents who reported a positive HIV status reported more sex

partners (OR=2.06), controlling for all other variables in the model. A summary of this regression analysis can be found in **Table 4.27**.

Table 4.27. Negative binomial regression predicting number of sexual partners in the last 12 months (n=237)

| Predictor variable | B | Standard error | Odds ratio | 95% Confidence Interval | |
|---|-------|----------------|------------|-------------------------|--------|
| | | | | Lower | Higher |
| Age | -.009 | .0119 | .991 | .968 | 1.014 |
| Education | .078 | .0584 | 1.081 | .964 | 1.212 |
| Income | -.045 | .0718 | .956 | .830 | 1.100 |
| Relationship status (ref = "single") | | | | | |
| Dating | -.321 | .1828 | .725 | .507 | 1.038 |
| Married/LTR with a man* | -.872 | .2512 | .418 | .256 | .684 |
| Sexual identity (ref = "Gay/homosexual") | | | | | |
| Same-gender-loving | -.149 | .2796 | .861 | .498 | 1.490 |
| Bisexual | .112 | .2180 | 1.118 | .729 | 1.714 |
| Masculinity | -.097 | .1115 | .908 | .729 | 1.129 |
| RCI-10 | .003 | .0103 | 1.003 | .983 | 1.024 |
| AAS Subscale | -.037 | .0295 | .964 | .910 | 1.021 |
| HIV status (ref = "negative")* | .722 | .1948 | 2.058 | 1.405 | 3.015 |

* denotes significance at the level $p < .05$

The mean number of male sex partners in the last 12 months was 4.01, with a standard deviation of 4.882. The model containing all predictor variables was significant, $\chi^2(11, n=235) = 33.211, p < .001$. The model also exhibits evidence of adequate fit, with a Pearson chi-square-to-degrees of freedom ratio of .862. Two of the predictor variables were significant. Those who reported dating or being married to or in a long-term relationship with a man reported fewer male sex partners in the last 12 months (OR=.420), while respondents who reported a positive HIV status reported more male sex partners (OR=1.98), controlling for all other variables in the model. **Table 4.28** summarizes the results of this regression analysis.

Table 4.28. Negative binomial regression predicting number of male sexual partners in the last 12 months (n=241)

| Predictor variable | B | Standard error | Odds ratio | 95% Confidence Interval | |
|---|-------|----------------|------------|-------------------------|--------|
| | | | | Lower | Higher |
| Age | -.011 | .0117 | .989 | .967 | 1.012 |
| Education | .073 | .0572 | 1.076 | .962 | 1.203 |
| Income | -.034 | .0721 | .967 | .839 | 1.113 |
| Relationship status (ref = "single") | | | | | |
| Dating | -.338 | .1806 | .713 | .501 | 1.016 |
| Married/LTR with a man* | -.867 | .2502 | .420 | .257 | .686 |
| Sexual identity (ref = "Gay/homosexual") | | | | | |
| Same-gender-loving | -.132 | .2790 | .876 | .507 | 1.514 |
| Bisexual | -.051 | .2109 | .950 | .629 | 1.437 |
| Masculinity | -.066 | .1125 | .936 | .751 | 1.167 |
| RCI-10 | .001 | .0105 | 1.001 | .981 | 1.022 |
| AAS Subscale | -.038 | .0301 | .962 | .907 | 1.021 |
| HIV status (ref = "negative")* | .681 | .1877 | 1.976 | 1.368 | 2.855 |

* denotes significance at the level $p < .05$

The mean number of total sex partners (male and female) in the last 3 months was 1.84, with a standard deviation of 1.96. The model containing all predictor variables was not significant, $\chi^2 (11, n=234) = 13.862, p=.241$. Those who reported a positive HIV status reported more sex partners (OR=1.608), controlling for all other variables in the model.

The mean number of male sex partners in the last 3 months was 1.81, with a standard deviation of 1.81. The model containing all predictor variables was not significant, $\chi^2 (11, N=230) = 13.841, p=.241$. Only one of the predictor variables was significant. Those who reported being HIV-positive were more likely to report more male sex partners in the last 3 months (OR=1.541), controlling for all other variables in the model.

Multinomial logistic regression was used to evaluate the predictive value of religiosity and selected demographic variables on the frequency of condom use for

insertive and receptive anal intercourse in the last 3 months. Initially, ordinal logistic regression was used to conduct this analysis; however, the ordinal logistic regression models for both insertive and receptive anal intercourse violated the test of parallel lines, thus necessitating the use of multinomial logistic regression.

The model containing all predictors of frequency of condom use for insertive anal intercourse was significant, $\chi^2(33, n=219) = 55.325, p=.009$, indicating that there was a significant relationship between the group of independent variables and the frequency of condom use for insertive intercourse. The pseudo R^2 values ranged between 11% and 24.8%. According to the likelihood ratio tests, both the Authority Afforded Scripture subscale of the RVS ($\chi^2=8.083$) and relationship status ($\chi^2=19.534$) were significantly associated with condom use during insertive anal intercourse. A relationship status of “dating” was significant in distinguishing between those who had “most times” used condoms as opposed to “never” in the last three months (OR=.251). A relationship status of “married or in a long-term relationship with a man” was significant in distinguishing between those who had used condoms “most times” (OR=.098) or “every time” (OR=.097) compared with those who had never used condoms. Additionally, the RCI-10 scale score was significant in distinguishing between those who had used condoms “some times” as opposed to never (OR=1.111). The results of the multinomial logistic regression analysis are summarized in **Table 4.29**.

Table 4.30 summarizes the results of the multinomial logistic regression analysis for the frequency of condom use during receptive anal intercourse in the last 3 months. The model containing all predictors of frequency of condom use for receptive anal intercourse was significant, $\chi^2(33, n=200) = 54.058, p=.012$. The pseudo R^2 values

Table 4.29. Multinomial logistic regression predicting frequency of condom use during insertive anal intercourse in the last 3 months (n=219)

| Frequency of condom use (ref = "never") | Variable | B | S.E. | Wald | df | p | Odds Ratio |
|--|--|---------|-------|--------|-------|------|------------|
| Some times | Age | .073 | .046 | 2.531 | 1 | .112 | 1.075 |
| | Education | -.360 | .227 | 2.510 | 1 | .113 | .698 |
| | Income | -.380 | .280 | 1.838 | 1 | .175 | .684 |
| | Relationship status (ref = "Single") | | | | | | |
| | Dating | -.120 | .703 | .029 | 1 | .864 | .887 |
| | Married/LTR with a man | -1.509 | .944 | 2.556 | 1 | .110 | .221 |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | |
| | Same-gender-loving | -19.652 | 0.000 | | 1 | | 2.920E-09 |
| | Bisexual | -.399 | .852 | .219 | 1 | .640 | .671 |
| | Masculinity | -.154 | .455 | .114 | 1 | .735 | .857 |
| | RCI-10* | .105 | .051 | 4.317 | 1 | .038 | 1.111 |
| | AAS Subscale | -.219 | .144 | 2.334 | 1 | .127 | .803 |
| | HIV status | .490 | .753 | .423 | 1 | .515 | 1.632 |
| | Intercept | -.063 | 2.067 | .001 | 1 | .976 | |
| | Most times | Age | .056 | .041 | 1.846 | 1 | .174 |
| Education | | -.222 | .189 | 1.374 | 1 | .241 | .801 |
| Income | | -.224 | .223 | 1.007 | 1 | .316 | .799 |
| Relationship status (ref = "Single") | | | | | | | |
| Dating* | | -1.383 | .627 | 4.868 | 1 | .027 | .251 |
| Married/LTR with a man* | | -2.328 | .781 | 8.875 | 1 | .003 | .098 |
| Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| Same-gender-loving | | 1.353 | .987 | 1.878 | 1 | .171 | 3.869 |
| Bisexual | | .012 | .686 | .000 | 1 | .986 | 1.012 |
| Masculinity | | -.177 | .379 | .219 | 1 | .640 | .837 |
| RCI-10 | | -.001 | .040 | .001 | 1 | .980 | .999 |
| AAS Subscale | | .143 | .114 | 1.590 | 1 | .207 | 1.154 |
| HIV status | | .236 | .605 | .152 | 1 | .696 | 1.266 |
| Intercept | | .362 | 1.785 | .041 | 1 | .839 | |
| Every time | | Age | .022 | .038 | .322 | 1 | .570 |
| | Education | -.239 | .163 | 2.154 | 1 | .142 | .788 |
| | Income | .000 | .191 | .000 | 1 | .999 | 1.000 |
| | Relationship status (ref = "Single") | | | | | | |
| | Dating | -.658 | .521 | 1.594 | 1 | .207 | .518 |
| | Married/LTR with a man* | -2.337 | .646 | 13.087 | 1 | .000 | .097 |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | |
| | Same-gender-loving | .796 | .897 | .787 | 1 | .375 | 2.217 |
| | Bisexual | -.468 | .604 | .601 | 1 | .438 | .626 |
| | Masculinity | -.372 | .329 | 1.279 | 1 | .258 | .689 |
| | RCI-10 | .032 | .035 | .842 | 1 | .359 | 1.033 |
| | AAS Subscale | .030 | .100 | .089 | 1 | .766 | 1.030 |
| | HIV status | -.370 | .541 | .469 | 1 | .493 | .691 |
| | Intercept | 2.518 | 1.560 | 2.603 | 1 | .107 | |

* denotes significance at the level $p < .05$

ranged from 12% to 26.5%. None of the predictor variables were significant in the likelihood ratio tests. However, some of the predictors were significant in distinguishing between specific levels of condom use. Degree of masculinity (OR=2.887) and a relationship status of “married/long-term relationship with a man” (OR=.170) were significant predictors of using condoms “most times” as compared to “never.” This indicated that lower self-reported levels of masculinity were associated with an increased likelihood of using condoms “most times,” while being in a long-term male-male relationship was associated with lower likelihood of using condoms “most times.” The only significant predictor of using condoms “every time” as opposed to “never” was education level (OR=.676), such that higher education level was associated with a lower likelihood of using condoms “every time,” controlling for all other variables in the model.

Spirituality

The mean score for the DSES was 74.02 (SD = 17.21). This mean is above the scale’s midpoint of 55. The scale exhibited evidence of high internal consistency, with a Cronbach’s alpha of 0.96.

The relationships between spirituality (as measured by the DSES) and continuous demographic variables were investigated using Pearson product-moment correlation coefficients. There were no significant correlations between spirituality and the continuous demographic variables.

One-way analyses of variance were used to measure differences in mean DSES scores by relationship status, sexual identity, and recruitment technique. No significant differences were found in mean IHNI scores for either of these demographic variables.

Table 4.30. Multinomial logistic regression predicting frequency of condom use during receptive anal intercourse in the last 3 months (n=208)

| Frequency of condom use (ref = "never") | Variable | B | S.E. | Wald | df | p | Odds Ratio | |
|--|--|-------------------|-------|-------|-------|------|------------|-------|
| Some times | Age | .064 | .050 | 1.656 | 1 | .198 | 1.067 | |
| | Education | -.227 | .249 | .834 | 1 | .361 | .797 | |
| | Income | -.453 | .300 | 2.279 | 1 | .131 | .636 | |
| | Relationship status (ref = "Single") | | | | | | | |
| | Dating | .536 | .761 | .496 | 1 | .481 | 1.709 | |
| | Married/LTR with a man | -1.044 | .973 | 1.151 | 1 | .283 | .352 | |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| | Same-gender-loving | -.145 | 1.370 | .011 | 1 | .916 | .865 | |
| | Bisexual | -1.926 | 1.208 | 2.539 | 1 | .111 | .146 | |
| | Masculinity | .826 | .510 | 2.621 | 1 | .105 | 2.284 | |
| | RCI-10 | .033 | .048 | .479 | 1 | .489 | 1.034 | |
| | AAS Subscale | .090 | .137 | .428 | 1 | .513 | 1.094 | |
| | HIV status | .674 | .798 | .712 | 1 | .399 | 1.961 | |
| | Intercept | -3.508 | 2.367 | 2.197 | 1 | .138 | | |
| | Most times | Age | .027 | .046 | .342 | 1 | .559 | 1.028 |
| | | Education | -.373 | .219 | 2.904 | 1 | .088 | .689 |
| Income | | -.317 | .249 | 1.625 | 1 | .202 | .728 | |
| Relationship status (ref = "Single") | | | | | | | | |
| Dating | | -.715 | .693 | 1.065 | 1 | .302 | .489 | |
| Married/LTR with a man* | | -1.772 | .815 | 4.729 | 1 | .030 | .170 | |
| Sexual identity (ref = "Gay/homosexual") | | | | | | | | |
| Same-gender-loving | | .690 | 1.095 | .397 | 1 | .529 | 1.993 | |
| Bisexual | | -.200 | .725 | .076 | 1 | .783 | .819 | |
| Masculinity* | | 1.060 | .444 | 5.693 | 1 | .017 | 2.887 | |
| RCI-10 | | .042 | .041 | 1.057 | 1 | .304 | 1.043 | |
| AAS Subscale | | .042 | .116 | .134 | 1 | .715 | 1.043 | |
| HIV status | | 1.083 | .695 | 2.428 | 1 | .119 | 2.953 | |
| Intercept | | -1.681 | 2.047 | .674 | 1 | .411 | | |
| Every time | | Age | .014 | .043 | .102 | 1 | .750 | 1.014 |
| | | Education* | -.391 | .189 | 4.288 | 1 | .038 | .676 |
| | Income | -.216 | .218 | .975 | 1 | .324 | .806 | |
| | Relationship status (ref = "Single") | | | | | | | |
| | Dating | -.132 | .588 | .050 | 1 | .823 | .877 | |
| | Married/LTR with a man* | -1.759 | .687 | 6.559 | 1 | .010 | .172 | |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| | Same-gender-loving | .321 | .961 | .112 | 1 | .738 | 1.379 | |
| | Bisexual | -.819 | .645 | 1.613 | 1 | .204 | .441 | |
| | Masculinity | .617 | .393 | 2.465 | 1 | .116 | 1.854 | |
| | RCI-10 | .053 | .037 | 2.085 | 1 | .149 | 1.055 | |
| | AAS Subscale | -.070 | .102 | .471 | 1 | .493 | .933 | |
| | HIV status | .015 | .619 | .001 | 1 | .981 | 1.015 | |
| | Intercept | 1.836 | 1.785 | 1.059 | 1 | .303 | | |

* denotes significance at the level $p < .05$

An independent-samples t-test was conducted to examine differences in mean IHNI scores by HIV status. No significant differences were found between those who reported a negative (N=167, M=73.59, SD=17.27) diagnosis and those who reported a positive (N=48, M=76.90, SD=15.57) diagnosis, $t(df=213) = -1.195, p=.23$.

RQ5: How is spirituality associated with sexual risk behaviors among AAMSM?

Binary logistic regression was used to determine the impact spirituality and a number of demographic factors on the likelihood of having concurrent sexual relationships in the last 3 months and having been tested for HIV in the last 12 months. The full model containing all predictors of concurrency was not statistically significant, $\chi^2(10, N=189) = 9.413, p=.493$. **Table 4.31** summarizes the results of the regression analysis for concurrency of sexual relationships.

Table 4.32 summarizes the results of regression analysis for the likelihood of having been tested for HIV in the last 12 months. The full model containing all predictors of having been tested for HIV in the last 12 months was significant, $\chi^2(10, N=192) = 43.550, p<.001$, indicating that the model was able to distinguish between those who had and had not been tested for HIV. The model as a whole explained between 20.3% and 31.7% of the variance in testing, and correctly classified 84.9% of cases. The three predictors making a statistically significant contribution to the model were HIV status (OR=.115), age (OR=.940), and a sexual identity of “same-gender-loving” (OR=.223), indicating that those who reported identifying as “same-gender-loving,” a positive HIV status, or older age were less likely to have been tested for HIV within the last year, controlling for all other factors in the model.

Table 4.31. Logistic regression predicting likelihood of having had concurrent sexual relationships in the last 3 months (n=194)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|--------|-------|-------|----|------|------------|
| Age | .013 | .027 | .248 | 1 | .618 | 1.014 |
| Education | .065 | .128 | .255 | 1 | .614 | 1.067 |
| Income | .011 | .156 | .005 | 1 | .946 | 1.011 |
| Relationship status | | | | | | |
| Single | | | 1.949 | 2 | .377 | |
| Dating | .206 | .397 | .269 | 1 | .604 | 1.229 |
| Married/LTR with a man | -.748 | .662 | 1.276 | 1 | .259 | .473 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | .155 | 2 | .926 | |
| Same-gender-loving | .217 | .650 | .111 | 1 | .739 | 1.242 |
| Bisexual | .130 | .526 | .061 | 1 | .805 | 1.139 |
| Masculinity | .250 | .278 | .811 | 1 | .368 | 1.284 |
| DSES | -.010 | .011 | .893 | 1 | .345 | .990 |
| HIV status* | .943 | .424 | 4.947 | 1 | .026 | 2.568 |
| Constant | -2.114 | 1.321 | 2.562 | 1 | .109 | .121 |

* denotes significance at the level p<.05

Table 4.32. Logistic regression predicting likelihood of having been tested for HIV in the last 12 months (n=192)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|----------------------------|--------|-------|--------|----|------|------------|
| Age* | -.062 | .029 | 4.372 | 1 | .037 | .940 |
| Education | -.010 | .143 | .005 | 1 | .942 | .990 |
| Income | .000 | .180 | .000 | 1 | .999 | 1.000 |
| Relationship status | | | | | | |
| Single | | | .846 | 2 | .655 | |
| Dating | .080 | .484 | .027 | 1 | .869 | 1.083 |
| Married/LTR with a man | .617 | .675 | .835 | 1 | .361 | 1.853 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 5.724 | 2 | .057 | |
| Same-gender-loving* | -1.502 | .651 | 5.317 | 1 | .021 | .223 |
| Bisexual | .235 | .713 | .109 | 1 | .741 | 1.266 |
| Masculinity | -.368 | .317 | 1.347 | 1 | .246 | .692 |
| DSES | .006 | .013 | .228 | 1 | .633 | 1.006 |
| HIV status* | -2.162 | .462 | 21.894 | 1 | .000 | .115 |
| Constant | 4.467 | 1.552 | 8.287 | 1 | .004 | 87.083 |

* denotes significance at the level p<.05

Binary logistic regression was also used to determine the impact of spirituality and the sociodemographic factors on the likelihood of having certain kinds of high-risk sexual partners in the last 3 months. (NOTE: Because of the small number of respondents who reported having sex with an injecting drug user or with someone exchanging sex for money, drugs, or food, no regression analysis could be conducted.)

Table 4.33 summarizes the results of the logistic regression analysis identifying predictors of the likelihood of having had sex with a HIV-positive person in the last 3 months. The full model containing all predictors of having sex with an HIV-positive person in the last 3 months was significant, $\chi^2(10, N=175) = 65.518, p < .001$, indicating that the model was able to distinguish between those who did and did not report having sex with someone who was HIV-positive in the last 3 months. The Hosmer-Lemeshow goodness of fit test provided evidence of good model fit. The model explained between 31.4% and 50.9% of the variance in the outcome variable, and correctly classified 88% of the cases. The two significant predictors in the model were respondents' age and HIV status. HIV status was the strongest predictor, producing an odds ratio of 23.56, indicating that those who were HIV-positive were more than 23 times more likely to have had sex with another HIV-positive person than those who had not tested positive for HIV. Age was also a significant predictor, with the likelihood of having had sex with a HIV-positive person increasing with age (OR=1.119).

The regression model predicting having had sex with an anonymous sex partner in the last 3 months was significant, $\chi^2(10, N=181) = 22.456, p = .013$, indicating that the model was able to distinguish between respondents who did and did not report having sex with an anonymous sex partner.

Table 4.33. Logistic regression predicting likelihood of having had sex with a HIV-positive person in the last 3 months (n=175)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|--------|-------|--------|----|------|------------|
| Age* | .113 | .038 | 8.783 | 1 | .003 | 1.119 |
| Education | .078 | .172 | .207 | 1 | .649 | 1.081 |
| Income | -.180 | .224 | .647 | 1 | .421 | .835 |
| Relationship status | | | | | | |
| Single | | | .761 | 2 | .683 | |
| Dating | -.358 | .623 | .331 | 1 | .565 | .699 |
| Married/LTR with a man | .332 | .772 | .185 | 1 | .667 | 1.393 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 1.460 | 2 | .482 | |
| Same-gender-loving | .800 | .800 | 1.001 | 1 | .317 | 2.226 |
| Bisexual | -.541 | .958 | .319 | 1 | .572 | .582 |
| Masculinity | .591 | .387 | 2.325 | 1 | .127 | 1.805 |
| DSES | -.028 | .015 | 3.191 | 1 | .074 | .973 |
| HIV status* | 3.159 | .587 | 28.937 | 1 | .000 | 23.558 |
| Constant | -5.412 | 1.835 | 8.697 | 1 | .003 | .004 |

* denotes significance at the level $p < .05$

The Hosmer-Lemeshow goodness of fit test provided evidence of good model fit, and the model explained between 11.7% and 21.9% of the variance in the sample. One of the independent variables were significant predictors. Those who reported a positive HIV diagnosis were more likely to have had sex with an anonymous partner (OR=4.759). These results are summarized in **Table 4.34**.

Binary logistic regression was used to determine the impact of the components of spirituality and other demographic variables on the likelihood that respondents would report having engaged in certain high-risk sexual situations in the last 3 months. (NOTE: Because of the small number of respondents who reported having had sex for money, drugs, or food, no regression analysis could be conducted.)

The regression model predicting the likelihood of having had sex within 3 hours of consuming alcohol in the last 3 months was significant, $\chi^2 (10, N=191) = 22.559, p=.012$,

indicating that the model is able to distinguish between respondents who did or did not have sex while using alcohol within the last 3 months.

Table 4.34. Logistic regression predicting likelihood of having had sex with an anonymous person in the last 3 months. (n=184)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|---------|----------|-------|----|------|------------|
| Age | .024 | .037 | .441 | 1 | .507 | 1.025 |
| Education | -.003 | .169 | .000 | 1 | .985 | .997 |
| Income | .059 | .205 | .084 | 1 | .773 | 1.061 |
| Relationship status | | | | | | |
| Single | | | 4.034 | 2 | .133 | |
| Dating | -.622 | .579 | 1.152 | 1 | .283 | .537 |
| Married/LTR with a man | -2.251 | 1.196 | 3.542 | 1 | .060 | .105 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | .689 | 2 | .708 | |
| Same-gender-loving | -.944 | 1.137 | .689 | 1 | .406 | .389 |
| Bisexual | -19.509 | 7215.924 | .000 | 1 | .998 | .000 |
| Masculinity | .698 | .365 | 3.663 | 1 | .056 | 2.010 |
| DSES | -.020 | .014 | 2.089 | 1 | .148 | .980 |
| HIV status* | 1.560 | .596 | 6.840 | 1 | .009 | 4.759 |
| Constant | -3.134 | 1.605 | 3.811 | 1 | .051 | .044 |

* denotes significance at the level $p < .05$

The Hosmer-Lemeshow goodness of fit indicated evidence of adequate model fit. The model was able to explain between 11.1% and 14.9% of variance in the sample, and correctly classified 61.3% of cases. There were three independent variables that were significant predictors. Participants' income produced an odds ratio of 1.435, indicating that those with higher income were more likely to have used alcohol prior to having sex. Participants' age recorded an odds ratio of .934, meaning that those who were older were slightly less likely to have had sex after alcohol use. The DSES scale score produced an odds ratio of .979, indicating that those who reported higher DSES scores had a decreased likelihood of having sex with alcohol use. **Table 4.35** summarizes the results of this logistic regression analysis.

Table 4.35. Logistic regression predicting likelihood of having had sex within 3 hours of using alcohol in the last 3 months (n=191)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|-------|-------|-------|----|------|------------|
| Age* | -.068 | .027 | 6.368 | 1 | .012 | .934 |
| Education | .051 | .115 | .197 | 1 | .657 | 1.053 |
| Income* | .361 | .145 | 6.227 | 1 | .013 | 1.435 |
| Relationship status | | | | | | |
| Single | | | 1.500 | 2 | .472 | |
| Dating | -.023 | .364 | .004 | 1 | .950 | .977 |
| Married/LTR with a man | .608 | .520 | 1.366 | 1 | .242 | 1.837 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 1.317 | 2 | .518 | |
| Same-gender-loving | .403 | .591 | .466 | 1 | .495 | 1.497 |
| Bisexual | -.397 | .472 | .707 | 1 | .401 | .673 |
| Masculinity | -.080 | .251 | .100 | 1 | .751 | .924 |
| DSES* | -.021 | .010 | 4.798 | 1 | .029 | .979 |
| HIV status | .717 | .409 | 3.082 | 1 | .079 | 2.049 |
| Constant | 1.924 | 1.195 | 2.593 | 1 | .107 | 6.847 |

* denotes significance at the level $p < .05$

The regression model predicting the likelihood of having sex within 3 hours of using illegal drugs in the last 3 months was significant, $\chi^2 (10, N=191) = 19.274, p=.037$. The model predicted between 9.6% and 15.3% of variance in the sample, and correctly classified 80.6% of cases. HIV status was identified as a significant predictor, producing an odds ratio of 4.703. This indicates that respondents who reported being HIV-positive were more than 4 times more likely to have had sex within 3 hours of using illegal drugs than those who did not report being HIV-positive, controlling for other factors in the model. **Table 4.36** summarizes these results.

Table 4.36. Logistic regression predicting likelihood of having had sex within 3 hours of using illegal drugs in the last 3 months (n=191)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|------------------------|--------|-------|--------|----|------|------------|
| Age | -.035 | .032 | 1.176 | 1 | .278 | .966 |
| Education | .084 | .146 | .334 | 1 | .563 | 1.088 |
| Income | -.223 | .180 | 1.543 | 1 | .214 | .800 |
| Relationship status | | | | | | |
| Single | | | 4.786 | 2 | .091 | |
| Dating | -.281 | .470 | .357 | 1 | .550 | .755 |
| Married/LTR with a man | 1.108 | .599 | 3.424 | 1 | .064 | 3.029 |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 1.179 | 2 | .555 | |
| Same-gender-loving | -.591 | .859 | .474 | 1 | .491 | .554 |
| Bisexual | .416 | .542 | .590 | 1 | .443 | 1.516 |
| Masculinity | .133 | .314 | .178 | 1 | .673 | 1.142 |
| DSES | .001 | .012 | .007 | 1 | .931 | 1.001 |
| HIV status* | 1.548 | .467 | 10.989 | 1 | .001 | 4.703 |
| Constant | -1.285 | 1.467 | .767 | 1 | .381 | .277 |

* denotes significance at the level $p < .05$

The regression model predicting the likelihood of having had sex with someone the participant met on the Internet was statistically significant, $\chi^2(10, N=192) = 21.554$, $p = .018$, indicating that the model was able to differentiate between respondents who reported or did not report having had sex with someone they met via the Internet. The Hosmer and Lemeshow goodness-of-fit test was not significant, providing evidence of good model fit, and the model correctly classified 71.6% of cases. However, the model only explained between 10.6% and 15.1% of variance in the sample. Two of the predictors included in the model were significant predictors. Those who reported a relationship status of “married/long-term relationship with a man” were significantly less likely ($OR = .052$) to have had sex with a partner from the Internet. Also, those who identified as HIV-positive were more likely ($OR = 2.454$) to have had sex with an Internet partner. These results are summarized in **Table 4.37**.

Table 4.37. Logistic regression predicting likelihood of having had sex with an Internet sex partner in the last 3 months (n=192)

| Variable | B | S.E. | Wald | df | p | Odds Ratio |
|--------------------------------|-------|------|-------|----|------|------------|
| Age | .008 | .028 | .074 | 1 | .786 | 1.008 |
| Education | .078 | .128 | .373 | 1 | .541 | 1.081 |
| Income | .000 | .154 | .000 | 1 | .999 | 1.000 |
| Relationship status | | | | | | |
| Single | | | 9.606 | 2 | .008 | |
| Dating | -.749 | .394 | 3.602 | 1 | .058 | .473 |
| Married/LTR with a man* | - | 1.09 | 7.306 | 1 | .007 | .052 |
| | 2.960 | 5 | | | | |
| Sexual identity | | | | | | |
| Gay/homosexual | | | 1.747 | 2 | .418 | |
| Same-gender-loving | - | .835 | 1.746 | 1 | .186 | .332 |
| | 1.103 | | | | | |
| Bisexual | -.041 | .486 | .007 | 1 | .932 | .959 |
| Masculinity | .080 | .267 | .089 | 1 | .765 | 1.083 |
| DSES | .000 | .010 | .001 | 1 | .977 | 1.000 |
| HIV status* | .898 | .444 | 4.087 | 1 | .043 | 2.454 |
| Constant | - | 1.26 | 1.328 | 1 | .249 | .233 |
| | 1.458 | 5 | | | | |

* denotes significance at the level $p < .05$.

Negative binomial regression was used to evaluate the predictive value of spirituality and selected demographic variables on the number of total sex partners and male sex partners in the last 12 months and 3 months.

The mean number of total sex partners (male and female) in the last 12 months was 4.19, with a standard deviation of 5.33. The model containing all predictor variables was significant, $\chi^2(10, N=175) = 28.758, p=.001$. The model also exhibits evidence of good fit, with a Pearson chi-square-to-degrees of freedom ratio of .893. Three of the predictor variables were significant. Those who reported either dating (OR=.647) or being married to or in a long-term relationship with a man (OR=.356) reported fewer sex partners in the last 12 months, while respondents who reported a positive HIV status (OR=2.261) reported more sex partners, controlling for all other variables in the model.

A summary of this regression analysis can be found in **Table 4.38**.

Table 4.38. Negative binomial regression predicting number of sexual partners in the last 12 months (n=210)

| Predictor variable | B | Standard error | Rate ratio | 95% Confidence Interval | |
|---|--------|----------------|------------|-------------------------|--------|
| | | | | Lower | Higher |
| Age | -.004 | .0138 | .996 | .970 | 1.023 |
| Education | .080 | .0671 | 1.083 | .950 | 1.235 |
| Income | -.023 | .0828 | .977 | .831 | 1.150 |
| Relationship status (ref = "single") | | | | | |
| Dating | -.436 | .2090 | .647 | .429 | .974 |
| Married/LTR with a man* | -1.032 | .2962 | .356 | .199 | .637 |
| Sexual identity (ref = "Gay/homosexual") | | | | | |
| Same-gender-loving | .012 | .3356 | 1.013 | .524 | 1.955 |
| Bisexual | .050 | .2547 | 1.051 | .638 | 1.731 |
| Masculinity | -.001 | .1403 | .999 | .759 | 1.316 |
| DSES | -.006 | .0054 | .994 | .984 | 1.005 |
| HIV status (ref = "negative")* | .816 | .2237 | 2.261 | 1.458 | 3.505 |

* denotes significance at the level $p < .05$

The mean number of male sex partners in the last 12 months was 4.17, with a standard deviation of 5.275. The model containing all predictor variables was significant, $\chi^2(10, N=177) = 30.048, p = .001$. The model also exhibits evidence of good fit, with a Pearson chi-square-to-degrees of freedom ratio of .874. Once again, three of the predictor variables were significant. Those who reported dating (OR=.636) or being married to or in a long-term relationship with a man (OR=.359) reported fewer male sex partners in the last 12 months, while respondents who reported a positive HIV status (OR=2.277) reported more male sex partners, controlling for all other variables in the model. **Table 4.39** summarizes the results of this regression analysis.

Table 4.39. Negative binomial regression predicting number of male sexual partners in the last 12 months (n=177)

| Predictor variable | B | Standard error | Rate ratio | 95% Confidence Interval | |
|---|-------|----------------|------------|-------------------------|--------|
| | | | | Lower | Higher |
| Age | -.008 | .0139 | .992 | .966 | 1.020 |
| Education | .073 | .0659 | 1.076 | .946 | 1.225 |
| Income | -.009 | .0828 | .991 | .843 | 1.166 |
| Relationship status (ref = "single") | | | | | |
| Dating* | -.452 | .2070 | .636 | .424 | .955 |
| Married/LTR with a man* | - | .2957 | .359 | .201 | .640 |
| Sexual identity (ref = "Gay/homosexual") | | | | | |
| Same-gender-loving | .017 | .3353 | 1.017 | .527 | 1.962 |
| Bisexual | -.073 | .2534 | .930 | .566 | 1.528 |
| Masculinity | -.004 | .1399 | .996 | .757 | 1.310 |
| DSES | -.006 | .0054 | .994 | .983 | 1.004 |
| HIV status (ref = "negative")* | .823 | .2167 | 2.277 | 1.489 | 3.483 |

* denotes significance at the level $p < .05$

The mean number of total sex partners (male and female) in the last 3 months was 1.81, with a standard deviation of 1.90. The model containing all predictor variables was not significant, $\chi^2 (10, N=175) = 10.466, p=.401$. One of the predictor variables was significant. Respondents who reported a positive HIV status (OR=1.674) reported more sex partners, controlling for all other variables in the model.

The mean number of total male sex partners in the last 3 months was 1.83, with a standard deviation of 1.85. The model containing all predictor variables was not significant, $\chi^2 (10, N=171) = 10.745, p=.378$. None of the predictor variables was significant.

Multinomial logistic regression was used to evaluate the predictive value of spirituality and selected demographic variables on the frequency of condom use for insertive and receptive anal intercourse in the last 3 months. Initially, ordinal logistic regression was used to conduct this analysis; however, the ordinal logistic regression

models for both insertive and receptive anal intercourse violated the test of parallel lines, thus necessitating the use of multinomial logistic regression.

The model containing all predictors of frequency of condom use for insertive anal intercourse was significant, $\chi^2(30, N=157) = 48.035, p=.02$, indicating that there was a significant relationship between the group of independent variables and the frequency of condom use for insertive intercourse. The pseudo R^2 values ranged between 13.1% and 29.2%. According to the likelihood ratio tests, relationship status was the only significant predictor variable in the model. However, some predictor variables were significant in distinguishing between specific levels of condom use during insertive anal intercourse. Age (OR=1.109) was significant in predicting the likelihood of using condoms “some times” as opposed to “never.” The DSES scale score (OR=1.045) and a relationship status of “married/long-term relationship with a man” (OR=.076) were significant in predicting the likelihood of using condoms “most times” as opposed to “never.” Being in a long-term relationship with a man was also predictive of the likelihood of using condoms “every time” (OR=.064). These results are summarized in **Table 4.40**.

Table 4.41 summarizes the results of the multinomial logistic regression analysis for the frequency of condom use during receptive anal intercourse in the last 3 months. The model containing all predictors of frequency of condom use for receptive anal intercourse was significant, $\chi^2(30, N=147) = 65.331, p<.001$, suggesting that there is a relationship between this group of independent variables and the dependent variable. The model explained between 19.3% and 39.9% of the variance in the sample. According to the likelihood ratio tests, the DSES scale score was significantly related to frequency of

Table 4.40. Multinomial logistic regression predicting frequency of condom use during insertive anal intercourse in the last 3 months (n=157)

| Frequency of condom use (ref = "never") | Variable | B | S.E. | Wald | df | p | Odds Ratio | |
|--|--|-----------|-------|--------|-------|------|------------|-------|
| Some times | Age* | .103 | .052 | 4.007 | 1 | .045 | 1.109 | |
| | Education | -.457 | .249 | 3.357 | 1 | .067 | .633 | |
| | Income | -.298 | .294 | 1.027 | 1 | .311 | .742 | |
| | Relationship status (ref = "Single") | | | | | | | |
| | Dating | -.422 | .828 | .260 | 1 | .610 | .656 | |
| | Married/LTR with a man | -1.994 | 1.082 | 3.397 | 1 | .065 | .136 | |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| | Same-gender-loving | .130 | 1.398 | .009 | 1 | .926 | 1.139 | |
| | Bisexual | -1.071 | 1.240 | .746 | 1 | .388 | .343 | |
| | Masculinity | .287 | .539 | .283 | 1 | .595 | 1.332 | |
| | DSES | .028 | .023 | 1.503 | 1 | .220 | 1.028 | |
| | HIV status | .603 | .809 | .556 | 1 | .456 | 1.828 | |
| | Intercept | -2.435 | 2.465 | .976 | 1 | .323 | | |
| | Most times | Age | .009 | .055 | .028 | 1 | .867 | 1.009 |
| | | Education | -.370 | .232 | 2.549 | 1 | .110 | .690 |
| Income | | -.234 | .277 | .714 | 1 | .398 | .791 | |
| Relationship status (ref = "Single") | | | | | | | | |
| Dating | | -1.367 | .743 | 3.384 | 1 | .066 | .255 | |
| Married/LTR with a man* | | -2.583 | 1.029 | 6.295 | 1 | .012 | .076 | |
| Sexual identity (ref = "Gay/homosexual") | | | | | | | | |
| Same-gender-loving | | .657 | 1.221 | .289 | 1 | .591 | 1.929 | |
| Bisexual | | .110 | .804 | .019 | 1 | .891 | 1.117 | |
| Masculinity | | -.545 | .494 | 1.217 | 1 | .270 | .580 | |
| DSES* | | .044 | .019 | 5.298 | 1 | .021 | 1.045 | |
| HIV status | | -.014 | .767 | .000 | 1 | .985 | .986 | |
| Intercept | | 1.651 | 2.321 | .506 | 1 | .477 | | |
| Every time | | Age | .025 | .043 | .359 | 1 | .549 | 1.026 |
| | | Education | -.248 | .184 | 1.827 | 1 | .176 | .780 |
| | Income | -.087 | .219 | .157 | 1 | .692 | .917 | |
| | Relationship status (ref = "Single") | | | | | | | |
| | Dating | -.530 | .613 | .748 | 1 | .387 | .588 | |
| | Married/LTR with a man* | -2.755 | .795 | 12.019 | 1 | .001 | .064 | |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| | Same-gender-loving | .405 | 1.017 | .159 | 1 | .690 | 1.500 | |
| | Bisexual | -.718 | .719 | .997 | 1 | .318 | .488 | |
| | Masculinity | -.340 | .402 | .716 | 1 | .398 | .712 | |
| | DSES | .028 | .015 | 3.621 | 1 | .057 | 1.029 | |
| | HIV status | -.348 | .616 | .319 | 1 | .572 | .706 | |
| | Intercept | 1.948 | 1.884 | 1.069 | 1 | .301 | | |

* denotes significance at the level $p < .05$

condom use during receptive anal intercourse, $\chi^2=11.911$, $p=.008$, indicating that spirituality is significantly related to the dependent variable. Relationship status was also significantly related to frequency of condom use for receptive anal intercourse, $\chi^2=15.190$, $p=.019$. The DSES scale score was significant in distinguishing between those who never used condoms for receptive anal intercourse and all other levels of the dependent variable: those who reported “some times” (OR=1.093), “most times” (OR=1.065), and “every time” (1.058). These findings suggest that those who reported higher levels of spirituality were more likely to engage in varying levels of condom use than to have reported “never” using condoms in the last 3 months. In addition to the DSES scale score, degree of masculinity (OR=4.178) and being married or in a long-term male-male relationship (OR=.082) were significant in distinguishing the likelihood of using condoms “most times” as opposed to “never,” indicating that those who identify as more masculine or being in a committed male-male relationship were less likely to use condoms “most times.” Also, education (OR=.607) and being in a long-term relationship with a man (OR=.062) were significant predictors of the likelihood of using condoms “every time” as opposed to “never,” such that those who had higher education levels or were in long-term male-male relationships were less likely to use condoms “every time” during receptive anal intercourse.

Table 4.41. Multinomial logistic regression predicting frequency of condom use during receptive anal intercourse in the last 3 months (n=152)

| Frequency of condom use (ref = "never") | Variable | B | S.E. | Wald | df | p | Odds Ratio |
|--|--|--------|-------|-------|------|------|------------|
| Some times | Age | .060 | .062 | .951 | 1 | .330 | 1.062 |
| | Education | -.429 | .288 | 2.216 | 1 | .137 | .651 |
| | Income | -.500 | .361 | 1.921 | 1 | .166 | .606 |
| | Relationship status (ref = "Single") | | | | | | |
| | Dating | 1.127 | 1.005 | 1.256 | 1 | .262 | 3.086 |
| | Married/LTR with a man | -1.852 | 1.201 | 2.379 | 1 | .123 | .157 |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | |
| | Same-gender-loving | .801 | 1.290 | .385 | 1 | .535 | 2.227 |
| | Bisexual | -1.154 | 1.409 | .671 | 1 | .413 | .315 |
| | Masculinity | .929 | .686 | 1.832 | 1 | .176 | 2.532 |
| | DSES* | .089 | .033 | 7.068 | 1 | .008 | 1.093 |
| | HIV status | 1.169 | .925 | 1.595 | 1 | .207 | 3.217 |
| | Intercept | -7.395 | 3.305 | 5.008 | 1 | .025 | |
| | Most times | Age | -.057 | .066 | .747 | 1 | .387 |
| Education | | -.517 | .269 | 3.695 | 1 | .055 | .597 |
| Income | | -.339 | .320 | 1.125 | 1 | .289 | .713 |
| Relationship status (ref = "Single") | | | | | | | |
| Dating | | -.190 | .918 | .043 | 1 | .836 | .827 |
| Married/LTR with a man* | | -2.503 | 1.060 | 5.580 | 1 | .018 | .082 |
| Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| Same-gender-loving | | -.439 | 1.482 | .088 | 1 | .767 | .645 |
| Bisexual | | -.161 | .997 | .026 | 1 | .871 | .851 |
| Masculinity* | | 1.430 | .609 | 5.505 | 1 | .019 | 4.178 |
| DSES* | | .063 | .023 | 7.158 | 1 | .007 | 1.065 |
| HIV status | | .926 | .861 | 1.158 | 1 | .282 | 2.525 |
| Intercept | | -2.179 | 2.631 | .686 | 1 | .408 | |
| Every time | | Age | .000 | .056 | .000 | 1 | 1.00 |
| | Education* | -.499 | .229 | 4.767 | 1 | .029 | .607 |
| | Income | -.191 | .270 | .498 | 1 | .481 | .826 |
| | Relationship status (ref = "Single") | | | | | | |
| | Dating | .651 | .801 | .660 | 1 | .417 | 1.917 |
| | Married/LTR with a man* | -2.784 | .937 | 8.836 | 1 | .003 | .062 |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | |
| | Same-gender-loving | -.636 | 1.196 | .283 | 1 | .595 | .529 |
| | Bisexual | -.735 | .908 | .656 | 1 | .418 | .479 |
| | Masculinity | 1.034 | .542 | 3.641 | 1 | .056 | 2.811 |
| | DSES* | .057 | .020 | 7.671 | 1 | .006 | 1.058 |
| | HIV status | -.231 | .744 | .097 | 1 | .756 | .794 |
| | Intercept | -1.300 | 2.311 | .317 | 1 | .574 | |

* denotes significance at the level p<.05

Specific Aim 3: Examine the associations between internalized homonegativity, religiosity, spirituality, perceived affirmativeness, and sexual risk behaviors among AAMSM.

RQ6: Does internalized homonegativity mediate the associations between religiosity, spirituality, and sexual risk behaviors among AAMSM?

Structural equation models were generated separately for condom use during insertive and receptive anal intercourse. In each model, the sample was restricted only to those who had participated in each type of anal intercourse within the last three months (n=285 for insertive; n=263 for receptive).

Condom use during insertive anal intercourse

The chi-square test of model fit for condom use during insertive anal intercourse was significant ($\chi^2 = 286.12$, $df = 101$), $p < .001$, indicating poor model fit. However, the chi-square test of model fit is often considered to be inadequate because it is sensitive to sample size (Schumacker & Lomax, 2004). Other fit indices provided evidence of adequate model fit (CFI = .97, TLI = .99, RMSEA = .08).

Bivariate correlations were calculated to determine the magnitude and direction of the relationships between certain variables. Religiosity and spirituality were significantly correlated ($r=.38$, $p<.001$) with each other, as were the two dimensions of internalized homonegativity, Personal & Moral Homonegativity and Gay Affirmation ($r=-.11$, $p<.001$). The model explained 5% of the variance in Gay Affirmation and 9% of the variance in Personal & Moral Homonegativity.

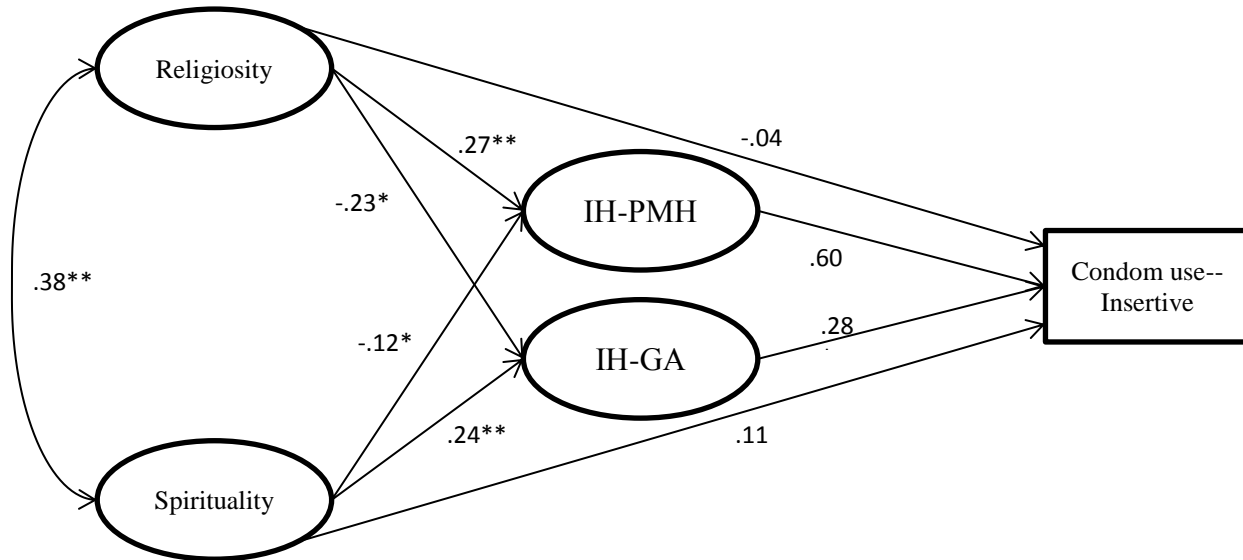


Figure 4.1. Structural model path diagram for condom use during insertive anal intercourse with unstandardized path coefficients.

Note: IH-PMH = Personal & Moral Homonegativity subscale of the IHNI. IH-GA = Gay Affirmation subscale of the IHNI. * denotes significance at $p < .05$. ** denotes significance at $p < .01$.

Figure 4.1 illustrates the structural model and corresponding path coefficients for predictors of condom use during insertive anal intercourse. Several paths in the model were found to be statistically significant. Religiosity scores were found to have a significant effect on both dimensions of internalized homonegativity, Personal & Moral Homonegativity ($B = .27$, $p < .001$) and Gay Affirmation ($B = -.23$, $p = .01$). This indicates that higher levels of religiosity were associated with higher levels of personal & moral homonegativity, and with lower levels of gay affirmation. Spirituality was also found to have a significant effect on both Personal & Moral Homonegativity ($B = -.12$, $p = .02$) and Gay Affirmation ($B = .24$, $p = .002$). These results suggest that higher levels of spirituality were associated with higher levels of gay affirmation and lower levels of personal & moral homonegativity. However, neither religiosity nor spirituality were found to have a

significant direct effect on condom use during insertive anal intercourse in the past three months. Both Gay Affirmation ($B=.28$, $p=.03$) and Personal & Moral Homonegativity ($B=.60$, $p=.001$) were found to have significant direct effects on insertive condom use, indicating that higher levels of both gay affirmation and personal & moral homonegativity were associated with increased frequency of condom use for insertive anal intercourse in the last 3 months.

A test of indirect effects was conducted to examine whether internalized homonegativity mediated the relationships between religiosity, spirituality, and insertive condom use. The indirect religiosity \rightarrow Personal & Moral Homonegativity \rightarrow insertive condom use path was significant ($B=.11$, $p=.01$). None of the indirect paths involving spirituality and internalized homonegativity was found to be significant.

Condom use during receptive anal intercourse

The chi-square test of model fit for condom use during receptive anal intercourse was significant ($\chi^2 = 274.08$, $df = 100$), $p<.001$, indicating poor model fit. However, other fit indices provide evidence of adequate model fit (CFI = .97, TLI = .99, RMSEA = .08).

As in the insertive condom use model, bivariate correlations were calculated to determine the magnitude and direction of relationships between two sets of variables. Religiosity and spirituality were found to be significantly correlated ($r=.39$, $p<.001$), as were the two dimensions of internalized homonegativity, Gay Affirmation and Personal & Moral Homonegativity ($r=-.10$, $p<.001$). The model explained 5% of the variance in Gay Affirmation and 7% of the variance in Personal & Moral Homonegativity.

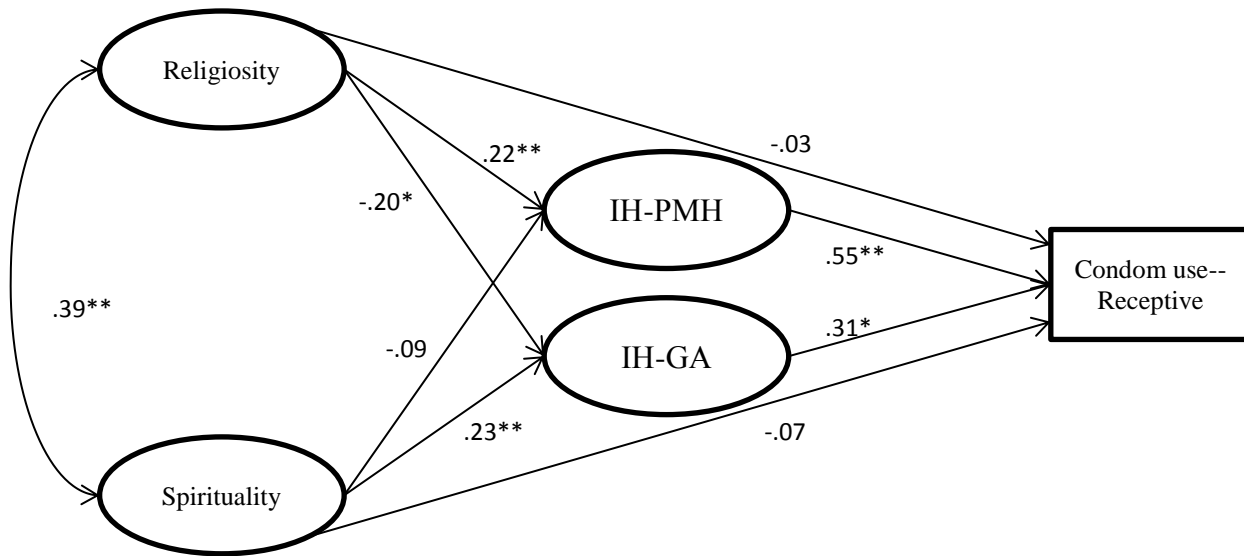


Figure 4.2. Structural model path diagram for condom use during receptive anal intercourse with unstandardized path coefficients.

Note: IH-PMH = Personal & Moral Homonegativity subscale of the IHNI. IH-GA = Gay Affirmation subscale of the IHNI. * denotes significance at $p < .05$. ** denotes significance at $p < .01$.

Figure 4.2 illustrates the structural model and corresponding path coefficients for predictors of condom use during receptive anal intercourse. Again, several paths within the model were found to be statistically significant. Religiosity scores were found to have a significant direct effect on the two dimensions of internalized homonegativity, Gay Affirmation ($B = -.20$, $p = .03$) and Personal & Moral Homonegativity ($B = .22$, $p = .001$). This indicates that higher levels of religiosity were associated with higher levels of personal & moral homonegativity, and lower levels of gay affirmation. Spirituality scores were found to have a significant direct effect on Gay Affirmation scores ($B = .22$, $p = .001$), but not on Personal & Moral Homonegativity scores ($B = -.09$, $p = .07$), indicating that higher levels of spirituality were associated with higher levels of gay affirmation. Neither religiosity nor spirituality were found to have a significant direct effect on

condom use during receptive anal intercourse in the last three months. However, both dimensions of internalized homonegativity, Gay Affirmation ($B=.31$, $p=.02$) and Personal & Moral Homonegativity ($B=.55$, $p=.005$) were found to have a significant direct effect on condom use for receptive anal intercourse.

A test of indirect effects was conducted to determine whether internalized homonegativity mediated the relationships between religiosity, spirituality, and condom use for receptive anal intercourse. Two significant indirect paths were identified: the path from religiosity \rightarrow Personal & Moral Homonegativity \rightarrow receptive condom use ($B=.08$, $p=.03$), and the path from spirituality \rightarrow Gay Affirmation \rightarrow receptive condom use ($B=.06$, $p=.04$).

RQ7: Does the perceived affirmativeness of a religious group influence the associations between religiosity, spirituality, internalized homonegativity, and sexual risk behaviors among AAMSM?

Multinomial logistic regression was used to evaluate the predictive values of religiosity, spirituality, two dimensions of internalized homonegativity, perceived affirmativeness, and selected demographic variables on the frequency of condom use for insertive and receptive anal intercourse in the last 3 months. A religiosity x perceived affirmativeness interaction term was also included in the analysis. Initially, ordinal logistic regression was used to conduct this analysis; however, the ordinal logistic regression models for both insertive and receptive anal intercourse violated the test of parallel lines, thus necessitating the use of multinomial logistic regression.

The regression model containing all predictors of condom use during insertive anal intercourse was significant, $\chi^2(48, N=108) = 75.145, p=.007$, indicating that there was a significant relationship between the group of predictor variables and insertive condom use. According to the Nagelkerke pseudo- R^2 value, the model was able to account for 55.7% of the variance in the data. Results of the likelihood ratio test showed that three independent variables were significant overall predictors of the frequency of condom use: relationship status ($\chi^2=18.878, p=.004$), Gay Affirmation scores ($\chi^2=10.937, p=.012$), and Authority Afforded Scripture scores ($\chi^2=8.123, p=.044$).

The Personal & Moral Homonegativity scores (OR=1.10) and Gay Affirmation scores (OR=1.24) from the IHNI were significant in predicting the likelihood of using condoms “sometimes” as opposed to “never.” Gay Affirmation scores were also significant in predicting insertive condom use “most times” as opposed to “never” (OR=1.22). A relationship status of “married/LTR with a man” (OR=.043) and Gay Affirmation scores (OR=1.25) were significant in distinguishing between those who used condoms for insertive anal intercourse “every time” as opposed to “never.” These results are summarized in **Table 4.42**.

Table 4.42. Multinomial logistic regression predicting frequency of condom use during insertive anal intercourse in the last 3 months (n=108)

| Frequency of condom use (ref = "never") | Variable | B | S.E. | Wald | df | p | Odds Ratio |
|--|--|----------------|-------|-------|------|------|----------------|
| Some times | Income | -.870 | .450 | 3.735 | 1 | .053 | -.870 |
| | Age | .163 | .076 | 4.594 | 1 | .032 | .163 |
| | Perceived Affirmativeness | -.036 | 1.805 | .000 | 1 | .984 | -.036 |
| | IH-PMH | .092 | .047 | 3.877 | 1 | .049 | .092 |
| | DSES | -.005 | .057 | .007 | 1 | .934 | -.005 |
| | HIV status | .934 | 1.334 | .490 | 1 | .484 | .934 |
| | Relationship status (ref = "Single") | 0 ^b | | | 0 | | 0 ^b |
| | Dating | 1.078 | 1.454 | .549 | 1 | .459 | 1.078 |
| | Married/LTR with a man | -2.607 | 1.701 | 2.348 | 1 | .125 | -2.607 |
| | Sexual identity (ref = "Gay/homosexual") | 0 ^b | | | 0 | | 0 ^b |
| | Same-gender-loving | -18.946 | 0.000 | | 1 | | -18.946 |
| | Bisexual | .324 | 1.895 | .029 | 1 | .864 | .324 |
| | RCI-10 | -.044 | .156 | .079 | 1 | .778 | .957 |
| | IH-GA | .211 | .089 | 5.640 | 1 | .018 | 1.235 |
| | AAS | -.208 | .234 | .788 | 1 | .375 | .812 |
| | Masculinity | -.954 | .804 | 1.407 | 1 | .236 | .385 |
| | Education | -.204 | .398 | .263 | 1 | .608 | .815 |
| | RCI-10*PA | .003 | .049 | .004 | 1 | .947 | 1.003 |
| | Intercept | -4.100 | 6.862 | .357 | 1 | .550 | |
| | Most times | Income | -.211 | .414 | .259 | 1 | .611 |
| Age | | .021 | .078 | .070 | 1 | .791 | 1.021 |
| Perceived Affirmativeness | | -1.189 | 1.496 | .632 | 1 | .427 | .305 |
| IH-PMH | | .056 | .044 | 1.629 | 1 | .202 | 1.057 |
| DSES | | -.001 | .051 | .000 | 1 | .985 | .999 |
| HIV status | | -.020 | 1.298 | .000 | 1 | .988 | .981 |
| Relationship status (ref = "Single") | | 0 ^b | | | 0 | | |
| Dating | | -.946 | 1.292 | .537 | 1 | .464 | .388 |
| Married/LTR with a man | | -2.620 | 1.387 | 3.570 | 1 | .059 | .073 |
| Sexual identity (ref = "Gay/homosexual") | | 0 ^b | | | 0 | | |
| Same-gender-loving | | 1.237 | 1.520 | .663 | 1 | .416 | 3.447 |
| Bisexual | | 1.199 | 1.571 | .582 | 1 | .445 | 3.317 |
| RCI-10 | | -.204 | .134 | 2.331 | 1 | .127 | .815 |
| IH-GA | | .199 | .085 | 5.498 | 1 | .019 | 1.220 |
| AAS | | .407 | .239 | 2.898 | 1 | .089 | 1.502 |
| Masculinity | | .836 | .777 | 1.158 | 1 | .282 | 2.308 |
| Education | | -.667 | .395 | 2.840 | 1 | .092 | .513 |
| RCI-10*PA | | .036 | .042 | .763 | 1 | .382 | 1.037 |
| Intercept | | -3.754 | 6.218 | .364 | 1 | .546 | |
| Every time | | Income | -.248 | .345 | .517 | 1 | .472 |
| | Age | .051 | .060 | .727 | 1 | .394 | 1.052 |
| | Perceived Affirmativeness | -.810 | 1.256 | .415 | 1 | .519 | .445 |
| | IH-PMH | .067 | .039 | 2.888 | 1 | .089 | 1.069 |
| | DSES | -.017 | .045 | .151 | 1 | .698 | .983 |
| | HIV status | .688 | .994 | .479 | 1 | .489 | 1.990 |
| | Relationship status | 0 ^b | | | 0 | | |

| | | | | | | |
|--------------------------|----------------|-------|-------|---|------|-------|
| (ref = "Single") | | | | | | |
| Dating | .914 | 1.063 | .740 | 1 | .390 | 2.495 |
| Married/LTR with a man | -3.145 | 1.114 | 7.972 | 1 | .005 | .043 |
| Sexual identity | 0 ^b | | | 0 | | |
| (ref = "Gay/homosexual") | | | | | | |
| Same-gender-loving | .600 | 1.231 | .237 | 1 | .626 | 1.822 |
| Bisexual | .416 | 1.438 | .084 | 1 | .772 | 1.516 |
| RCI-10 | -.111 | .109 | 1.040 | 1 | .308 | .895 |
| IH-GA | .220 | .076 | 8.411 | 1 | .004 | 1.246 |
| AAS | .057 | .190 | .089 | 1 | .766 | 1.058 |
| Masculinity | .317 | .644 | .243 | 1 | .622 | 1.373 |
| Education | -.385 | .319 | 1.460 | 1 | .227 | .680 |
| RCI-10*PA | .018 | .034 | .277 | 1 | .599 | 1.018 |
| Intercept | -1.772 | 5.253 | .114 | 1 | .736 | |

The regression model containing all predictors of the frequency of condom use during receptive anal intercourse was significant, $\chi^2 (48, N=93) = 103.302, p < .001$. The Nagelkerke pseudo- R^2 indicates that the model accounted for 74.8% of the variance in the data. According to the likelihood ratio tests, several independent variables made significant contributions to the model, all at a significance level of $p < .001$: Personal & Moral Homonegativity scores, Gay Affirmation scores, RCI-10 scores, DSES scores, Authority Afforded Scripture scores, HIV status, relationship status, sexual identity, education, and degree of masculinity. However, parameter estimates for the predictor variables were uninterpretable and therefore omitted from these results. It is highly likely that the small analytic sample size ($N=93$) significantly impacted statistical power.

MANUSCRIPT 1

DIFFERENT DIMENSIONS: INTERNALIZED HOMONEGATIVITY AND
CONDOM USE AMONG AFRICAN-AMERICAN MEN WHO HAVE SEX WITH
MEN IN THE DEEP SOUTH⁴

SUBMITTED BY

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Abstract

Background: African-American men who have sex with men (AAMSM) are at disproportionate risk for HIV infection. While internalized homonegativity (IH) has been identified as a potential predictor of engagement in sexual risk behaviors, little is known about how it might function differently among AAMSM when compared with majority white populations. This study examined the dimensions of IH and its associations with condom use among AAMSM. **Methods:** Participants in the Sexual Health in Faith Traditions Study (n=261) were recruited in the southeastern U.S. to complete a self-administered survey. The Internalized Homonegativity Inventory (IHNI) was used to measure IH, and condom use was measured as frequency of condom use for both insertive and receptive anal intercourse. The factor structure of IH was examined using exploratory factor analysis, and multinomial logistic regression was then used to identify whether the dimensions that were identified were associated with condom use. **Results:** Results of the exploratory factor analysis of the IHNI showed evidence of a two-factor solution: Personal and Moral Homonegativity, and Gay Affirmation. Both of these factors were positively associated with more frequent condom use for both insertive and receptive anal intercourse, controlling for other sociodemographic variables. **Conclusions:** Findings suggest that the IHNI might function differently for AAMSM than for majority-white populations. Results also showed that two seemingly-oppositional components IH were associated with greater frequency of condom use. Further research is needed to examine how IH can be incorporated into the development of culturally-specific HIV prevention programs for AAMSM.

Keywords: internalized homonegativity, condom use, African-American MSM

Introduction

African-American men who have sex with men (AAMSM) in the United States are at disproportionate risk for HIV infection. AAMSM are estimated to account for 9% of all MSM in the United States, but represent 38% of new HIV infections among MSM (Black AIDS Institute, 2012). An estimated 15,444 African-American men were diagnosed with HIV infection in 2010; of those, 10,838 (70%) were reported to have been infected through male-to-male sexual contact (CDC, 2012). In addition to experiencing disproportionately high infection rates, many AAMSM are unaware of their HIV status (CDC, 2005).

Explanations for the differences in HIV rates between AAMSM and MSM of other racial/ethnic groups vary. Unprotected anal intercourse (UAI) is one of the most commonly-cited risk factors associated with HIV infection among MSM (Goedert, et al., 1985; Jin, et al., 2009). A higher occurrence of UAI among AAMSM could account for a significant portion of the racial disparity in HIV rates. However, many studies found either no significant differences in UAI between AAMSM and MSM of other races, and in some cases found that AAMSM were comparatively less likely to engage in UAI or other high-risk sexual behaviors (Millett, Peterson, Wolitski, & Stall, 2006; Rothenberg, et al., 2007). Other possible explanations for AAMSM's disproportionate risk, including below-average rates of circumcision and the fact that AAMSM are less likely to identify as gay compared to white MSM, have also been challenged (Black AIDS Institute, 2012). Yet another study of 778 AAMSM in the Atlanta, GA area reported that low peer norms of condom use were associated with higher likelihood of both unprotected receptive anal intercourse (URAI) and unprotected insertive anal intercourse (UIAI), while not carrying condoms was associated with higher likelihood of URAI (Hart, Peterson, & Team, 2004).

The fact that the literature on behavioral risk factors for HIV infection among AAMSM is equivocal suggests additional inquiry is needed to understand the underlying factors that influence the sexual behaviors of AAMSM (Malebranche, 2003; Peterson & Jones, 2009)

One such factor which has received considerable attention in recent years is internalized homonegativity (IH). IH refers to the internalization of certain aspects of prejudice against homosexuality in a heterosexist society (Williamson, 2000), and is often used interchangeably with the term “internalized homophobia.” Previous research has suggested that IH is associated with several negative health outcomes for lesbian, gay, bisexual, and transgender (LGBT) populations, including increased incidences of unprotected sexual intercourse (Williamson, 2000). Evidence also suggests that IH might differ between racial/ethnic groups. Multiple studies have found that IH was more common among African-American men than men of other racial groups (Glick and Golden, 2010; O’Leary et al, 2007; Shoptaw, et al., 2009; Peterson & Jones, 2009; Young, et al., 2011). Among AAMSM, IH has been positively associated with depression and anxiety (Graham, et al., 2011), as well as sexual risk behaviors that could lead to HIV infection (Stokes & Peterson, 1998; Peterson & Jones, 2009).

Researchers have made a concerted effort to understand IH and its potential role in influencing the health of gay, lesbian, and bisexual people. Many quantitative psychometric instruments have been developed to measure IH, including the Nungesser Homosexuality Attitudes Inventory (Nungesser, 1983), the Internalized Homophobia Scale (Ross & Rosser, 1996), the Short Internalized Homonegativity Scale (Currie, Cunningham, & Findlay, 2004), and the Internalized Homonegativity Inventory (IHNI; Mayfield, 2001). Mayfield developed the IHNI in response to content validity problems

identified in previous scales, such as items that did not clearly address IH. To develop the scale, Mayfield administered a 42-item survey to 241 gay men over a six-month period. Participants were recruited online and from LGBT-friendly organizations (e.g., gay bars, churches with primarily LGBT memberships, an adult bookstore, LGBT pride festivals, etc.). The final sample was predominantly white, Midwestern, HIV-negative, and lower middle class. Following iterated principal component analyses utilizing oblique rotations, 23 items were retained across three subscales: Personal homonegativity (11 items), Gay affirmation (7 items), and Morality of homosexuality (5 items). Internal consistency reliability was .91 for the entire 23-item inventory, and .70 or greater in each of the three subscales: .70 for Morality of homosexuality, .82 for Gay affirmation, and .89 for Personal homonegativity (Mayfield, 2001). IHNI scores were negatively correlated with extroversion and emotional stability scales, providing evidence of discriminant validity (Mayfield, 2001). The IHNI has been used multiple times since its development (Mayfield, 2001), yet few studies have examined possible variations in its original three-factor structure.

Although previous research has attempted to better understand and measure IH among LGBT populations, little attention has been given to the different ways in which IH has emerged and manifests itself across different sexual minority populations. Particularly among men who have sex with men or identify as gay or bisexual, the preponderance of studies about IH have been conducted with primarily white populations (e.g., Ross, et al., 2001; Damon & Rosser, 2005; Szymanski & Carr, 2008; Feinstein, Goldfried, & Davila, 2012). Few studies, if any, have examined the underlying dimensional structure of IH and the ways in which it might differ for sexual minority

people at different intersections of race, gender, and class (Szymanski & Gupta, 2009). More specifically, no study has examined whether the factor structure of IH, as measured by the IHNI, is the same for AAMSM as it is for a majority white sample.

Certain characteristics of African-American culture and history may influence how AAMSM experience IH. For example, scholars have noted that African-American communities, particularly African-American religious communities, are characterized by a high level of collective orientation, by which African-Americans are more likely to recognize themselves as part of a larger group as opposed to an individual identity (Patillo-McCoy, 1998; Foster, et al., 2011). Previous research has also noted that African-American communities also exhibit high levels of homonegativity, a phenomenon rooted in a notion of resisting a history of sexually-deviant stereotypes and based on a literal interpretation of certain Biblical scriptures (Douglas, 1999). These high levels of homonegativity espoused in African-American churches and communities often become internalized by AAMSM (Woodyard, Peterson, & Stokes, 2000; Balaji, et al., 2012), as they continue to participate in these structures and find validation of their racial identities within them (Pitt, 2010; Jeffries, Dodge, & Sandfort, 2008; Griffin, 2006; Woodyard, Peterson, & Stokes, 2000). In light of the unique particularities of African-American culture and history, an intersectional approach is required in order to better understand IH and how it differentially impacts the sexual health of AAMSM.

To aid in addressing this gap in the literature, this article explores the dimensionality of IH and how IH relates to sexual risk among a sample of AAMSM. Specifically, this study sought to address the following research questions: 1) What are

the underlying dimensions of IH among AAMSM?, and 2) How are the dimensions of IH associated with condom use among AAMSM?

Methods

Participants

Data for this project came from 261 participants enrolled in the Sexual Health in Faith Traditions (SHIFT) Study, a cross-sectional, quantitative study of AAMSM living in the Deep South. To be included in the study, a participant had to meet the following criteria: (1) self-identify as an African-American man who had sex with a man at least once in the past 12 months, or self-identify as gay or bisexual; (2) be aged 18 years or older; and (3) reside in one of the states in the United States classified as the “Deep South”: Alabama, Georgia, Louisiana, Mississippi, North Carolina, or South Carolina.

Measures

Data for the SHIFT Study were collected using a cross-sectional survey which included measures of sociodemographic characteristics, religiosity, spirituality, internalized homonegativity, and condom use. Sociodemographic variables in the survey included age (in years), highest educational level attained, income, relationship status, sexual identity, HIV status, and degree of masculinity/femininity. Sexual identity was measured by one item, “How do you describe yourself?” Response options were “gay/homosexual,” “same-gender-loving,” “bisexual,” “straight/heterosexual,” and “other.” Those who chose “other” were given space to write their own description. (Because of the low number of respondents who reported “straight/homosexual” or “other,” they were excluded from analysis.) HIV status was measured by one item, “Have you ever tested positive for HIV?” Response options were “yes,” “no,” and “I

have never been tested for HIV.” Degree of the respondent’s masculinity/femininity was measured by one item, “Which statement best describes you?” Response options were “extremely masculine,” “masculine,” “equally masculine and feminine,” “feminine,” and “extremely feminine.” The degree of masculinity was measured because previous research has indicated that, among young AAMSM, perceptions of masculinity may influence perceptions of partner risk and condom use decision-making (Fields, et al., 2012).

Internalized homonegativity was measured using the 23-item Internalized Homonegativity Inventory (IHNI), which includes three subscales: Personal Homonegativity (11 items), Gay Affirmation (7 items), and Morality of Homosexuality (5 items). Responses were scored on a 6-point Likert-type scale (1=Strongly Disagree to 6=Strongly Agree). The IHNI has been found to be positively correlated with scores on the Nungesser Homosexual Attitudes Inventory (Nungesser, 1983), providing evidence of convergent validity. The IHNI has been used in previous studies to assess levels of IH among AAMSM, with Cronbach’s alpha coefficients ranging from .76 to .91 (Shoptaw, et al., 2009; Young, et al., 2009).

Frequency of condom use during the last 3 months was used to measure sexual risk. It was assessed using two items adapted from the National Household Survey of Drug Abuse (SAMHSA, 1997). Participants were asked about their frequency of condom use for insertive and receptive anal intercourse in the last 3 months, respectively. Response options were presented on a 4-point Likert-type scale (1=Every time to 4=Never), with an additional response option for those who reported that they had not had anal intercourse in the last 3 months. These items were reverse-coded for analysis.

Procedures

Data were collected using a paper-and-pencil survey administered between June and December 2011. Study participants were recruited using a variety of strategies. A reactive recruitment technique was used for potential study participants who wished to opt into the study. Flyers that contained basic information about the study, including the study's purpose and target population, and the principal investigator's (PI's) contact information (phone number and email address), were distributed through community-based HIV prevention organizations, AIDS service organizations, LGBT-serving organizations, LGBT-friendly businesses, and LGBT email listservs in the targeted states.. Social media platforms, including a Facebook page and Twitter account, were developed as a means to recruit potential participants. A purposive convenience sample of the target population was recruited by using a proactive recruitment strategy at Black Gay Pride celebrations in the Deep South. Finally, in two Southern cities that did not have Black Gay Pride celebrations, the PI held small social gatherings, or "survey parties," to recruit participants.

Participants received a consent form prior to participation that outlined the study's purpose, potential risks, benefits, and the PI's contact information. Following consent, each participant anonymously completed the printed survey and returned it to a trained data collector. Each participant received a \$5 cash incentive for participating in the study. All SHIFT Study protocols were approved by the Institutional Review Board at the University of South Carolina.

Analysis

Descriptive statistics were calculated for all study variables, including means and standard deviations for continuous variables and frequencies for categorical variables.

The 23 items of the IHNI were subjected to exploratory factor analysis (EFA) using SPSS version 20. Prior to performing the EFA, data were assessed for suitability for factor analysis using the Kaiser-Meyer-Olkin value (greater than .6 preferred) and a significant Bartlett's test of sphericity. After determining suitability, a principal components analysis (PCA) with Direct Oblimin rotation was conducted.

Three procedures were used to estimate the correct number of factors to extract: Kaiser's criterion, Catell's scree test (Catell, 1966), and Horn's parallel analysis (Horn, 1965). Separate factor solutions were evaluated based on the number of factors indicated by each of the three extraction procedures. Each factor solution was evaluated for fit based on evidence of simple structure (Thurstone, 1947), with each IHNI item loading significantly onto only one factor with little to no cross-loading across factors, and each factor having at least three items significantly loading onto it. Factor loadings greater than .3 were considered to be significant. Once an optimal factor solution was identified, internal consistency reliability coefficients were calculated for the full IHNI and each subscale.

After investigating the factor structure of the IHNI within the sample, multinomial logistic regression was used to determine whether the identified dimensions of IH were significant predictors of participants' frequency of condom use for insertive and receptive anal intercourse in the last 3 months, controlling for covariates in the model. Covariates included age, highest educational level attained, annual income, relationship status, sexual identity, HIV status, and degree of masculinity/femininity. Relationship status and

sexual identity were treated as categorical variables. Due to small cell sizes, some categories of the non-continuous covariates were combined or removed from analysis. HIV status was treated as a dichotomous yes/no variable, while all other independent variables were treated as continuous. A 95% confidence interval with an α of 0.05 were used to determine statistical significance.

Results

Participant Characteristics

The analytic sample was restricted to cases with complete IHNI data (n=261). In the analytic sample, the mean age of participants was 28.73 years, with a standard deviation of 8.41. Almost half (48%) of the men in the sample were aged 18-26. As shown in Table 1, the sample included participants representing five states in the Deep South. More than a third (35.6%) reported having some college education but no degree, and almost three-fourths (71.5%) reported an annual income of less than \$40,000. The majority of men reported a gay/homosexual identity (71.6%) and reported a “single” relationship status (57.9%). Most men classified themselves as being equally masculine and feminine (49.8%) or masculine (37.2%).

Exploratory Factor Analysis

The 23 items of the IHNI were subjected to principal components analysis (PCA). The data were suitable for factor analysis, showing a Kaiser-Meyer-Olkin value of .935, and $p < .001$ on Bartlett’s test of sphericity. PCA identified the presence of three components with eigenvalues greater than 1: 9.23 (40.1% of variance), 3.24 (14.1%), and 1.25 (5.4%). Although the eigenvalues suggested that a three-factor solution was appropriate, we also examined alternative indicators in order to identify the most

meaningful solution. Parallel analysis provided support for considering a two-factor solution, with only two observed eigenvalues exceeding the randomly generated eigenvalues in the corresponding data set. The scree plot provided further support for the possibility of a two-factor solution. Based on these indicators, analyses were performed using a two- and three-factor solution separately to determine the most meaningful solution.

After comparing the information provided by the two and three-factor solutions, the two-factor solution provided the most meaningful factor solution given that 1) it showed evidence of simple structure, 2) had no cross-loadings, and 3) included the minimum three items per factor. Specifically, the two-factor solution explained 54.2% of the variance, with Factor 1 contributing 40.1% and Factor 2 contributing 14.1%.

Although the three-factor solution accounted for a greater percent (59.6%) of the variance, it failed to show the same degree of simple structure observed in the rotated two-factor solution. In the 2-factor solution, however, 16 of the 23 items loaded onto Factor 1, with factor loadings ranging from .49 to .83, and seven of the 23 items loaded onto Factor 2, with factor loadings ranging from .50 to .81. In addition, the 3-factor solution contained cross-loaded items in each factor, and the third factor contained only two items. The factor loadings for the two-factor solution can be found in Table 4.44.

After examining the items that loaded onto each factor, descriptions were generated for each factor. The first factor was described as “Personal and Moral Homonegativity,” and included all items from the “Personal Homonegativity” and “Morality of Homosexuality” subscales of the original IHNI. The original “Personal

Table 4.43. Socio-Demographic Characteristics of Analytic Sample (n=261)

| | n | % |
|---|-----|------|
| State of residence (n=260) | | |
| Georgia | 60 | 23.0 |
| Louisiana | 4 | 1.5 |
| Mississippi | 61 | 23.4 |
| North Carolina | 73 | 28.0 |
| South Carolina | 62 | 23.8 |
| Highest educational level completed (n=260) | | |
| High school diploma/GED or lower | 37 | 14.2 |
| Some college but no degree | 93 | 35.6 |
| Associate's degree | 22 | 8.4 |
| Bachelor's degree | 52 | 19.9 |
| Some graduate school or adv. degree | 56 | 21.4 |
| Annual income (n=260) | | |
| Less than \$10,000 | 56 | 21.5 |
| \$10,000-\$24,999 | 55 | 21.1 |
| \$25,000-\$39,999 | 75 | 28.7 |
| \$40,000-\$49,999 | 36 | 13.8 |
| \$50,000 or more | 38 | 14.5 |
| Relationship status (n=259) | | |
| Single | 151 | 57.9 |
| Dating | 67 | 25.7 |
| Married/long-term relationship with man | 35 | 13.4 |
| Married/long-term relationship with woman | 2 | 0.8 |
| Separated | 4 | 1.5 |
| Sexual identity (n=249) | | |
| Gay/Homosexual | 187 | 71.6 |
| Same-Gender-Loving | 25 | 9.6 |
| Bisexual | 30 | 11.5 |
| Straight/Heterosexual | 1 | 0.4 |
| Other | 6 | 2.3 |
| Masculinity/Femininity (n=257) | | |
| Masculine/Extremely masculine | 102 | 39.1 |
| Equally masculine and feminine | 130 | 49.8 |
| Feminine/Extremely feminine | 25 | 9.6 |
| HIV Status (n=257) | | |
| Positive | 54 | 20.7 |
| Negative | 195 | 74.7 |
| Never been tested for HIV | 8 | 3.1 |

Note: All frequencies may not total to 100% due to missing data.

Homonegativity” subscale was reported to measure the negative attitudes and emotions that gay men have toward their own homosexuality, while the original “Morality of Homosexuality” subscale measured negative attitudes toward homosexuality in general.

By extension, the sixteen items of a joint “Personal and Moral Homonegativity” factor could be described as measuring the negative emotions that gay men experience toward

Table 4.44. Internalized Homonegativity Inventory (IHNI) Items and Subscale Factor Loadings

| Item number | Item text | Factor loading |
|---|--|----------------|
| <i>Factor 1: Personal & Moral Homonegativity (16 items)</i> | | |
| 15 | Sometimes I get upset when I think about being attracted to men. | .83 |
| 16 ^a | In my opinion, homosexuality is harmful to the order of society. | .82 |
| 17 | Sometimes I feel that I might be better off dead than gay. | .82 |
| 19 ^a | I believe it is morally wrong for men to be attracted to each other. | .82 |
| 5 | I feel ashamed of my homosexuality. | .82 |
| 7 | When I think about my attraction towards men, I feel unhappy. | .80 |
| 20 | I sometimes feel that my homosexuality is embarrassing. | .80 |
| 3 | When I think of my homosexuality, I feel depressed. | .79 |
| 4 ^a | I believe that it is morally wrong for men to have sex with other men. | .77 |
| 18 | I sometimes resent my sexual orientation. | .76 |
| 23 | I believe it is unfair that I am attracted to men instead of women. | .73 |
| 13 | I am disturbed when people can tell I'm gay. | .66 |
| 14 ^a | In general, I believe that gay men are more immoral than straight men. | .57 |
| 11 | I wish I could control my feelings of attraction toward other men. | .56 |
| 10 | When people around me talk about homosexuality, I get nervous. | .56 |
| 2 ^a | I believe it is OK for men to be attracted to other men in an emotional way, but it's not OK for them to have sex with each other. | .49 |
| <i>Factor 2: Gay Affirmation (7 items)</i> | | |
| 9 | I see my homosexuality as a gift. | .81 |
| 6 | I am thankful for my sexual orientation | .80 |
| 21 | I am proud to be gay. | .79 |
| 1 | I believe being gay is an important part of me. | .67 |
| 22 | I believe that public schools should teach that homosexuality is normal. | .66 |
| 12 | In general, I believe that homosexuality is as fulfilling as heterosexuality. | .63 |
| 8 | I believe that more gay men should be shown in TV shows, movies, and commercials. | .50 |

Note: ^a denotes items that constituted the Morality of Homosexuality subscale of the original IHNI.

their own homosexuality and toward homosexuality in general. The second factor consists of the seven items from the original IHNI's “Gay Affirmation” subscale, which was described as “the extent to which gay men feel that their homosexuality is an important and positive part of them and that being homosexual is normal and fulfilling” (Mayfield, 2001, p. 67). The two-factor solution exhibited good internal consistency reliability, with a Cronbach's alpha of .92 for the entire IHNI, and Cronbach's alpha values of .93 and .83 for “Personal and Moral Homonegativity” and “Gay Affirmation,”

respectively. The factors were significantly intercorrelated ($r = -.30$, $n=261$), $p<.001$, and both factors were significantly correlated with the full IHNI. The psychometric properties of the IHNI and its component subscales are presented in **Table 4.45**.

Table 4.45. Descriptive statistics and Pearson correlations for internalized homonegativity and its component factors

| Property | IHNI | Personal & moral homonegativity | Gay affirmation |
|---|--------|---------------------------------|-----------------|
| N | 261 | 276 | 313 |
| Mean | 48.16 | 32.03 | 16.78 |
| SD | 20.73 | 17.13 | 7.66 |
| Range | 23-108 | 16-96 | 7-42 |
| Skewness | 1.03 | 1.60 | .78 |
| Internal consistency (Cronbach's alpha) | .92 | .93 | .83 |
| Correlations | | | |
| IHNI | ----- | | |
| Personal & moral homonegativity | .94 | ----- | |
| Gay affirmation | -.61 | -.30 | ----- |

Note: N = 261 for correlations. All correlations shown are significant at $p<.001$.

Multinomial Logistic Regression

Frequency of Condom Use, Insertive Anal Intercourse

The fully-adjusted multinomial logistic regression model for frequency of condom use during insertive intercourse was significant, $\chi^2 (33, n=189) = 51.065$, $p=.023$, indicating that the model was able to distinguish between respondents who reported varying levels of condom use frequency. Based on pseudo R^2 values, the model was able to explain between 11.8% and 26.3% of the variance in the data. According to the likelihood ratio tests, two predictor variables were significant in the overall model: the "Gay Affirmation" subscale of the IHNI ($\chi^2 = 8.143$, $p=.043$) and relationship status ($\chi^2 = 16.097$, $p=.013$; data not shown).

As shown in Table 4.46, some of the predictor variables were also significant in distinguishing the likelihood of specific levels of condom use. Those who reported “never” using condoms during insertive anal intercourse were used as the reference group. Age (OR=1.125) was positively associated with a greater likelihood of reporting using condoms “some times” as opposed to “never” for insertive anal intercourse. The “Personal and Moral Homonegativity” subscale of the IHNI (OR=1.053) and a relationship status of “Married/long-term relationship with a man” (OR=.146) were significant predictors of using condoms “most times” for insertive anal intercourse as compared to those who “never” used condoms. Three variables were significant predictors of condom use “every time” during insertive anal intercourse: the “Gay Affirmation” subscale of the IHNI (OR=.1.193, the “Personal and Moral Homonegativity” subscale of the IHNI (OR=1.057), and a relationship status of “married/long-term relationship with a man” (OR=.111). This indicates that a greater sense of gay affirmation was associated with increased likelihood of using condoms “every time” for insertive anal intercourse. Interestingly, however, a greater sense of personal and moral homonegativity was also associated with an increased likelihood of using condoms “every time.” In contrast, being in a long-term relationship with a man was associated with a much lower likelihood of using condoms “every time” for insertive anal intercourse.

Frequency of Condom Use, Receptive Anal Intercourse

The fully-adjusted multinomial logistic regression model for frequency of condom use during receptive anal intercourse was also statistically significant (χ^2 (33, N = 170) = 66.429, $p < .001$), indicating that the model was able to differentiate between

Table 4.46. Multinomial logistic regression predicting frequency of condom use during insertive anal intercourse in the last 3 months (n=189)

| Frequency of condom use (ref = "never") | Variable | B | S.E. | Wald | df | p | Odds Ratio |
|--|--|---------------|-------------|---------------|----------|-------------|--------------|
| Some times | Age* | .118 | .051 | 5.348 | 1 | .021 | 1.125 |
| | Education | -.278 | .240 | 1.340 | 1 | .247 | .757 |
| | Income | -.340 | .290 | 1.377 | 1 | .241 | .712 |
| | Relationship status (ref = "Single") | | | | | | |
| | Dating | .218 | .762 | .082 | 1 | .775 | 1.244 |
| | Married/LTR with a man | -1.503 | .971 | 2.396 | 1 | .122 | .223 |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | |
| | Same-gender-loving | .107 | 1.334 | .006 | 1 | .936 | 1.113 |
| | Bisexual | -1.035 | 1.206 | .736 | 1 | .391 | .355 |
| | Masculinity | -.085 | .480 | .031 | 1 | .859 | .919 |
| | IHNI-GA | .081 | .050 | 2.670 | 1 | .102 | 1.085 |
| | IHNI-PMH | .050 | .028 | 3.251 | 1 | .071 | 1.051 |
| | HIV status | .379 | .764 | .246 | 1 | .620 | 1.461 |
| | Intercept | -1.214 | 2.146 | .320 | 1 | .571 | |
| | Most times | Age | .070 | .049 | 2.054 | 1 | .152 |
| Education | | -.286 | .208 | 1.887 | 1 | .170 | .752 |
| Income | | -.165 | .241 | .472 | 1 | .492 | .848 |
| Relationship status (ref = "Single") | | | | | | | |
| Dating | | -1.037 | .691 | 2.249 | 1 | .134 | .355 |
| Married/LTR with a man* | | -1.927 | .811 | 5.648 | 1 | .017 | .146 |
| Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| Same-gender-loving | | 1.399 | .971 | 2.075 | 1 | .150 | 4.053 |
| Bisexual | | .058 | .741 | .006 | 1 | .938 | 1.059 |
| Masculinity | | -.357 | .407 | .771 | 1 | .380 | .700 |
| IHNI-GA | | .077 | .042 | 3.334 | 1 | .068 | 1.080 |
| IHNI-PMH* | | .052 | .025 | 4.240 | 1 | .039 | 1.053 |
| HIV status | | -.037 | .662 | .003 | 1 | .956 | .964 |
| Intercept | | 1.124 | 1.816 | .383 | 1 | .536 | |
| Every time | | Age | .062 | .043 | 2.076 | 1 | .150 |
| | Education | -.334 | .178 | 3.522 | 1 | .061 | .716 |
| | Income | .003 | .207 | .000 | 1 | .990 | 1.003 |
| | Relationship status (ref = "Single") | | | | | | |
| | Dating | -.066 | .555 | .014 | 1 | .905 | .936 |
| | Married/LTR with a man* | -2.202 | .684 | 10.367 | 1 | .001 | .111 |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | |
| | Same-gender-loving | .913 | .892 | 1.048 | 1 | .306 | 2.492 |
| | Bisexual | -.524 | .646 | .658 | 1 | .417 | .592 |
| | Masculinity | -.653 | .356 | 3.376 | 1 | .066 | .520 |
| | IHNI-GA* | .103 | .038 | 7.487 | 1 | .006 | 1.109 |
| | IHNI-PMH* | .055 | .024 | 5.469 | 1 | .019 | 1.057 |
| | HIV status | -.671 | .587 | 1.307 | 1 | .253 | .511 |
| | Intercept | 3.093 | 1.586 | 3.804 | 1 | .051 | |

NOTE: IHNI-GA = Gay Affirmation subscale of IHNI. IHNI-PMH = Personal & Moral Homonegativity subscale of the IHNI. LTR = Long-term relationship.

* denotes significance at the level $p < .05$

respondents who reported varying levels of condom use frequency. The model was able to explain between 17.8% and 36.4% of the variance in the data, based on the McFadden, Nagelkerke, and Cox and Snell pseudo R^2 values. According to the likelihood ratio tests, three predictor variables were significant overall within the model: the “Gay Affirmation” subscale of the IHNI ($\chi^2=9.528$, $p=.023$), relationship status ($\chi^2=14.813$, $p=.022$), and HIV status ($\chi^2=8.123$, $p=.044$; data not shown).

Table 4.47 shows that some of the predictor variables emerged as significant in distinguishing the likelihood of specific levels of condom use during receptive anal intercourse. Those who “never” used condoms were used as the reference group. None of the predictors were significantly associated with the likelihood of using condoms “some times” for receptive anal intercourse. Degree of masculinity (OR=2.924) was significant in predicting the likelihood of engaging in condom use “most times” as opposed to “never,” such that lower levels of reported masculinity were associated with a greater likelihood of using condoms “most times.” Finally, four variables were significant in predicting the likelihood of engaging in condom use “every time”: education (OR=.624), the “Gay Affirmation” subscale of the IHNI (OR=1.134), the “Personal and Moral Homonegativity” subscale of the IHNI (OR=1.077), and a relationship status of “married/long-term relationship with a man” (OR=.158). These results suggest that higher education levels and being in a long-term relationship with a man were associated with lower likelihood of using condoms “every time,” while higher Gay Affirmation scores and higher Personal and Moral Homonegativity scores were associated with a higher likelihood of using condoms “every time” as opposed to “never,” controlling for other variables in the model.

Discussion

The results of this study indicate that the previously-published factor structure of the IHNI did not hold within this sample of AAMSM. Exploratory factor analysis conducted on the IHNI among a sample of AAMSM living in the Deep South revealed evidence of a two-dimensional structure of IH. Sixteen of the items—eleven items from the original “Personal Homonegativity” subscale and five from the original “Morality of Homosexuality” subscale, both identified in the original IHNI research—loaded significantly onto one factor, while the remaining seven items—all from the “Gay Affirmation” subscale of the IHNI—loaded significantly onto a second factor. The resulting dimensional structure differs from the dimensional structure from the original IHNI research, in which a three-factor solution was identified as the most meaningful solution (Mayfield, 2001).

In the original research, the “Personal Homonegativity” and “Morality of Homosexuality” dimensions were found to be distinct from each other, with respective subscale items loading onto separate factors. What, then, does it mean that items from these two seemingly distinct dimensions now show evidence of loading onto the same factor in this sample? It is possible that, whereas for a predominantly white, Midwest sample, IH exhibits both an individual (personal homonegativity) and moral/social (morality of homosexuality) component, AAMSM in the Deep South may not distinguish between these two concepts. For AAMSM, personal negative attitudes toward homosexuality and the perceived negative stances of the community toward homosexuality appear to be isomorphic, such that separating one’s personal negative feelings toward his homosexuality from the prevailing negative moral and social

Table 4.47. Multinomial logistic regression predicting frequency of condom use during receptive anal intercourse in the last 3 months (n=170)

| Frequency of condom use (ref = "never") | Variable | B | S.E. | Wald | df | p | Odds Ratio | |
|--|--|---------------|-------------|--------------|----------|-------------|--------------|-------|
| Some times | Age | .076 | .058 | 1.704 | 1 | .192 | 1.079 | |
| | Education | -.107 | .271 | .156 | 1 | .693 | .898 | |
| | Income | -.472 | .339 | 1.942 | 1 | .163 | .623 | |
| | Relationship status (ref = "Single") | | | | | | | |
| | Dating | 1.429 | .938 | 2.319 | 1 | .128 | 4.174 | |
| | Married/LTR with a man | -.265 | 1.029 | .067 | 1 | .796 | .767 | |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| | Same-gender-loving | .445 | 1.184 | .141 | 1 | .707 | 1.561 | |
| | Bisexual | -.969 | 1.293 | .562 | 1 | .454 | .380 | |
| | Masculinity | .673 | .585 | 1.325 | 1 | .250 | 1.961 | |
| | IHNI-GA | .102 | .056 | 3.289 | 1 | .070 | 1.107 | |
| | IHNI-PMH | .067 | .037 | 3.312 | 1 | .069 | 1.070 | |
| | HIV status | .971 | .840 | 1.337 | 1 | .248 | 2.640 | |
| | Intercept | -2.338 | 2.556 | .837 | 1 | .360 | | |
| | Most times | Age | .001 | .059 | .000 | 1 | .984 | 1.001 |
| Education | | -.336 | .244 | 1.902 | 1 | .168 | .714 | |
| Income | | -.260 | .298 | .759 | 1 | .384 | .771 | |
| Relationship status (ref = "Single") | | | | | | | | |
| Dating | | -.596 | .887 | .451 | 1 | .502 | .551 | |
| Married/LTR with a man | | -1.377 | .897 | 2.356 | 1 | .125 | .252 | |
| Sexual identity (ref = "Gay/homosexual") | | | | | | | | |
| Same-gender-loving | | .681 | 1.121 | .369 | 1 | .544 | 1.976 | |
| Bisexual | | -.118 | .861 | .019 | 1 | .891 | .889 | |
| Masculinity* | | 1.073 | .506 | 4.493 | 1 | .034 | 2.924 | |
| IHNI-GA | | .070 | .050 | 1.992 | 1 | .158 | 1.073 | |
| IHNI-PMH | | .058 | .034 | 2.883 | 1 | .090 | 1.060 | |
| HIV status | | .895 | .759 | 1.388 | 1 | .239 | 2.446 | |
| Intercept | | .843 | 2.192 | .148 | 1 | .700 | | |
| Every time | | Age | .039 | .053 | .532 | 1 | .466 | 1.039 |
| | Education* | -.471 | .216 | 4.755 | 1 | .029 | .624 | |
| | Income | -.161 | .263 | .373 | 1 | .541 | .851 | |
| | Relationship status (ref = "Single") | | | | | | | |
| | Dating | .540 | .756 | .509 | 1 | .475 | 1.716 | |
| | Married/LTR with a man* | -1.843 | .791 | 5.431 | 1 | .020 | .158 | |
| | Sexual identity (ref = "Gay/homosexual") | | | | | | | |
| | Same-gender-loving | .502 | 1.012 | .246 | 1 | .620 | 1.652 | |
| | Bisexual | -.981 | .778 | 1.588 | 1 | .208 | .375 | |
| | Masculinity | .408 | .460 | .789 | 1 | .374 | 1.504 | |
| | IHNI-GA* | .126 | .046 | 7.443 | 1 | .006 | 1.134 | |
| | IHNI-PMH* | .074 | .033 | 4.960 | 1 | .026 | 1.077 | |
| | HIV status | -.422 | .691 | .372 | 1 | .542 | .656 | |
| | Intercept | 3.246 | 1.974 | 2.704 | 1 | .100 | | |

NOTE: IHNI-GA = Gay Affirmation subscale of IHNI. IHNI-PMH = Personal & Moral Homonegativity subscale of the IHNI. LTR = Long-term relationship. * denotes significance at the level $p < .05$

norms regarding homosexuality is difficult. In order to capture this finding, this dimension was named “Personal and Moral Homonegativity.”

One further way to interpret these findings is through the lens of intersectionality (Bowleg, 2012). The two-factor solution revealed in the present study may possibly speak to the unique social, cultural, and historical characteristics of the African-American experience. Scholars have noted that African-American communities, particularly African-American religious communities, exhibit a high level of collective orientation (Patillo-McCoy, 1998; Foster, Arnold, Rebchook, & Kegeles, 2011). Because of this high level of collective orientation, coupled with the homonegative messages often voiced in African-American families, churches, and communities, it may be difficult for AAMSM to separate their personal feelings from the sociocultural contexts in which they live. Therefore, the collective shaming of homosexuality perpetuated in African-American communities becomes fused to the negative ways in which AAMSM experience their own sexuality in intersectional ways that other racial/ethnic groups of MSM may not experience.

While intersectionality may be a plausible explanation for the differences in IH seen between this sample and others in the literature, there exists a possibility that the original measure created by Mayfield (2001) might itself be inadequate for measuring IH among AAMSM. The IHNI, while more comprehensive than other measures of IH that have been posited in the literature, was originally developed and tested with a sample of primarily white gay men in the Midwest. If Mayfield (2001) had tested the same pool of original items with AAMSM, the items retained in the final scale and the IHNI’s subsequent factor analysis may have been significantly different.

Findings show that mean IHNI scores in the present sample of AAMSM were higher than those reported for the original sample surveyed by Mayfield (2001), which was mostly white and Midwestern. This finding supports the results of previous studies, which have suggested that IH is more common among AAMSM than other racial/ethnic MSM, a pattern which has been demonstrated across different measures of IH (Glick & Golden, 2010; O’Leary et al, 2007; Shoptaw, et al., 2009; Peterson & Jones, 2009; Young, et al., 2011). Because IH has been identified as a potential predictor of a host of negative health outcomes among gay and bisexual men, future research should explore the development of new measures of IH that might be more sensitive to the lived experiences of sexual minority people of color.

The study also explored the relationships between the dimensions of IH identified in the sample and condom use. Using multinomial logistic regression, “Gay Affirmation” subscale scores were found to be a significant overall predictor of increased frequency of condom use, both insertive and receptive, in this sample. However, “Personal & Moral Homonegativity” subscale scores were also shown to have a positive association with frequency of condom use, such that those who reported higher scores of Personal & Moral Homonegativity also reported more frequent use of condoms for both insertive and receptive anal intercourse. This finding contradicts the results of previous studies, which suggest that IH was associated with higher sexual risk (Stokes & Peterson, 1998; Peterson & Jones, 2009). One possible explanation for this finding may be that, as a result of increased negative feelings about their sexuality, AAMSM may be more sensitive to the threat of HIV or STI infection, as those infections are commonly associated with being a gay or bisexual man. Therefore, to avoid the added stigma of

testing positive for HIV or another STI, they may choose to engage in safer sex behaviors. This discrepant finding underscores the need for additional research to explore the components of IH in this population and their associations with other sexual risk behaviors.

This study is not without limitations. This study is a cross-sectional study that relied on self-reported data. As such, respondents' recall of their engagement in the sexual behavior outcomes may not have been accurate. Also, because the study asked respondents to report sensitive information about sexual behaviors, social desirability bias could have affected the results. However, this bias may have been mitigated by the fact that the surveys were completed anonymously.

Although the sample size provided sufficient power, the sample size may have made it difficult to identify significant relationships between the variables of interest in the data set. However, the use of diverse recruitment techniques yielded a sample that was larger than many other studies of AAMSM found in the literature. Future studies should continue to use innovative recruitment techniques to maximize the sample size and, subsequently, the generalizability of the data. The convenient nature of the sample is also a limitation. The sample was largely drawn from Black Gay Pride events, which are more likely to attract younger attendees who self-identify as gay, same-gender-loving, or bisexual; therefore, it is possible that the IHNI scores reported may underrepresent actual levels of IH among AAMSM, thus reducing our ability to generalize these findings to a larger population of AAMSM.

Despite the limitations, the findings of this study suggest that IH can be a significant predictor of AAMSM engagement in condom use during insertive and

receptive anal intercourse. Future HIV prevention interventions should explore the ways in which psychosocial factors, including IH, affect the decisions that AAMSM make regarding their sexual health. However, before interventionists can effectively incorporate factors such as IH into their interventions, they should explore the ways in which selected factors may function differently amongst different populations, and how these factors have been measured in previous research. The unique social, historical, and cultural aspects of the African-American experience must be taken into account in order to speak specifically to individuals finding themselves at the intersection of being African-American and MSM.

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MANUSCRIPT 2

EXAMINING THE RELATIONSHIPS BETWEEN RELIGIOSITY, SPIRITUALITY,
INTERNALIZED HOMONEGATIVITY, AND CONDOM USE AMONG AFRICAN-
AMERICAN MEN WHO HAVE SEX WITH MEN IN THE DEEP SOUTH⁵

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Abstract

Background: Although the disproportionate rates of HIV infection among African-American men who have sex with men (AAMSM) have been well-documented, less is known about the reasons for the disparity. The Sexual Health in Faith Traditions (SHIFT) Study evaluated the relationships between religiosity, spirituality, internalized homonegativity, and frequency of condom use among a sample of 348 AAMSM living in the Deep South region of the United States. **Methods:** Participants in the SHIFT Study completed a self-administered, paper-and-pencil survey. The Internalized Homonegativity Inventory (IHNI) was used to measure internalized homonegativity, the Religious Commitment Inventory-10 (RCI-10) was used to assess religiosity, and the Daily Spiritual Experiences Scale (DSES) was used to measure spirituality. Structural equation modeling was used to determine the relationships between religiosity, spirituality, internalized homonegativity, and frequency of condom use for both insertive and receptive anal intercourse in the last 3 months. **Results:** The mean age of participants was 28.24. Almost half of respondents reported using condoms “Every time” they engaged in insertive (48.3%) or receptive (45.1%) anal intercourse. Structural equation models found that religiosity scores were positively associated with personal & moral homonegativity scores and negatively associated with gay affirmation scores, while higher spirituality scores were negatively associated with personal & moral homonegativity scores and positively associated with gay affirmation scores. There were no significant direct relationships between religiosity and condom use or spirituality and condom use; however, there were significant indirect relationships using the dimensions of internalized homonegativity as a mediator. **Conclusions:** These findings suggest that

religiosity and spirituality have the potential to influence AAMSM's feelings toward their sexuality and their engagement in safer sex behaviors.

Keywords: religiosity, spirituality, sexual risk, condom use, African-American MSM

Introduction

African-American men who have sex with men (AAMSM) are disproportionately affected by HIV. AAMSM are estimated to account for 9% of all MSM in the U.S., but represent 38% of new HIV infections among MSM (Black AIDS Institute, 2012). An estimated 15,444 African-American men were diagnosed with HIV infection in 2010; of those, 70% were reported to have been infected through male-to-male sexual contact (CDC, 2013). African-American men also represented almost 38% of new infections among MSM in 2008 (CDC, 2013). According to a six-city study conducted by the HIV Prevention Trials Network (2012), the rate of new HIV infections among AAMSM was 2.8% per year, a rate that is 50% higher than the infection rate for white MSM in the U.S. Within the U.S. South, rates of HIV infection were higher among AAMSM than the rates for White or Hispanic MSM (Lieb, et al., 2011). In fact, the high reported incidence rates of HIV infection among AAMSM are comparable to HIV infection rates in developing countries (Mays, Cochran, & Zamudio, 2004).

While the HIV epidemic among AAMSM has been well-documented, less attention has been given to finding explanations for the differences in HIV rates between AAMSM and MSM of other racial/ethnic groups. Unprotected anal intercourse (UAI) is one of the most commonly-cited factors associated with HIV infection among MSM (Goedert, et al., 1985; Koblin, et al., 2006). However, previous research has indicated that there are no significant differences in UAI between AAMSM and MSM of other races, and in some cases that AAMSM were comparatively less likely to engage in UAI or other high-risk sexual behaviors (Millett, Peterson, Wolitski, & Stall, 2006). The lack of race-based differences in HIV risk behaviors suggests that there must be alternative

explanations for the differences in HIV infection rates between AAMSM and other racial/ethnic MSM groups. Specifically, more attention should be given to the sociocultural contextual factors that may influence the sexual behaviors and subsequent HIV risk of AAMSM (Malebranche, 2003).

One of the oldest and most influential institutions in African-American communities is the African-American Christian faith community, commonly referred to as the “Black church.” The Black church is considered to be a foundation that links African-American ethnicity, the American South, working-class socioeconomic status, and conservative sociopolitical ideology (Schulte & Battle, 2004). Lincoln and Mamiya (1990) argued that “the core values of black culture, like freedom, justice, equality, an African heritage, and racial parity at all levels of human intercourse, are raised to ultimate levels and legitimated in the black sacred cosmos...given birth and nurtured in the womb of the Black Church.” (p.7) This notion of the Black church as the cultural nucleus of African-American history and culture is also evidenced in the Black church’s role in the development of non-religious organizations, such as the National Association for the Advancement of Colored People, that have advocated for civil rights and social justice (Schulte & Battle, 2004). African-Americans report more frequent attendance at religious services, higher rates of prayer and affective religious behaviors, and feel more strongly about their religious beliefs than white Americans (Taylor, 1988). Even African-Americans who no longer extol religious principles still often report that they have been profoundly influenced by the religious ideology in which they were raised, and that these doctrines continue to influence their current beliefs (Dyson, 2003).

African-American religiosity has also been associated with positive health outcomes. For example, African-Americans who frequently attended church experienced lower rates of mortality than those who did not attend frequently (Ellison, et al., 2000). Musgrave et al. (2002) reported that African-American and Puerto Rican women living with HIV/AIDS cited spirituality as a key component of their ability to live healthy lives; however, they emphasized aspects of religious activity, specifically citing prayer, television ministries, and Bible reading as markers of their spirituality, indicating a strong relationship between religious activity and spirituality.

While positive associations between religiosity, spirituality, and health have been documented among African-Americans, AAMSM may not experience the same benefits of involvement in African-American religious life. Many African-American churches espouse anti-homosexual, or homonegative, messages and policies that can negatively impact AAMSM members. Some of these homonegative positions are based on Biblical interpretations of homosexuality as “sinful,” relying on a small number of passages in the Bible that reference homosexual behavior. These homonegative positions may also be based in historical realities and sociocultural norms. As a result, many African-American faith communities have developed a negative view of homosexuality as a threat to the African-American family and manhood (Douglas, 1999).

Regardless of the origins of homonegativity in African-American churches, its effects on AAMSM are pernicious. Homophobia is manifested in Black churches to varying degrees, ranging from verbal hostility to silence (Ward, 2005). Pastors, preachers, or church leaders may publicly engage in verbal ridicule of homosexual men using derogatory terms and situating them as a threat to Black masculinity and survival of

the race, with little to no resistance—and often, encouragement—from parishioners. Qualitative studies have indicated that many churches’ anti-homosexual messages have contributed to a hierarchy of “sin,” or a perception that being a homosexual is more egregious than other transgressions, such as adultery or participation in the drug trade (Fullilove & Fullilove, 1999). Other churches adopt a culture of silence on homosexuality, privately encouraging AAMSM to participate in the religious community as long as there are no outward acknowledgments or expressions of their sexuality (Jeffries, Dodge, & Sandfort, 2008). This notion of private welcome in the face of public ridicule has been described as the “open closet,” or a phenomenon in which non-heterosexuals are encouraged to take part in the religious experience at the expense of their non-heterosexual identity (Fullilove & Fullilove, 1999).

Some researchers have suggested that homophobia among African-American churches, and by extension African-American communities, has contributed to the dramatic spread of HIV/AIDS among African-Americans. Fullilove and Fullilove (1999) argued that, because discussion of HIV/AIDS is often linked to discussions about sexuality in general and homosexuality in particular, many churches have shied away from engagement in HIV prevention, testing, treatment, and care activities out of reluctance to acknowledge the existence of homosexuality in African-American populations. Because of the widespread homonegative experiences often associated with participation in traditional African-American religious organizations or communities, it may seem logical to believe that AAMSM would eschew religion and spirituality altogether. However, research suggests that AAMSM, despite the homonegative messages they may receive, maintain high levels of involvement in African-American

religious life (Griffin, 2006; Woodyard, Peterson, & Stokes, 2000; Jeffries, Dodge, & Sandfort, 2008; Pitt, 2010).

When faced with homonegative messages from the pulpit, many AAMSM have expressed feelings of guilt, condemnation, embarrassment, and alienation, to the point that they sometimes internalize those negative messages (Woodyard, Peterson, & Stokes, 2000; Balaji, et al., 2012). This phenomenon, referred to as internalized homonegativity, has been associated with depression, anxiety (Graham, et al., 2011), and sexual risk behaviors that could lead to HIV infection among AAMSM (Stokes & Peterson, 1998). Griffin (2006) wrote that the homophobia sanctioned by the Black church has become internalized by many AAMSM, who begin to harbor beliefs that they are “inherently sinful because they are sexually attracted to the same sex.” (p. 149) Internalized homonegativity has also been shown to deter MSM from participating in community-based HIV prevention programs and interventions (Huebner, Davis, Nemeroff, & Aiken, 2002).

Despite the potential negative effects of AAMSM religious participation, AAMSM have developed resilience and coping strategies to the negative messages they encounter through spirituality. Spirituality is defined as “the sense of meaning, purpose, and morality that individuals espouse regarding their lives” (Tan, 2005). Spirituality is considered distinct from religiosity in that, whereas religiosity is considered an embrace of prescribed beliefs and practices, spirituality refers more to internal values and relationships (Mattis, 2000). Some AAMSM have indicated that a personal sense of spirituality provided them with the resilience to neutralize anti-gay messages and accept their sexual orientation, calling on affirming messages such as “God loves me,” “God

made me this way,” or “Only God can judge me” as a coping mechanism (Jeffries, Dodge, & Sandfort, 2008; Miller, 2007; Woodyard, Peterson, & Stokes, 2000). Greater spirituality has also been shown to be a significant predictor of lower experiences of internalized homonegativity (Tan, 2005).

Although the disproportionate impact of HIV infection among AAMSM has been well-documented in the literature, there is little information available about the underlying psychological and sociocultural factors that contribute to their increased risk. Further, even less is known about the associations between these factors, and the unique ways in which they manifest themselves among AAMSM. To address these challenges, the Sexual Health in Faith Traditions (SHIFT) Study was developed.

The purpose of this paper is to better understand the relationships between religiosity, spirituality, and internalized homonegativity, and explore their connection to condom use among AAMSM. The conceptual model for the hypothesized relationships between constructs is presented in Figure 4.3. Specifically, we sought to address the following research questions: 1) Is religiosity negatively associated with condom use among AAMSM? 2) Is spirituality positively associated with condom use among AAMSM? And 3) Does internalized homonegativity mediate the associations between religiosity, spirituality, and sexual risk behaviors among AAMSM? The results of this study can contribute to the development of more culturally-specific, contextually-based HIV prevention interventions for AAMSM.

Methods

Sample and Recruitment

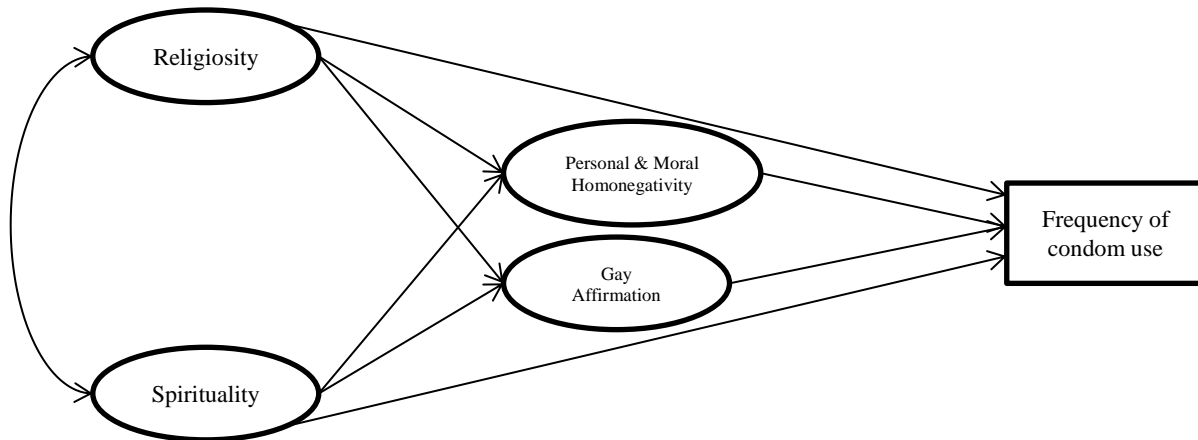


Figure 4.3. Conceptual model.

Data were collected between June and December 2011 from 348 participants enrolled in the SHIFT Study, a cross-sectional, quantitative study of AAMSM living in the Deep South. Participants were included in the study if they met the following criteria: (1) self-identifying as an African-American man who had sex with a man at least once in the last 12 months, or self-identifying as gay or bisexual; (2) aged 18 or older; and (3) residing in one of the states classified as the “Deep South”: Alabama, Georgia, Louisiana, Mississippi, North Carolina, or South Carolina.

Participants were recruited into the SHIFT Study through a variety of strategies. A purposive convenience sample was recruited using a proactive recruitment strategy at Black Gay Pride celebrations in the Deep South. In two Southern cities that did not have Black Gay Pride celebrations, small social gatherings, or “survey parties,” were held to recruit participants. Flyers containing basic information about the study, including its purpose and target population, were distributed through community-based HIV prevention organizations, AIDS service organizations, LGBT-serving organizations, LGBT-friendly businesses, and LGBT email listservs. A Facebook page and Twitter

account were developed as a means to recruit potential participants. All SHIFT Study protocols were approved by the Institutional Review Board at the University of South Carolina.

Data Collection

Data were collected using printed surveys administered by the principal investigator (PI) or a trained member of the data collection team. Before administering the survey, the data collector provided a brief verbal summary of the survey's purpose and an estimate of the time required to complete it (approximately 10 minutes). The data collector then provided him with a copy of the informed consent form, outlining the study's purpose, potential risks, benefits, and the PI's contact information. The participant then received a printed survey to complete. Data collectors were allowed to read aloud any items in which the participant had difficulty comprehending. However, the data collectors were instructed not to interpret items for the participant. After the survey was completed, the data collector placed the survey in a sealable file folder and provided the participant with \$5 cash as an incentive for their participation.

For participants who opted into the study or were recruited through snowball sampling, the PI met each contact in a mutually agreed-upon location at a time that was convenient for the potential participant and followed the data collection protocols. Upon completion of the survey, the study participant was asked to share information about the study with at least 3-5 other members of the target population who might be interested in participating in the study. The PI provided each study participant with a phone number and email address through which new potential participants could contact the PI for more information and to schedule a time to complete the survey.

Measures

Data for the SHIFT Study were collected using a cross-sectional survey which included measures of sociodemographic characteristics, religiosity, spirituality, internalized homonegativity, and condom use. Sociodemographic variables in the survey included age (in years), highest educational level attained, income, relationship status, sexual identity, HIV status, and degree of masculinity/femininity. Sexual identity was measured by one item, “How do you describe yourself?” Response options were “gay/homosexual,” “same-gender-loving,” “bisexual,” “straight/heterosexual,” and “other.” Those who chose “other” were given space to write their own description. HIV status was measured by one item, “Have you ever tested positive for HIV?” Response options were “yes,” “no,” and “I have never been tested for HIV.” Degree of the respondent’s masculinity/femininity was measured by one item, “Which statement best describes you?” Response options were “extremely masculine,” “masculine,” “equally masculine and feminine,” “feminine,” and “extremely feminine.” The degree of masculinity was measured because previous research has indicated that, among young AAMSM, perceptions of masculinity may influence perceptions of partner risk and condom use decision-making (Fields, et al., 2012).

Religiosity was measured using the Religious Commitment Inventory-10 (RCI-10), a 10-item measure, scored using a 5-point Likert scale, with responses ranging from 1 (“not at all true of me”) to 5 (“totally true of me”) (Worthington, et al., 2003). Religious commitment was defined as “the degree to which a person adheres to his or her religious values, beliefs, and practices and uses them in daily living” (Worthington, et al., 2003). The RCI-10 exhibited good internal consistency reliability ($\alpha =$

.93), and provided evidence of convergent and discriminant validity (Worthington, et al., 2003).

Spirituality was measured using the Daily Spiritual Experiences Scale (DSES). The DSES is a 16-item scale developed to address “reported ordinary experiences of spirituality such as awe, joy that lifts one out of the mundane, and a sense of deep inner peace” (Underwood & Teresi, 2002, p. 22). Fifteen of the 16 items in the DSES are scored using a modified 6-point Likert scale, in which responses range from “many times a day” to “never or almost never.” The final item, “In general, how close do you feel to God?” has four response options: not close at all, somewhat close, very close, and as close as possible. Lower scores on the DSES indicate a higher occurrence of daily spiritual experiences; however, for the SHIFT Study, all items were reverse-coded so that higher scores indicated a higher occurrence of daily spiritual experiences.

Internalized homonegativity was measured using the 23-item Internalized Homonegativity Inventory (IHNI). Responses were scored on a 6-point Likert-type scale (1=Strongly Disagree to 6=Strongly Agree). Mayfield (2001) reported an internal consistency reliability of .91 for the entire 23-item inventory and evidence of convergent validity. The IHNI has been used in previous studies to assess levels of internalized homonegativity among AAMSM, with reliability coefficients ranging from .76 to .91 for the entire scale (Shoptaw, et al., 2009; Young, et al., 2009). While the original IHNI measured internalized homonegativity across three subscales (Personal Homonegativity, Gay Affirmation, Morality of Homosexuality), an exploratory factor analysis (EFA) of SHIFT Study data provided evidence of a two-factor solution (Smallwood, et al., 2013). In the EFA, one factor included all of the items from both the “Personal Homonegativity”

and “Morality of Homosexuality” subscales, while the “Gay Affirmation” subscale remained intact. The “Gay Affirmation” label was retained, while the combined factor was reclassified as “Personal & Moral Homonegativity” (Smallwood, et al., 2013). The two-dimensional conceptualization of internalized homonegativity was used in the present study.

Condom use was assessed using two items adapted from the National Household Survey of Drug Abuse (SAMHSA, 1997). Participants were asked about their frequency of condom use for insertive and receptive anal intercourse in the last 3 months, respectively. Response options were presented on a 4-point Likert-type scale (1=Every time to 4=Never), with an additional response option for those who reported that they had not had anal intercourse in the last 3 months. These items were reverse-coded for analysis.

Data Analysis

Descriptive statistics were calculated for all study variables using SPSS v.20, including means and standard deviations for continuous variables and frequencies for categorical variables. Latent variable structural equation modeling (SEM) was conducted using Mplus version 5.2 (Muthén & Muthén, 2008). SEM is a statistical technique that uses both a measurement (confirmatory factor) model and a structural (path) model to evaluate the validity of a theoretical model using both observed and latent variables (Schumacker & Lomax, 2004). A full information maximum likelihood (FIML) estimation method was used to address missing data (Little & Rubin, 2002). FIML is different from other common methods of dealing with missing data (e.g., listwise or pairwise deletion) in that all available data are used in the process of parameter

estimation, thus minimizing the number of cases that are excluded from analysis (Enders & Bandalos, 2001).

Model fit was assessed using four indices. A chi-square test was used to assess absolute model fit, which is calculated based on the differences between the observed and reproduced covariance matrix. A chi-square statistic with an associated p-value greater than .05 is indicative of good model fit. However, a significant chi-square statistic may not necessarily provide evidence for poor model fit, as the chi-square test is sensitive to sample size (Schumacker & Lomax, 2004). In addition to the chi-square test, the Bentler comparative fit index (CFI; Bentler, 1980), the Non-Normed Fit Index (NNFI), also known as the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), and the root mean square error of approximation (RMSEA; Browne & Cudek, 1993) were used to assess model fit. CFI and TLI values of .95 or greater and RMSEA values of .06 or lower are generally considered indicators of acceptable model fit; however, these cut-offs are considered as guidelines and are not absolute (Barrett, 2007).

To allow for the possibility of different relationships among the variables of interest, the outcome variables—frequency of condom use for insertive and receptive anal intercourse in the last 3 months—were modeled separately. In the proposed models, religiosity and spirituality were considered exogenous variables. The two components of internalized homonegativity were endogenous variables and tested to determine whether they mediate the relationships between the exogenous variables and condom use. Religiosity, spirituality, and internalized homonegativity were treated as continuous latent variables.

Results

Participant Characteristics

The mean age of participants was 28.2 years (SD=8.46) for the insertive sample, and 27.65 years (SD=8.34) for the receptive sample. As shown in Table 4.47, more than a third of the men in each sample reported having some college education but no degree, and almost three-fourths reported an annual income of less than \$40,000. The majority of men reported a gay/homosexual identity and reported a “single” relationship status. Most men classified themselves as being equally masculine and feminine or masculine.

Almost one-quarter of the participants reported having tested positive for HIV.

Structural equation models were generated separately for condom using during insertive and receptive anal intercourse. In each model, the sample was restricted only to those who had participated in each type of anal intercourse within the last three months (n=285 for insertive; n=263 for receptive).

Cases were excluded from each of the two models based on whether they had engaged in anal intercourse in the last 3 months. In the insertive model, there were significant differences between included and excluded cases by HIV status, with seropositivity rates of 11% for excluded cases and 24% for included cases. In the receptive model, there were significant differences between included and excluded cases on a number of sociodemographic variables. Those excluded from analysis were older, with a mean age of 30.04 years compared to 27.65 years in the included cases. Excluded cases also reported more educational experience, higher income, being more masculine, and a lower HIV seropositivity rate (10%, as opposed to 25% among included cases).

Table 4.48. Sociodemographic Characteristics of Study Participants.

| | As Insertive Partner (n=285) | | As Receptive Partner (n=263) | |
|--|---------------------------------|------|---------------------------------|------|
| | n | % | n | % |
| State of residence | | | | |
| Georgia | 58 | 20.4 | 50 | 19.0 |
| Louisiana | 3 | 1.1 | 3 | 1.1 |
| Mississippi | 72 | 25.3 | 70 | 26.6 |
| North Carolina | 67 | 23.5 | 60 | 22.8 |
| South Carolina | 83 | 29.1 | 78 | 29.7 |
| Highest educational level completed | | | | |
| High school diploma/GED or less | 55 | 19.3 | 56 | 21.3 |
| Some college but no degree | 102 | 35.8 | 97 | 36.9 |
| Associate's or bachelor's degree | 72 | 25.2 | 69 | 26.3 |
| Some graduate school or adv. degree | 55 | 19.3 | 40 | 15.2 |
| Annual income | | | | |
| Less than \$10,000 | 64 | 22.5 | 63 | 24.0 |
| \$10,000-\$24,999 | 63 | 22.1 | 62 | 23.6 |
| \$25,000-\$39,999 | 77 | 27.0 | 72 | 27.4 |
| \$40,000-\$49,999 | 39 | 13.7 | 32 | 12.2 |
| \$50,000 or more | 40 | 14.1 | 32 | 12.2 |
| Relationship status | | | | |
| Single | 163 | 57.2 | 149 | 56.7 |
| Dating | 78 | 27.4 | 72 | 27.4 |
| Married/long-term relationship with man | 35 | 12.3 | 34 | 12.9 |
| Married/long-term relationship with woman | 2 | 0.7 | 2 | 0.8 |
| Separated | 4 | 1.4 | 4 | 1.5 |
| Sexual identity | | | | |
| Gay/Homosexual | 204 | 71.6 | 192 | 73.0 |
| Same-Gender-Loving | 20 | 7.0 | 16 | 6.1 |
| Bisexual | 41 | 14.4 | 36 | 13.7 |
| Straight/Heterosexual | 2 | 0.7 | 2 | 0.8 |
| Other | 6 | 2.1 | 7 | 2.7 |
| Masculinity/Femininity | | | | |
| Extremely masculine/masculine | 119 | 41.8 | 99 | 37.7 |
| Equally masculine and feminine | 135 | 47.4 | 132 | 50.2 |
| Extremely feminine/feminine | 26 | 9.2 | 29 | 11.1 |
| Ever tested positive for HIV | | | | |
| Yes | 65 | 22.8 | 63 | 24.0 |
| No | 210 | 73.7 | 189 | 71.9 |
| I have never been tested for HIV | 3 | 1.1 | 4 | 1.5 |

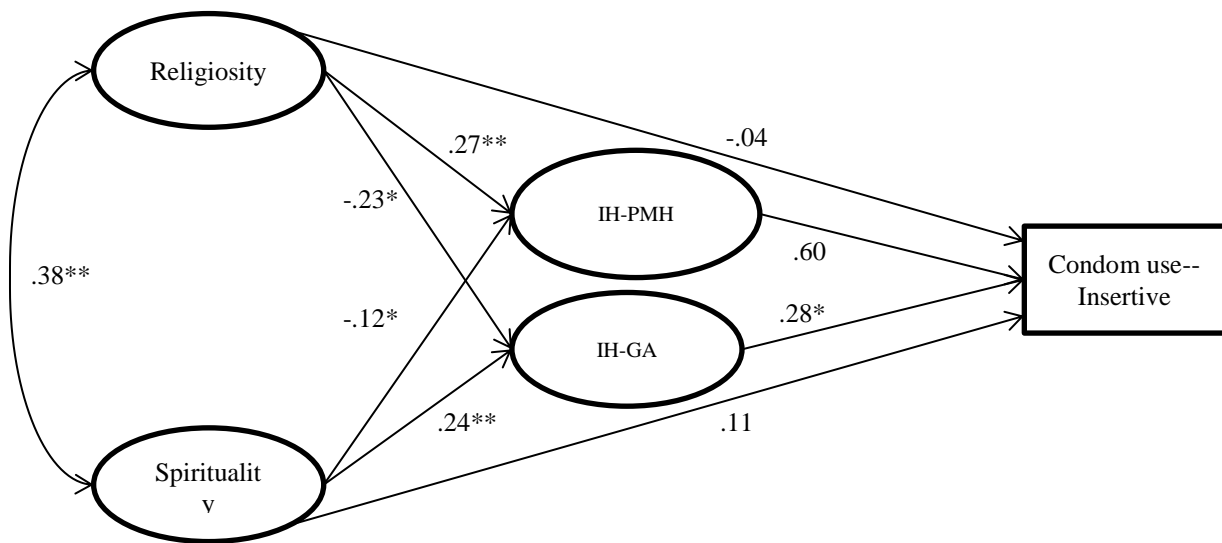
Note: The column totals may not sum to 100% due to missing values.

Condom Use During Insertive Anal Intercourse

The chi-square test of model fit for condom use during insertive anal intercourse was significant ($\chi^2 = 286.12$, $df = 101$), $p < .001$, indicating poor model fit. However, other fit indices provided evidence of adequate fit (CFI=.97, TLI=.99, RMSEA= .08).

Bivariate correlations were calculated to determine the magnitude and direction of the relationships between certain variables. Religiosity and spirituality were significantly correlated ($r=.38$, $p<.001$), as were the two dimensions of internalized homonegativity, Personal & Moral Homonegativity and Gay Affirmation ($r=-.11$, $p<.001$).

Figure 4.4 illustrates the structural model and corresponding path coefficients for predictors of condom use during insertive anal intercourse. Several paths in the model were found to be statistically significant. Religiosity scores were found to have a significant effect on both dimensions of internalized homonegativity: Personal & Moral Homonegativity ($B=.27$, $p<.001$) and Gay Affirmation ($B=-.23$, $p=.01$), indicating that higher levels of religiosity were associated with higher levels of Personal & Moral



Note: * denotes significance at $p<.05$. ** denotes significance at $p<.01$.

Figure 4.4. Structural model path diagram for condom use during insertive anal intercourse with unstandardized path coefficients ($n=285$).

Homonegativity, and with lower levels of Gay Affirmation. Spirituality was also found to have a significant effect on both Personal & Moral Homonegativity ($B=-.12, p=.02$) and Gay Affirmation ($B=.24, p=.002$). These results suggest that higher levels of spirituality were associated with higher levels of Gay Affirmation and lower levels of Personal & Moral Homonegativity. However, neither religiosity nor spirituality were found to have a significant direct effect on condom use during insertive anal intercourse in the past three months. Both Gay Affirmation ($B=.28, p=.03$) and Personal & Moral Homonegativity ($B=.60, p=.001$) were found to have significant direct effects on insertive condom use, indicating that higher levels of both Gay Affirmation and Personal & Moral Homonegativity were associated with increased frequency of condom use for insertive anal intercourse in the last 3 months.

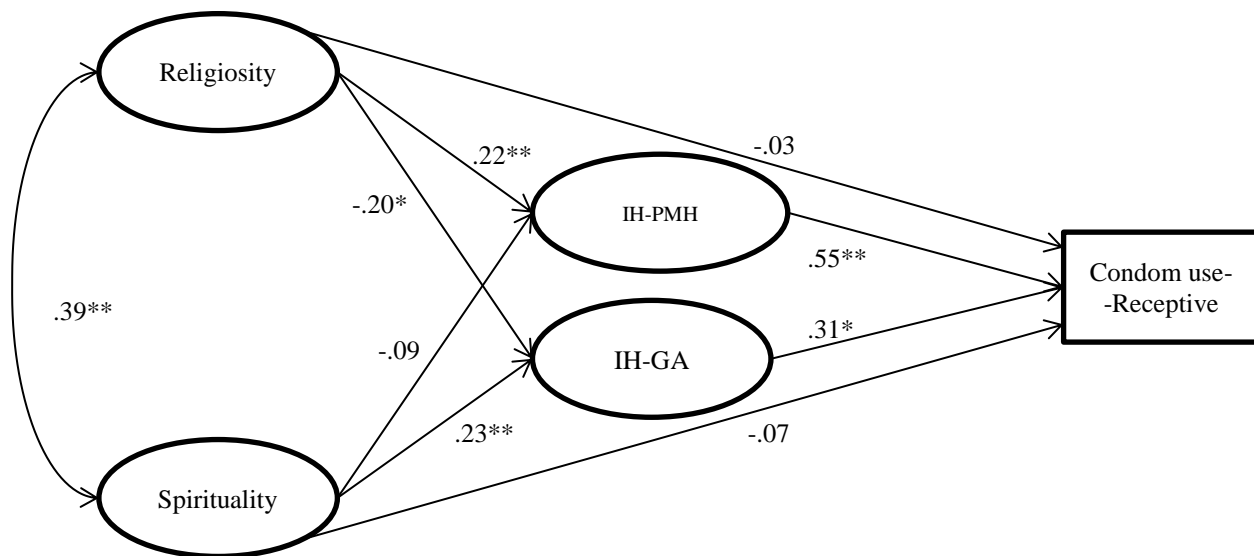
A test of indirect effects was conducted to examine whether internalized homonegativity mediated the relationships between religiosity, spirituality, and insertive condom use. Assessment of the overall indirect pathways from religiosity and spirituality to insertive condom use suggested that only the indirect path from religiosity through personal & moral homonegativity was statistically significant ($B=.11, p=.01$). None of the indirect paths involving spirituality and internalized homonegativity was found to be significant.

Condom Use During Receptive Anal Intercourse

The chi-square test of model fit for condom use during receptive anal intercourse was significant ($\chi^2 = 274.08, df = 100, p < .001$), indicating poor model fit. However, other fit indices provide evidence of adequate model fit (CFI = .97, TLI = .99, RMSEA = .08).

As in the insertive condom use model, bivariate correlations were calculated to determine the magnitude and direction of relationships between religiosity and spirituality, and between Gay Affirmation and Personal & Moral Homonegativity. Religiosity and spirituality were found to be significantly correlated ($r=.39, p<.001$), as were the two dimensions of internalized homonegativity, Gay Affirmation and Personal & Moral Homonegativity ($r=-.10, p<.001$). The model explained 5% of the variance in Gay Affirmation and 7% of the variance in Personal & Moral Homonegativity.

Figure 4.4 illustrates the structural model and corresponding path coefficients for predictors of condom use during receptive anal intercourse. Again, several paths within the model were found to be statistically significant. Religiosity scores were found to have a significant direct effect on the two dimensions of internalized homonegativity, Gay Affirmation ($B=-.20, p=.03$) and Personal & Moral Homonegativity ($B=.22,$



Note: * denotes significance at $p<.05$. ** denotes significance at $p<.01$.

Figure 4.5. Structural model path diagram for condom use during receptive anal intercourse with unstandardized path coefficients ($n=263$).

$p=.001$). This indicates that higher levels of religiosity were associated with higher levels of personal & moral homonegativity, and lower levels of gay affirmation. Spirituality scores were found to have a significant direct effect on Gay Affirmation scores ($B=.22$, $p=.001$), but not on Personal & Moral Homonegativity scores ($B=-.09$, $p=.07$), indicating that higher levels of spirituality were associated with higher levels of gay affirmation. Neither religiosity nor spirituality was found to have a significant direct effect on condom use during receptive anal intercourse in the last three months. However, both dimensions of internalized homonegativity, Gay Affirmation ($B=.31$, $p=.02$) and Personal & Moral Homonegativity ($B=.55$, $p=.005$) were found to have a significant direct effect on condom use for receptive anal intercourse, such that higher levels of each were associated with greater frequency of condom use.

A test of indirect effects was conducted to determine whether internalized homonegativity mediated the relationships between religiosity, spirituality, and condom use for receptive anal intercourse. Two significant indirect paths were identified: the path from religiosity \rightarrow Personal & Moral Homonegativity \rightarrow receptive condom use ($B=.08$, $p=.03$), and the path from spirituality \rightarrow Gay Affirmation \rightarrow receptive condom use ($B=.06$, $p=.04$).

Discussion

Results from the current study indicate that religiosity and spirituality were significantly associated with the two identified dimensions of internalized homonegativity, although in different ways. Higher spirituality was associated with higher Gay Affirmation, which is consistent with the results of previous research, which have found that spirituality was positively associated with self-esteem and suggests that

spirituality can be a source of empowerment for LGBT individuals (Tan, 2005; Foster, et al., 2011). Spirituality was also found to be significantly associated with Personal & Moral Homonegativity, but only in the model for condom use during insertive anal intercourse. Higher religiosity, on the other hand, was associated with higher reported Personal & Moral Homonegativity scores and lower Gay Affirmation scores in both of the models presented. This finding suggests that religious involvement among AAMSM can be a source of sexuality-related psychological distress, exacerbating negative personal feelings about their sexuality. This connection between religiosity and internalized homonegativity is consistent with the findings of previous research, which have suggested that African-American religious communities are often characterized by stigma toward homosexuality (Balaji, et al., 2012; Woodyard, Peterson, & Stokes, 2000; Wilkerson, Smolenski, Brady, & Rosser, 2012). However, less attention has been given to the differential roles that religiosity and spirituality play in the lives of AAMSM. These discordant findings suggest that religiosity and spirituality cannot be conceptualized as equivalent constructs, as they may, at times, operate in very different ways. As such, future intervention research should take care to disaggregate religiosity and spirituality in order to maximize intervention effectiveness.

Internalized homonegativity was found to be significantly associated with condom use during both insertive and receptive anal intercourse. However, the two identified dimensions of internalized homonegativity functioned in a way that was unexpected. Higher Gay Affirmation scores were associated with an increased frequency of condom use for both receptive and insertive anal intercourse, a finding that supports previous research that Gay Affirmation has been positively associated with engagement

in sexual risk behaviors (Shoptaw, et al., 2009). However, higher Personal & Moral Homonegativity scores were also associated with increased frequency of condom use. The latter finding challenges the notion that negative feelings about one's own homosexuality are associated with higher engagement in risky sexual behaviors (Peterson & Jones, 2009; Stokes & Peterson, 1998).

One potential explanation for this finding might be related to stigma- or shame-avoidance strategies. Homosexuality carries a significant stigma among African-Americans—a stigma that many AAMSM try to resist or avoid. However, HIV infection also carries a stigma that is not entirely related to homosexuality. It is possible that AAMSM who feel more homonegative might engage in more frequent condom use in order to protect themselves from HIV infection and its accompanying stigma. It is also possible that, as more Black churches have begun to engage in HIV prevention discourse and become sites of HIV prevention and care activities, the overarching messages of prevention may outweigh the homonegative messages that AAMSM may encounter in these religious spaces. Finally, it is possible that AAMSM may have developed a resilience that allows them to resist the homonegative messages they may experience. As noted in previous studies, AAMSM have developed a variety of coping strategies to circumvent the homonegative messages they receive from the church (Jeffries, Dodge, & Sandfort, 2008; Miller, 2007; Woodyard, Peterson, & Stokes, 2000). Additional research is needed to understand the complexities of the relationships between internalized homophobia and engagement in sexual risk behaviors among AAMSM.

The structural models provided support for the hypothesis that dimensions of internalized homonegativity mediate the relationships between religiosity, spirituality,

and condom use. Personal & Moral Homonegativity mediated the relationship between religiosity and condom use in both the insertive and receptive models, and Gay Affirmation mediated the relationship between spirituality and receptive condom use. This suggests that the African-American religious experience, as a sociocultural contextual structure, has some influence on the individual sexual health behaviors of AAMSM by contributing to feelings of internalized homonegativity. As such, HIV prevention interventions should not seek only to address individual levels of HIV risk; interventionists should also use a more social-ecological approach to address the structures that may exacerbate or ameliorate the likelihood that AAMSM may engage in risky sexual behaviors, such as training programs for clergy or opportunities for AAMSM to discuss their religious and spiritual experiences within the context of HIV prevention interventions.

This study is not without its limitations. The sample used was a convenience sample largely drawn from attendees at Black Gay Pride events. Such events may be more likely to attract participants who identify as gay, bisexual, or same-gender-loving; demonstrate more comfort with their sexuality; and thus be less likely to report higher levels of internalized homonegativity. Future research should aim to recruit a more diverse sample, including AAMSM who would not be as likely to attend a Black Gay Pride or self-identify in their social networks as gay, bisexual, or same-gender-loving. Also, all participants in the study resided in the Deep South at the time of data collection, thus limiting our ability to generalize to the nationwide AAMSM population. However, this limitation could be mitigated by the fact that most African-American communities, including institutions such as the Black church, are rooted in the history and culture of the

Deep South, so while regional differences may exist, there may be more contextual similarities across regions than for other racial/ethnic groups. Because this is cross-sectional data, the causal direction of the pathways specified in the model cannot be determined. Finally, the present study does not take into account the amount of variation that exists within African-American faith communities. Doctrine and policy related to issues of homosexuality varies greatly within the Black church, based on factors such as denomination and geographic location (urban vs. rural). Given the promising findings of this study, future research should examine the perceived degree of LGBT affirmation within African-American faith communities as a potential moderator of the relationships between religiosity, internalized homonegativity, and condom use.

Despite its limitations, the findings of this study provide insight for future investigation into the determinants of HIV risk for AAMSM. This is the first study to simultaneously examine the relationships between religiosity, spirituality, internalized homonegativity, and condom use among AAMSM. The results indicate that the sociocultural experiences of African-American faith communities have the potential to influence AAMSM's feelings toward their sexuality and, subsequently, their engagement in safer sex behaviors. As such, African-American faith communities can be a powerful venue through which HIV prevention messages can be communicated to AAMSM. Similarly, these results can be used to develop more culturally-specific HIV prevention interventions that incorporate the power and value associated with highly-regarded, highly-influential institutions in African-American communities, namely the Black church. Although the results of the present study provide a unique look into the experiences of AAMSM in the Deep South, there are many opportunities to build upon

this research in order to better understand the factors affecting HIV risk among this disproportionately-affected population, and develop nuanced, evidence-based strategies to reduce risk and promote sexual health.

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CHAPTER V: DISCUSSION

This chapter provides an overview of the results of the SHIFT Study presented in the manuscripts and narrative contained in Chapter 4. This chapter will also examine the implications of these findings, study limitations, and directions for future research.

Conclusions

The SHIFT Study explored three specific aims. The first specific aim examined the factor structure of internalized homonegativity as measured by the Internalized Homonegativity Inventory (IHNI) and its associations with sexual risk behaviors among a sample of AAMSM living in the Deep South. The results showed that, whereas a three-factor solution was found and reported in the original research conducted on the IHNI by Mayfield (2001), a two-factor solution emerged as the most meaningful solution among this sample of AAMSM. All of the items associated with the original “Personal Homonegativity” and “Morality of Homosexuality” subscales loaded onto one factor, while the items associated with the “Gay Affirmation” (GA) subscale remained intact. This finding suggests that internalized homonegativity may be experienced differently among AAMSM in the South than what has been reported in a more white, Midwestern sample. For AAMSM in the SHIFT Study, the personal feelings of negativity toward one’s own homosexuality were not distinguishable from the negative views of homosexuality perceived to be held by the community at-large. This new dimension is described in the results as “Personal & Moral Homonegativity” (PMH).

One way to explore the finding that AAMSM conceptualize internalized homonegativity differently is by taking an intersectional approach, in which the origins of PMH might be interpreted through the history of the African-American experience. Ward (2005) pointed out that African-American men have been portrayed as sexual deviants from the time of slavery through the Jim Crow era, and even into contemporary mainstream media images. African-American men have been continually depicted as hypersexual individuals who are incapable of controlling their sexuality or conforming to puritanical sexual norms (Griffin, 2006). In an effort to resist those depictions and present themselves as worthy of full citizenship, African-Americans developed a more conservative construction of sexuality—one in which heteronormativity and sexual abstinence until marriage were emphasized (Griffin, 2006). These norms were justified by the doctrines promoted by the African-American faith community. As such, anyone who did not conform to these standards was seen as perpetuating the prevailing stereotypes regarding African-American sexuality and, thus, harmful to the African-American quest for full citizenship. Homosexuality, then, became demonized within African-American communities as being unnatural, a threat to African-American families, and to African-American norms of masculinity (Douglas, 1999).

In addition to the multiple stigmas that have surrounded African-American sexuality, African-American life has also been largely characterized by a collective orientation that itself is rooted in the African-American faith community. Patillo-McCoy (1998) talks about the use of African-American church culture in the development and sustainability of secular African-American social movements. Organizations such as the National Association for the Advancement of Colored People (NAACP) were formed out

of African-American Christian faith communities, and reinforced many of the norms that were promoted in those communities. Because of this high level of collective orientation, coupled with the homonegative messages often voiced in African-American families, churches, and communities, it may be difficult for AAMSM to separate their personal feelings toward their sexuality from the sociocultural context in which they live. Therefore, the collective shaming of homosexuality perpetuated in African-American communities becomes fused to the negative ways in which AAMSM experience their own sexuality in unique ways that other racial/ethnic groups of MSM may not experience.

The second specific aim of the SHIFT Study was to examine the relationship between religiosity and spirituality, and their associations with sexual risk behaviors. Results showed that, consistent with the specified hypothesis, religiosity and spirituality were significantly correlated with each other, yet still distinct. This finding concurs with previous research findings (Mattis, 2000). However, religiosity and spirituality were differentially associated with engagement in risky sexual behaviors. Higher religiosity was significantly associated with a lower likelihood of having had sex within 3 hours of using illegal drugs, and with a higher frequency of condom use for insertive anal intercourse. Similarly, those who reported a higher degree of authority afforded to scripture also had a lower likelihood of having had sex with an anonymous partner, and a greater likelihood of having had sex with drugs. Higher spirituality was also associated with a lower likelihood of having had sex within 3 hours of using alcohol and an increased likelihood of using condoms for both insertive and receptive anal intercourse.

These findings paint a complex picture of the ways in which religiosity and spirituality influence AAMSM engagement in risky sexual behaviors.

Despite the negative messages that AAMSM may receive in African-American religious communities, religiosity was associated with less risky sexual behaviors. However, those who assigned greater authority to their sacred texts also reported a significantly higher likelihood of having sex within 3 hours of using illegal drugs. These findings suggest that AAMSM may be able to neutralize some of the correspondent homonegative religious messages they receive (Pitt, 2010; Jeffries, Dodge, & Sandfort, 2008; Miller, 2007; Woodyard, Peterson, & Stokes, 2000). In turn, religiosity could still function as a protective factor for HIV infection. Similarly, higher spirituality was associated with more frequent condom use and a lower likelihood of sex under the influence of alcohol, indicating that spirituality might be one mechanism through which HIV prevention activities can be framed and delivered.

The third specific aim examined religiosity, spirituality, perceived affirmativeness, internalized homonegativity, and condom use. Results indicate that internalized homonegativity, as measured by the two factors identified in Specific Aim 1, is significantly influenced by religiosity and spirituality. However, the two dimensions did not operate in the same way. While spirituality was associated with higher reported GA and lower PMH, religiosity was associated with higher PMH and lower GA. These findings might suggest that while religious commitment and involvement increase experiences of internalized homonegativity, a sense of personal spirituality can serve as a protective factor against internalized homonegativity. These findings are consistent with the results of previous research (Tan, 2005; Balaji, et al., 2012; Woodyard, Peterson, &

Stokes, 2000; Wilkerson, et al., 2012); however, the SHIFT Study is unique in that it examined the relationships simultaneously using a quantitative approach.

The relationships between internalized homonegativity and condom use examined in the SHIFT Study were contrary to expectations. Higher GA subscale scores were associated with a higher frequency of condom use; however, higher PMH scores were also associated with a greater frequency of condom use. The latter finding challenges the notion that negative feelings about one's own homosexuality are associated with higher engagement in risky sexual behaviors (Peterson & Jones, 2009; Stokes & Peterson, 1998). One potential explanation for this finding might be related to stigma- or shame-avoidance strategies. Homosexuality carries a significant stigma among African-Americans that many AAMSM may try to resist or avoid. However, HIV infection also carries a stigma that is not entirely related to homosexuality. It is possible that AAMSM who feel more homonegative might engage in more frequent condom use in order to protect themselves from HIV infection and its concordant stigma. An alternative explanation may be related to the resilience of AAMSM operating within religious organizations. As noted in previous studies, AAMSM have developed a variety of coping strategies to circumvent the homonegative messages they receive from the church (Pitt, 2010; Jeffries, Dodge, & Sandfort, 2008; Miller, 2007; Woodyard, Peterson, & Stokes, 2000). It is also possible that, as more Black churches have begun to engage in HIV prevention discourse and become sites of HIV prevention and care activities, the overarching messages of prevention may outweigh the homonegative messages that may also accompany those messages.

The structural models provided support for the hypothesis that dimensions of internalized homonegativity mediate the relationships between religiosity, spirituality, and condom use. For both insertive and receptive condom use, there was no significant direct effect between religiosity and condom use or spirituality and condom use. However, PMH mediated the relationship between religiosity and both insertive and receptive condom use, and GA mediated the relationship between spirituality and receptive condom use. This suggests that the African-American religious experience, as a sociocultural contextual structure, has the capacity to exert some influence on the individual sexual health behaviors of AAMSM. As such, HIV prevention interventions should not focus solely on individual levels of HIV risk. Rather, interventionists should use a more social-ecological approach to address the structures that may exacerbate or ameliorate the likelihood that AAMSM may engage in risky sexual behaviors.

Finally, it was hypothesized that the perceived affirmativeness of a religious institution/organization would moderate the relationship between religiosity and condom use. This hypothesis was not supported by the results. However, it is important to note that missing data may have reduced our ability to adequately investigate this hypothesis. Due to the amount of missing data on a number of variables included in this analysis, the analytical sample was reduced from 348 to 108 for the insertive regression model and 93 for the receptive regression model. This greatly reduced statistical power and limited our ability to test this hypothesis. Future studies should continue to investigate the relationships between these variables, with attention given to recruiting a large enough sample to preserve sufficient statistical power for analyses.

Limitations

Despite its many strengths, the SHIFT Study is not without its limitations. The sample was a convenience sample, largely drawn from Black Gay Pride events, which are more likely to attract attendees who self-identify as gay, same-gender-loving, or bisexual. Non-gay-identified AAMSM are unlikely to attend such events, largely due to internalized homonegativity and stigma. Therefore, it is possible that the IHNI scores reported may underrepresent actual levels of IH among AAMSM, and the ability to generalize these findings to a larger population of AAMSM is greatly reduced. The sample was also limited according to geography. The study intentionally focused on the Deep South region of the U.S. due to the exceptionally high rates of HIV infection and the lack of attention given to this region in the literature. However, because of the distinct sociohistorical and cultural characteristics of the Deep South within the American experience, generalizability to a larger population of AAMSM is difficult. Despite this geographic limitation, it is worth noting that African-American migration patterns originate in the Deep South, such that African-American communities across the country share common cultural and historical characteristics, particularly the influence of Black faith traditions and norms. (Schulte & Battle, 2004).

This study examined religiosity and spirituality as potential influences on engagement in sexual risk behaviors among AAMSM. It should be noted, however, that while these were treated as exogenous variables in the present study, there are other factors that may affect the levels of religiosity and spirituality reported by AAMSM. For example, family dynamics often play a role in an individual's experiences with religiosity and spirituality, and can also color their interpretations of those experiences. Future

research should examine the influences of family experience (i.e., size, cohesion) on religiosity. Mixed-methods research may allow researchers to explore both the breadth and depth of these dynamics.

Although 348 surveys were collected, in many cases, the analytical sample was much smaller due to missingness. In particular, the last question of the Daily Spiritual Experiences Scale was inadvertently left blank by more than 25% of respondents, which severely reduced the size of the analytical sample for all analyses dealing with spirituality. While multiple imputation was considered as a potential solution to the problem of missing data, a decision was ultimately made to use the smaller data set. In future analyses, multiple imputation may be used to account for missing data in the IHNI, DSES, and RCI-10, as this approach seems better suited for scales measuring latent variables. Also, data collection techniques that rely on technology can be used to minimize or eliminate the challenge of missingness—for example, the use of electronic tablets to collect data that will not allow respondents to skip questions.

Finally, this study is a cross-sectional study that relied on self-reported data. As such, respondents' recall of their engagement in the sexual behavior outcomes may not have been accurate. Also, because the study asked respondents to report sensitive information about sexual behaviors, social desirability bias could have affected the results. However, this bias may have been mitigated by the fact that the surveys were completed anonymously.

Implications for Public Health and Future Research

Despite its limitations, the findings of this study provide insight for future investigation into the determinants of HIV risk for AAMSM. Results suggest that

internalized homonegativity can be a significant predictor of AAMSM engagement in condom use during anal intercourse. Future HIV prevention interventions should explore the ways in which psychosocial factors, including internalized homonegativity, affect the decisions that AAMSM make regarding their sexual health. However, before interventionists can effectively incorporate these issues into their interventions, they should acknowledge the ways in which certain factors may function differently amongst different populations. For example, the unique social, historical, and cultural aspects of the African-American experience must be taken into account in order to speak specifically to individuals finding themselves at the intersection of being African-American and MSM. One strategy for accomplishing this would be to incorporate sociocultural discussions and critiques into HIV prevention interventions for AAMSM. In addition to traditional intervention strategies (e.g., increasing HIV transmission knowledge, building condom use and negotiation skills), HIV prevention interventions for AAMSM can also include discussion sessions in which AAMSM's feelings toward their sexuality can be discussed, and the origins of those feelings can be identified and interrogated in a safe environment. Such discussion could promote a greater sense of acceptance of one's sexuality, and could lead to healthier sexual behavior decision-making.

The findings related to the indirect associations between religiosity, spirituality, and condom use can also be useful in developing HIV prevention interventions at various levels of influence, including individual and structural levels. Spirituality was found to have an indirect positive influence on frequency of condom use through gay affirmation, suggesting that efforts to help AAMSM cultivate a stronger personal sense of spirituality

could lead them to engage in safer sex behaviors. Cultivating personal spirituality could also provide resilience against the negative messages about homosexuality that AAMSM frequently encounter in African-American communities, particularly African-American faith communities. Also, religiosity was found to have a positive association with personal & moral homonegativity, which is considered to be a negative mental health outcome. This information could help to inform a new discourse on AAMSM holistic health within African-American faith communities, and perhaps lead to the development of structural interventions that challenge faith communities to think critically about the impact of homonegative messages on their AAMSM constituents.

The SHIFT Study is one of the first studies to simultaneously examine the relationships between religiosity, spirituality, internalized homonegativity, and condom use. The results indicate that the sociocultural experiences of African-American faith communities have the potential to influence AAMSM's feelings toward their sexuality and, subsequently, their engagement in safer sex behaviors. As such, African-American faith communities can be a powerful venue through which HIV prevention messages can be communicated to AAMSM. Similarly, these results can be used to develop more culturally-specific HIV prevention interventions that incorporate the power and value associated with highly-regarded, highly-influential institutions in African-American communities, namely the Black church. Although the results of the present study provide a unique look into the experiences of AAMSM in the Deep South, there are many opportunities to build upon this research in order to better understand the factors affecting HIV risk among this disproportionately-affected population, and develop nuanced, evidence-based strategies to reduce risk and promote sexual health.

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APPENDIX A—SURVEY

Office Use Only

Date _____

Data Collector _____

Participant ID# _____

Recruitment Type: 1 2 3

Attempts before a “yes”: _____

Sexual Health in Faith Traditions (SHIFT) Study Survey Screener

Data Collector Use Only

Prior to administering the survey to a potential participant:

- Is the participant a Black or African-American man? Yes No
- Is the participant at least 18 years old? Yes No
- Does the participant live in one of these states: Alabama, Georgia, Louisiana, Mississippi, North Carolina, or South Carolina? Yes No

If the answers are “yes” to all of the previous questions:

- Does the participant consider himself gay, bisexual, or same-gender-loving? Yes No
- Has the participant had sex (oral, anal) with a man in the last 12 months? Yes No

If the answer is “yes” to at least one of the previous two questions:

- Has the participant taken this survey before? Yes No

If the answer is “no,” then the participant is eligible to participate in the study.

Sexual Health in Faith Traditions (SHIFT) Study

Thank you for completing this survey. Please answer each question as honestly as possible. For questions with multiple-choice answers, please put an X in the box next to the response that BEST fits you. If you do not wish to answer a question, you may leave it blank. There are no right or wrong answers to these questions; we are interested in what you think and how you feel. If you have any questions about the survey, please ask the team member who gave it to you. When you are done, you may turn it in to the team member. Thank you!

- CHECK HERE FOR INFORMED CONSENT:** I have been given a complete explanation about this research study. I have had the opportunity to ask questions and have my questions answered to my satisfaction. I freely give my consent to participate.

The first set of questions is about you.

1. What is your age? _____
2. In what state do you live? AL GA LA MS NC SC
 - 2a. In what **COUNTY** do you live? _____
3. What is the highest level of education you have **completed**?
 - Eighth grade or lower
 - Some high school, but no diploma
 - High school diploma or GED
 - Some college but no degree
 - Associate's degree
 - Bachelor's degree
 - Some graduate school but no advanced degree
 - Advanced degree (Master's or Doctoral degree)
4. What is your annual (yearly) income?
 - Less than \$10,000
 - \$10,000 - \$24,999
 - \$25,000 - \$39,999
 - \$40,000 - \$49,999
 - \$50,000 - \$74,999
 - \$75,000 - \$99,999
 - \$100,000 or more
5. Which of these best describes your current relationship status?
 - Single
 - Dating
 - Married/long-term relationship with a man
 - Married/long-term relationship with a woman
 - Separated
 - Widowed

The next set of questions is about your religious beliefs. Please choose only one answer per question.

6. What religion, if any, do you consider yourself a part of?

- Christianity (if "yes," go to Question 6a)
- Judaism
- Islam
- Buddhism
- Hinduism
- Confucianism
- Atheist
- Agnostic
- Other (please specify) _____

6a. If you chose "Christianity" above, to what denomination do you belong?

- Catholic
- Lutheran
- Anglican
- Baptist
- Methodist
- African Methodist Episcopal (AME)
- Christian Methodist Episcopal (CME)
- Church of God in Christ
- Apostolic
- Pentecostal
- Non-denominational
- Other (please specify) _____

7. How often do you attend church or other religious meetings?

- More than once a week
- Once a week
- A few times a month
- A few times a year
- Once a year or less
- Never

8. How often do you spend time in **private** religious activities, such as prayer, meditation, or private Bible study?

- More than once a day
- Daily
- Two or more times per week
- Once a week
- A few times a month
- Rarely or never

9. In general, how accepting of homosexuality is your church or religious group?

- Not accepting at all
- Somewhat accepting
- Mostly accepting
- Completely accepting
- I do not belong to a church or religious group

The following questions are also about your religious beliefs.

Read each of the following statements. Using the scale to the right, **CIRCLE** the response that best describes how true that statement is for you.

| | Not at all true of me | Somewhat true of me | Moderately true of me | Mostly true of me | Totally true of me |
|--|--------------------------|------------------------|--------------------------|-------------------------|-----------------------|
| 1. I often read books and magazines about my faith. | 1 | 2 | 3 | 4 | 5 |
| 2. I make financial contributions to my religious organization. | 1 | 2 | 3 | 4 | 5 |
| 3. I spend time trying to grow in understanding of my faith. | 1 | 2 | 3 | 4 | 5 |
| 4. Religion is especially important to me because it answers many questions about the meaning of life. | 1 | 2 | 3 | 4 | 5 |
| 5. My religious beliefs lie behind my whole approach to life. | 1 | 2 | 3 | 4 | 5 |
| 6. I enjoy spending time with others of my religious affiliation. | 1 | 2 | 3 | 4 | 5 |
| 7. Religious beliefs influence all my dealings in life. | 1 | 2 | 3 | 4 | 5 |
| 8. It is important to me to spend periods of time in private religious thought and reflection. | 1 | 2 | 3 | 4 | 5 |
| 9. I enjoy working in the activities of my religious affiliation. | 1 | 2 | 3 | 4 | 5 |
| 10. I keep well informed about my local religious group. | 1 | 2 | 3 | 4 | 5 |
| 11. I believe the scriptures of my faith are completely true. | 1 | 2 | 3 | 4 | 5 |
| 12. I think it is important to obey my faith's scripture. | 1 | 2 | 3 | 4 | 5 |
| 13. My faith's scriptures have practical value in the modern world. | 1 | 2 | 3 | 4 | 5 |

The following questions are about your spirituality.

The list that follows includes items which you may or may not experience. Please consider how often you directly have this experience, and try to disregard whether you feel you should or should not have these experiences. A number of items use the word God. If this word is not a comfortable one for you, please substitute another idea which calls to mind the divine or holy for you. Read each of the following statements. Using the scale below, CIRCLE the response that best describes how true that statement is for you.

| | Never or almost never | Once in a while | Some days | Most days | Every day | Many times a day |
|---|-----------------------|-----------------|-----------|-----------|-----------|------------------|
| 1. I feel God's presence. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. I experience a connection to all life. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. During worship, or at other times when connecting with God, I feel joy, which lifts me out of my daily concerns. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. I find strength in my spirituality. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. I find comfort in my spirituality. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. I feel deep inner peace or harmony. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. I ask for God's help in the midst of daily activities. | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. I feel guided by God in the midst of my daily activities. | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. I feel God's love for me, directly. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. I feel God's love for me through others. | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. I am spiritually touched by the beauty of creation. | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. I feel thankful for my blessings. | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. I feel a selfless caring for others. | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. I accept others even when they do things I think are wrong. | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. I desire to be closer to God or in union with Him. | 1 | 2 | 3 | 4 | 5 | 6 |

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16. In general, how close do you feel to God?

- Not close at all
- Somewhat close
- Very close
- As close as possible

The following questions will ask your opinions about homosexuality.

Read each of the following statements. On a scale from 1 (Strongly Disagree) to 6 (Strongly Agree), CIRCLE the response that best describes the extent to which you agree with each statement.

| | Strongly Disagree | | | | | Strongly Agree |
|---|-------------------|---|---|---|---|----------------|
| 1. I believe being gay is an important part of me. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. I believe it is OK for men to be attracted to other men in an emotional way, but it's not OK for them to have sex with each other. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. When I think of my homosexuality, I feel depressed. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. I believe that it is morally wrong for men to have sex with other men. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. I feel ashamed of my homosexuality. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. I am thankful for my sexual orientation. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. When I think about my attraction towards men, I feel unhappy. | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. I believed that more gay men should be shown in TV shows, movies, and commercials. | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. I see my homosexuality as a gift. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. When people around me talk about homosexuality, I get nervous. | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. I wish I could control my feelings of attraction toward other men. | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. In general, I believe that homosexuality is as fulfilling as heterosexuality. | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. I am disturbed when people can tell I'm gay. | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. In general, I believe that gay men are more immoral than straight men. | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. Sometimes I get upset when I think about being attracted to men. | 1 | 2 | 3 | 4 | 5 | 6 |
| 16. In my opinion, homosexuality is harmful to the order of society. | 1 | 2 | 3 | 4 | 5 | 6 |
| 17. Sometimes I feel that I might be better off dead than gay. | 1 | 2 | 3 | 4 | 5 | 6 |
| 18. I sometimes resent my sexual orientation. | 1 | 2 | 3 | 4 | 5 | 6 |
| 19. I believe it is morally wrong for men to be attracted to each other. | 1 | 2 | 3 | 4 | 5 | 6 |
| 20. I sometimes feel that my homosexuality is embarrassing. | 1 | 2 | 3 | 4 | 5 | 6 |
| 21. I am proud to be gay. | 1 | 2 | 3 | 4 | 5 | 6 |
| 22. I believe that public schools should teach that homosexuality is normal. | 1 | 2 | 3 | 4 | 5 | 6 |
| 23. I believe it is unfair that I am attracted to men instead of women. | 1 | 2 | 3 | 4 | 5 | 6 |

The next set of questions will ask about your sexual behaviors and sexual partners.

1. Have you ever had sex? (“Sex” includes oral, vaginal, and anal sex.)
 - Yes
 - No (If “no,” skip to Question #11)

2. Have you ever had sex with a man? (“Sex” includes oral, vaginal, and anal sex.)
 - Yes
 - No

3. How old were you the first time you had sex with a man? _____ N/A
 - 3a. The first time you had sex with a man, was it consensual?
 - Yes
 - No
 - Don’t know

4. In the past 12 months, how many sexual partners have you had? _____
 - How many were male? _____
 - How many were female? _____

5. In the past 3 months, how many sexual partners have you had? _____
 - How many were male? _____
 - How many were female? _____

6. In the past 3 months, have you had 2 or more sexual relationships that overlapped in time?
 - Yes
 - No

7. In the past 3 months, how often have you used condoms or barrier protection when penetrating another man (“topping”)?
 - Every time
 - Most times
 - Some times
 - Never
 - I have not done this in the past 3 months

8. In the past 3 months, how often have you used condoms or barrier protection when being penetrated by another man (“bottoming”)?
 - Every time
 - Most times
 - Some times
 - Never
 - I have not done this in the past 3 months

9. In the past 3 months, have you had sex with **someone** who was...

| | Yes | No | Don't Know |
|--|--------------------------|--------------------------|--------------------------|
| ...an injection drug user? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ...HIV-positive? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ...anonymous (you didn't know the person)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ...exchanging sex for money, drugs, or food? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

10. In the past 3 months, have **you** had sex...

| | Yes | No | Don't Know |
|---|--------------------------|--------------------------|--------------------------|
| ...within 3 hours of using alcohol? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ...within 3 hours of using illegal drugs (marijuana, cocaine, crack, ecstasy, crystal meth, or heroin)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ...with someone you met on the Internet? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ...in exchange for money, drugs, or food? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

11. In the last 12 months, have you been tested for HIV?

- Yes
- No

12. Have you **ever** tested positive for HIV?

- Yes
- No
- I have never been tested for HIV.

The last set of questions will ask about your identity.

13. How do you describe yourself?

- Gay/Homosexual
- Same-Gender-Loving
- Bisexual
- Straight/Heterosexual
- Other (please specify) _____

14. Which statement best describes you?

- Extremely masculine
- Masculine
- Equally masculine and feminine
- Feminine
- Extremely feminine

You have reached the end of the survey. Thank you for participating!

APPENDIX B—IRB APPROVAL LETTER



OFFICE OF RESEARCH COMPLIANCE

June 15, 2011

Mr. Stacy Smallwood
Arnold School of Public Health
Health Promotion, Education, & Behavior
800 Sumter Street
Columbia, SC 29208

Re: **Pro00011451**

Study Title: *Understanding the Relationships Between Religiosity, Spirituality, Internalized Homonegativity, and Sexual Risk Behaviors among African-American Men who Have Sex with Men: The Sexual Health in Faith Traditions (SHIFT) Study*

FYI: University of South Carolina Assurance number: FWA 00000404 / IRB Registration number: 00000240

Dear Mr. Smallwood:

In accordance with 45 CFR 46.101(b)(2), the referenced study received an exemption from Human Research Subject Regulations on **6/15/2011**. No further action or Institutional Review Board (IRB) oversight is required, as long as the project remains the same. However, you must inform this office of any changes in procedures involving human subjects. Changes to the current research protocol could result in a reclassification of the study and further review by the IRB.

Because this project was determined to be exempt from further IRB oversight, consent document(s), if applicable, are not stamped with an expiration date.

Research related records should be retained for a minimum of three years after termination of the study.

If you have questions concerning the IRB process, please contact Arlene McWhorter at arlenem@mailbox.sc.edu or (803) 777-7095.

Sincerely,

A handwritten signature in black ink, appearing to read "Thomas A. Coggins".

Thomas A. Coggins
Director

cc: Sharon M. Spencer

University of South Carolina-Columbia, South Carolina – 803/777-7095 – Fax 803/576-5589

APPENDIX C—FLYER

Let Your Voice Be Heard.

The Sexual Health in Faith Traditions (SHIFT) Study

Are you:

* **An African-American man who has sex with men?**

* **Age 18 or older?**

* **Living in the Deep South?**

(Alabama, Georgia, Louisiana, Mississippi, North Carolina, South Carolina)

Take the survey!

The SHIFT Study is designed to help us understand how religion, spirituality, and internalized homophobia influence the sexual health of African-American men who have sex with men in the Deep South.



THE SHIFT STUDY

This anonymous survey takes only 10 minutes to complete, but the information you can provide is important. If you would like to complete the survey, or if you know someone who might be interested, please contact Stacy W. Smallwood by phone at (252) 506-9586, or by email at smallwos@mailbox.sc.edu.

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It's time for a SHIFT!

This survey is part of a dissertation study in the Department of Health Promotion, Education, & Behavior
Arnold School of Public Health
University of South Carolina
Columbia, South Carolina

