



# Risk and Protective Factors for Sexual Health Outcomes Among Black Bisexual Men in the U.S.: Internalized Heterosexism, Sexual Orientation Disclosure, and Religiosity

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## Abstract

Bisexual individuals are oftentimes at higher risk for negative sexual health outcomes compared to their heterosexual, gay, and lesbian counterparts. Racial minorities, who may experience double minority stress, may be at particular risk for a sexually transmitted infection (STI) and HIV. Some studies have considered protective factors that ameliorate negative health outcomes; yet, few focus on especially vulnerable populations. We analyzed a sample of 225 Black bisexual men ( $M_{\text{age}} = 36$  years,  $SD = 12$ ) from Atlanta to explore how combinations of risk (internalized heterosexism) and protective (sexual identity disclosure to community, disclosure to family, and religiosity) factors were related to sexual health outcomes post-baseline during a 1-year follow-up period: any self-reported STI, chlamydia/gonorrhea diagnosis, and HIV diagnosis. We used probability profiling methodology to report the probabilities that a Black bisexual man would report an STI or HIV diagnosis with various combinations and profiles of risk/protective factors. We found that higher levels of internalized heterosexism were significantly related to higher odds of all sexual health outcomes. Disclosure to community was related to much lower risk of all outcomes, whereas disclosure to family was associated with lower odds of self-reported STIs over time. Religiosity was related to lower odds of diagnosis of STIs/HIV, but not self-reported STIs. Our findings have implications for interventions that address internalized heterosexism and protective factors, especially among racial and sexual minorities. Interventions are needed for Black bisexual men that will leverage specific strategies for support to reduce their risk of negative sexual health outcomes.

**Keywords** Sexual health · Sexuality disclosure · HIV · Sexual orientation · Black MSM

## Introduction

Black gay and bisexual men consistently account for the largest number of HIV infections each year (CDC, 2015). Though this is a burgeoning area of research with growing opportunities for national funding to reduce negative sexual health outcomes [e.g., HIV and/or sexually transmitted infections (STIs)], very little attention has been paid to bisexual men in particular, especially bisexual men of color (Crawford, Allison, Zamboni, &

Soto, 2002; Malebranche, Arriola, Jenkins, Dauria, & Patel, 2010; Santos, Williams, Rodriguez, & Ornelas, 2017; Zamboni & Crawford, 2007). In fact, research that specifically focuses on health among bisexual men—disaggregated or separate from those who identify as gay, lesbian, or heterosexual—is limited; many samples are small or insufficient, and as a result, bisexual participants are oftentimes collapsed into one “sexual minority” subgroup (Brewster & Moradi, 2010; Dodge, Sandfort, & Firestein, 2007). Thus, there is inadequate understanding of how important nuances in experiences, such as how risk and protective factors uniquely and/or in combination with each other, might relate to sexual health outcomes of those who identify as bisexual.

Some research suggests that bisexual individuals have worse health outcomes compared to gay and lesbian individuals (see Ross et al., 2018 for a systematic review and meta-analysis), which is oftentimes a result of heterosexism (i.e., prejudice against sexual minority individuals based on the assertion that being “heterosexual” is “normal”) and less support from friends

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and family members (Crawford, Allison, Zamboni, & Soto, 2002; Dodge et al., 2007; Jorm, Korten, Rodgers, Jacomb, & Christensen, 2002; Pollitt, Muraco, Grossman, & Russell, 2017; Roberts, Horne, & Hoyt, 2015). The relationship between heterosexism and health is in part enhanced for bisexual people because heterosexual and gay/lesbian communities can stigmatize bisexuality as an invalid identity; bisexual individuals are sometimes regarded as possessing an *invisible identity* (Roberts et al., 2015). We know very little about how communities of color (e.g., Black bisexual men) might view bisexual identity given differences in community (interpersonal relationships, religious) acceptance and understanding of sexual identity. It is meaningful to investigate bisexual men of color given these different community expectations and unique health concerns, such as high rates of HIV (CDC, 2015). More research is needed to examine the extent to which bisexual individuals may differ on health outcomes from other subgroups of sexual minorities.

Historically, bisexual individuals have experienced doubt from monosexual individuals about whether or not bisexuality is a “true” or valid identity (Bostwick & Hequembourg, 2014; Burlison, 2005; Dodge, Reece, & Gebhard, 2008b; Flanders, Dobinson, & Logie, 2017; Israel & Mohr, 2004). Termed biphobia (Bradford, 2004), this invalidity may be related to some of the unique experiences of prejudice and discrimination that bisexual individuals encounter compared to those who identify as lesbian or gay (Brewster & Moradi, 2010). For example, results from a large-scale telephone survey found that heterosexual men and women reported more negative attitudes toward bisexual individuals compared to other groups, such as lesbian women, gay men, and racial/ethnic minorities (Herek, 2002). In some studies, bisexual individuals have been viewed as less trustworthy, less psychologically stable, and more likely to carry and transmit STDs compared to other sexual minority identities (Eliason, 2001; Israel & Mohr, 2004). Research suggests that this discrimination, which bisexual people receive from both heterosexual people and gay men and lesbians (Roberts et al., 2015), can be internalized by bisexual people in the form of internalized heterosexism/binegativity (Dworkin, 2002). Internalized heterosexism has been shown to be related to health, including alcohol use (Molina et al., 2015) and mental health (Bostwick & Hequembourg, 2014; Dyar, Feinstein, & London, 2014; Lambe, Cerezo, & O’Shaughnessy, 2017), and may be related to sexual health outcomes.

Given their minority race and sexual orientation, Black bisexual men can be understood as *double minorities* (Calabrese, Meyer, Overstreet, Haile, & Hansen, 2015; Zamboni & Crawford, 2007), and issues related to their status as both a racial and sexual minority have the potential to greatly affect sexual and mental health risk (Bostwick et al., 2014; Millett, Peterson, Wolitski, & Stall, 2006). Relatedly, Black gay and bisexual men are the most at-risk group for HIV infection (CDC, 2015). In efforts to better understand how to protect against negative health outcomes for bisexual men, we use probability profiling

to focus on several risk and protective factors for sexual health outcomes in a sample of Black bisexual men: internalized heterosexism, disclosure of sexual orientation, and religiosity.

## Internalized Heterosexism

Internalized heterosexism involves internal struggle and negativity toward one’s minority sexual identity (Szymanski, Kashubeck-West, & Meyer, 2008); for example, an individual with high internalized heterosexism may wish they were not a queer person and might wish they only had heterosexual attractions. Oftentimes, these feelings are attributed to stigma and discrimination—such negative experiences oftentimes limit bisexual individuals’ ability to find support, subsequently resulting in bisexual individuals having to develop their identity in isolation (Firestein, 2007). Specific to bisexual individuals, these experiences could lead to “internalized binegativity,” defined as internalized negative societal beliefs and attitudes regarding one’s bisexuality (Roberts et al., 2015; Sarno & Wright, 2013). Internalized heterosexism (and specially, binegativity) is related to a compromised sense of well-being and health for many bisexual individuals (see Barnes & Meyer, 2012; Herek, Cogan, Gillis, & Glunt, 1998; Meyer, 1995; Meyer & Dean, 1998; Paul, Smith, Mohr & Ross, 2014). For example, research has shown that higher levels of internalized sexual minority stigma reported by bisexual men were related to taking more sexual health risk behaviors (Emler, Fredriksen-Goldsen, Kim, & Hoy-Ellis, 2017). Despite attraction to other genders, bisexual individuals may internalize heterosexism in a different way than individuals part of a “gay” versus “heterosexual” binary.

## Sexual Orientation Disclosure as a Protective Factor

It is well documented that “coming out” is an important developmental milestone for sexual minorities, as it is oftentimes critical to a positive sense of self (Cain, 1991; Ryan, Legate, & Weinstein, 2015) and may indicate that one has overcome personal shame and devaluation. Individuals who have disclosed their sexual identities (or are “out”) are likely to report lower levels of internalized heterosexism/homophobia (see Frost & Meyer, 2009). Researchers have linked disclosure with better well-being and mental health, decreased substance abuse, and a positive and more stable self-concept (McGarrity & Huebner, 2014; Morris, Waldo, & Rothblum, 2001; Pachankis & Goldfried, 2006). However, research has found that sexual minority individuals, including bisexual people, often conceal their sexual identities (Cole, 2006; Scherrer, Kazyak, & Schmitz, 2015) because they fear losing family members, community status, jobs, and female partners due to negative stereotypes about same-sex behavior (D’Augelli, Hershberger, & Pilkington, 1998; Dodge, Jeffries, & Sandfort, 2008a; Friedman, Marshal, Stall, Cheong, & Wright, 2008; McGarrity & Huebner, 2014).

Bisexual people may miss out on these positive outcomes because they are less likely to disclose than lesbians and gay men, which is associated with poorer mental health (McGarrrity & Huebner, 2014; Morris et al., 2001; Pachankis & Goldfried, 2006; Ryan, Legate, Weinstein, & Rahman, 2017) and, importantly for sexual health, less awareness of HIV prevention techniques (Watson, Fish, Allen, & Eaton, 2017a) than their gay and lesbian counterparts. Moreover, Black sexual minority individuals are less likely to disclose their sexual identity compared to White sexual minorities (Groves, Bimbi, Nanín, & Parsons, 2006; Rosario, Schrimshaw, & Hunter, 2004); thus, the health outcomes of Black bisexual men, at the intersection of these identities, may be particularly compromised by lack of disclosure.

### Religiosity/Spirituality as a Protective Factor

Efforts to contend with stigma and biphobia, and make decisions about one's sexual orientation disclosure, are sometimes done so through religious and spiritual means—which oftentimes take form through prayer and belief in a higher being (Jeffries, Dodge, & Sandfort, 2008). Some religious environments have been found to contribute to positive self-identity among sexual minority people (Barnes & Meyer, 2012). One's relationship with God may serve as a source of resiliency or risk depending on the perception of support from one's religious institution (Dahl & Galliher, 2010; Halkitis et al., 2009). Scholars who have studied sexual minorities and religion have emphasized spirituality and positive personal relationships with God as being related to positive well-being (e.g., lower internalized homophobia and better mental health outcomes; Henrickson, 2007). Specific to Black communities, religiosity is oftentimes understood as a significant source of support and well-being, and involvement and identification with religion is extremely high among Black individuals in the U.S. (Foster, Arnold, Rebchook, Kegeles, 2011; Jeffries et al., 2008). Black men are more likely than their White counterparts to say that religion is *very important* to them (Barnes & Meyer, 2012).

It must be acknowledged that religion may pose a significant conflict for some and may not serve as protective factors for all Black bisexual men (Haile, Padilla, & Parker, 2011; Smith, Simmons, & Mayer, 2005), especially given that the church plays a large role in Black community. Some religious environments in the U.S. do not affirm same-sex attractions, relations, or behavior, which can in turn lead to higher levels of internalizing problems, depressive symptoms, and less psychological well-being (Barnes & Meyer, 2012). Some contemporary research has found clear negative associations between religiosity and loneliness, internalized homonegativity, and low condom efficacy among bisexual men of color (Severson, Muñoz-Laboy, & Kauffman, 2014). Despite some research that has found increased commitment and participation in traditional religious activities are not typically associated with better health

outcomes (Barnes & Meyer, 2012; Dahl & Galliher, 2010; Jeffries et al., 2008; Lease, Horne, & Noffsinger-Frazier, 2005), we explore whether religious environments for vulnerable populations might serve as protective factors given that personal relationships with God are sometimes maintained and help one to contend with their HIV status, personal senses of empowerment, and coping with adversity (Foster et al., 2011).

### Current Study

Given Black gay and bisexual men are a highly at-risk group for negative sexual health outcomes, more research is needed to better understand the factors associated with this elevated risk. Many scholars have analyzed direct effects of risk factors on health outcomes; yet, fewer have investigated the interplay between risk and protective factors for vulnerable individuals. To fill this gap and further the scholarship around bisexuality and sexual health outcomes, we predicted whether baseline reports of risk (internalized heterosexism) and protective (sexual identity disclosure to community, disclosure to family, and religiosity) factors predicted STIs and disease 3, 6, or 12 months post-baseline: any self-reported STI, diagnosed with chlamydia/gonorrhea, and diagnosed with HIV. To do this, we used probability profiling methodology to report the probabilities that a Black bisexual man would report negative sexual health outcomes (measured during a 1-year follow-up period post-baseline) with various combinations and profiles of risk/protective factors (measured at baseline).

## Method

### Participants and Procedure

All procedures were approved by the University of Connecticut's ethics board. We used a sample of 225 Black bisexual men ( $M_{\text{age}} = 35.68$  years;  $SD = 12.43$ ) from Atlanta, Georgia. These Black bisexual men were enrolled in a larger study of Black men who have sex with men (including gay, bisexual, heterosexual, and same gender loving men;  $N = 549$ ), aimed at reducing the prevalence of sexual risk among high risk populations through an intervention that targeted sero-adaptive beliefs; all participants reported being HIV-negative/unknown status. The intervention primarily targeted Black men and transgender women who reported at least two male sex partners and had any condomless anal sex in the past year. Specifically, information about sero-adaptive behaviors (e.g., sero-sorting, negotiated safety, consensual non-monogamy) was given to participants. No components of the intervention addressed measures included in the current study. The inclusion criteria for the larger study were: a report of engagement in condomless anal intercourse (receptive or penetrative) with a male partner in the past year, being at least 18 years of age, and reporting a male or

transgender female identity. In the current study, we excluded participants who reported a bisexual and transgender identity ( $n = 18$ ) because it is not clear whether the experiences explored in this paper were unique to gender identity or sexual identity.

Participants were recruited using online social media platforms, and in person at parks, bathhouses, and bars. All participants were screened by recruiters who were themselves part of the Black sexual minority community. When recruiters deemed participants eligible, they were invited to an in-person appointment and provided written consent. Surveys were administered via Audio Computer-Assisted Self-Interviewing (ACASI) software. Next, participants were tested for HIV (OraQuick HIV 1/2 antibody testing), and then provided \$30 for their participation.

## Measures

### Sociodemographic Variables

At baseline assessment, participants reported their age and gender identity (“male,” “female,” and “transgender female”).

### Sexual Orientation

At baseline assessment, participants were asked “How would you describe your sexual orientation?” Response options included “same gender loving,” “gay/homosexual,” “bisexual,” and “heterosexual.” We included participants who identified as bisexual in this study.

### Internalized Heterosexism

In an adapted version of Meyer’s (1995) Internalized Homophobia Scale, four items were averaged to measure internalized heterosexism at baseline assessment. The four items were, “I try not to be attracted to men in general,” “I would accept the chance to be completely heterosexual,” “I feel alienated for being attracted to men,” and “I wish I did not want to have sex with men.” Response options ranged from 1 (strongly disagree) to 6 (strongly agree); higher scores indicate higher levels of internalized heterosexism. In this study, Cronbach’s alpha for these four items was 0.81.

### Family and Community Disclosure

To assess whether participants had disclosed their sexual orientation to their family and/or community at baseline, two separate items asked, “Thinking about your family (community), how ‘out’ are you about your sexuality?” Response options were 0 (definitely closeted—not open about sexual orientation), 1 (closeted some of the time and out some of the time), and 2 (definitely out—open about sexual orientation all of the time).

Higher scores indicated that participants had disclosed their sexual identities to more community/family members.

### Religiosity

Religiosity was measured by three items at baseline. Two items asked participants, “How often do you attend religious services?” and “Besides religious services, how often do you take part in other activities at a place of worship?” Response options for both items ranged from 0 (never) to 5 (more than once a week); scores were averaged, and one score from 0 to 5 was produced where higher scores indicated more religiosity. This mean score was added to another item that asked participants, “To what extent do you consider yourself a religious person?” Response options to this question ranged from 0 (not at all religious) to 3 (very religious). Religiosity scores ranged from 0 (not religious at all) to 8 (most religious). In this study,  $\alpha = 0.77$ .

### HIV and STI Lab Results

Over a 1-year follow-up period post-baseline, sexual health outcome variables were measured by laboratory tests conducted by the study investigators. Individuals were diagnosed HIV positive or negative, and positive or negative for chlamydia and gonorrhea. Results at 3-, 6-, and 12-month follow-up periods were combined such that if a positive test result was reported at any time period, participants were coded as HIV/STI positive 1 year later. This project reports only data from participants who provided valid responses to each item at each follow-up survey.

### Self-Reported STI

Over a 1-year follow-up period post-baseline, four items assessed whether participants self-reported one of the following STI: chlamydia, gonorrhea, syphilis, or genital warts. Specifically, participants were asked, “In the past 3 months have you been diagnosed or treated for chlamydia; gonorrhea; syphilis; genital warts.” If participants responded “yes” to any of these items 3, 6, or 12 months post-baseline, and provided valid responses to each item at each follow-up survey, they were coded as self-reporting an STI after initial assessment.

### Statistical Analysis

We used SPSS version 22 for all statistical models. We utilized probability profiling methodology (see Pettingell et al., 2008; Veale, Peter, Travers, & Saewyc, 2017; Watson et al., 2017a) to examine the relation between risk and protective factors and sexual health outcomes for Black bisexual men.

Probability profiles use the results from multivariate logistic regression models to estimate the *probability* of an individual experiencing particular outcomes (e.g., HIV) given high or low levels of particular risk (e.g., internalized heterosexism) and protective factors (e.g., disclosure of sexual orientation to community and/or family). In this study, these *profiles* illustrate combinations of multiple risk and protective factors and represent the probability that an individual of a particular group (e.g., a participant in our study that reports high internalized heterosexism, not disclosing their sexual identity, and less religiosity) might report being HIV/STI positive.

Probability profiling is valuable because it provides insight into how multiple patterns of co-occurring risk and protective factors are related to health outcomes (e.g., sexual health experiences). Previous research has found utility in probability profiling: Veale et al. (2017) found that the probability of suicidality among transgender youth in Canada was highest when participants reported high enacted stigma and reported low levels of family connectedness and caring friends. In a similar study, Watson, Veale, and Saewyc (2017b) found that lower enacted stigma and higher levels of social support predicted lower probabilities of engaging in disordered eating behaviors among transgender young adults in Canada. In both studies, nuances in various patterns of health behaviors were disentangled by considering varying occurrences of risk and protective factors.

The first step of probability profiling involves conducting a series of individual logistic regressions that test age-adjusted associations between sexual health outcomes (measured at 12 months post-baseline) and the risk/protective factors of internalized heterosexism, disclosure of sexual identity to community and/or family, and religiosity (measured at baseline). Each of these risk/protective factors was rescaled from 0 to 1 to produce a common metric in which to compare the strength of effects on sexual health outcomes. For example, the odds of self-reporting an STI at the 12-month follow-up assessment were calculated as a function of a single risk/protective factor (e.g., religiosity). Risk or protective factors that were either significantly associated with a sexual health outcome or predicted a sexual health outcome at odds ratios of lower than 0.5, a cutoff that has been determined to be a strong effect size appropriate for this type of analysis (see Rubenstein, Heeren, Housman, Rubin, & Stechler, 1989), were included in subsequent multivariate logistic models. The parameter estimates resulting from multivariate logistic regression models, which predicted each sexual health outcome with significant risk and protective factors, were then used to calculate probability profiles.

The parameter estimates from logistic regression models determined risk profiles of sexual health outcomes for bisexual men. Sexual health probabilities comprised of different combinations of *low and high levels* (the 10th and 90th percentile) of the risk and protective factors were calculated using Microsoft Excel. To do this, we calculated the “high” and “low” version

of risk and protective factors (frequencies of the 10th and 90th percentiles were calculated). These profiles, along with the beta coefficients from the multivariate logistic regression models, were used to calculate a probability that a participant would engage in a sexual risk behavior given a particular combination of risk and protective factors. For example, the 90% percentile of the “religiosity” score was 7.4 (the variable ranged from scores of 0–8); this percentile was used to capture participants high in our construct of religiosity, which was then multiplied by the beta coefficient related to the other measures included in the multivariate logistic regression model for each sexual health outcome.

## Results

Sample characteristics are presented in Table 1. The prevalence of reported STIs varied: 31% of the sample of Black bisexual men self-reported any STI, 24% were diagnosed with chlamydia/gonorrhea, and 4% tested positive for HIV (see Table 1). Nearly half (46.7%) of participants were not out to their families, but fewer had not disclosed their sexual identities to their communities (29.3%). About two-thirds of the sample considered themselves at least fairly religious.

Table 2 presents the results from both the univariate and bivariate models. The first step of probability profiling is to determine individual associations between risk/protective factors and sexual health outcomes (presented in the column labeled “Bivariate model” in Table 2). In these bivariate models, we found internalized heterosexism was significantly related to higher rates of STI and HIV reports for all outcomes. For example, those who reported higher levels of internalized heterosexism were 2.03x the odds more likely to test positive for HIV. Because the risk factor (internalized heterosexism) was significantly predictive of STI/HIV diagnosis, it was included in our three multivariate models that tested self-reported STIs and diagnoses of chlamydia/gonorrhea and HIV. Two protective factors were significantly related to each outcome, but different protective factors were predictive in certain circumstances. Disclosure of sexual identity to both community and friends was related to lower odds of self-reporting an STI, and thus, both variables were included in multivariate models. Higher levels of religiosity were significantly predictive of lower incidences of HIV and diagnoses of chlamydia/gonorrhea, and so we included religiosity as a protective factor in the multivariate models for HIV/STI outcomes. Disclosure of sexual identity to one’s community was related to lower odds of diagnosis of chlamydia gonorrhea and lower incidence of HIV infection.

Once we determined significant independent associations in univariate models, we included these variables in our multivariate models (see Table 2). As an example, religiosity was not significantly associated with self-reported STIs among participants in our sample, and so it was excluded from the multivariate

**Table 1** Descriptive statistics

	<i>n</i>	%
Demographic variables education		
< High School	18	8.0
High School	65	28.9
Some college	90	40.0
College+	52	23.1
Unemployed <sub>(Yes)</sub>	101	44.9
Income (USD)		
≤ 10,000	130	58.0
11,000–20,000	37	16.5
21,000–30,000	22	9.8
31,000–40,000	14	6.3
41,000–50,000	12	5.4
51,000–60,000	6	2.7
≥ 61,000	3	1.3
Risk/protective factors		
Out to family <sub>(No)</sub>	105	46.7
Out to community <sub>(No)</sub>	66	29.3
Religiosity <sub>(Mean)</sub>	<i>M</i> = 6.6	<i>SD</i> = 1.1
Outcome variables		
Self-reported STI <sub>(Yes)</sub>	71	31.5
HIV positive <sub>(Yes)</sub>	8	3.6
Positive for STIs <sub>(Yes)</sub> (chlamydia/gonorrhea)	55	24.4

*M* mean, *SD* standard deviation

model. For self-reported STIs, Black bisexual men who reported they had disclosed their sexual identity to more of their family members were 62% lower the odds of self-reporting an STI, and those who were out to more of their community members were 42% lower the odds of self-reporting an STI. Similarly, disclosure to community lowered the odds of being diagnosed with chlamydia/gonorrhea and HIV by up to 73%. In both chlamydia/gonorrhea and HIV diagnosis outcomes, higher rates of religiosity were predictive of about half the odds of being diagnosed with either infection. For all three models, internalized heterosexism remained a significant risk factor; that is, higher levels of internalized heterosexism were predictive of higher prevalence of self-report and diagnosed STIs and HIV. Older participants were also more likely to have self-reported STIs.

Lastly, we present probability profiles based on multivariate models for each outcome in Table 3. In Table 3, the probability profiles of the three sexual health outcomes are separated by number of protective factors (0, 1, or 2), the levels (i.e., low/high) reported for each protective factor (see Analysis section for how low/high probabilities were determined), and high/low experiences of internalized heterosexism. For each outcome, we present the risk profiles for each combination of risk/protective factors. For example, in the context of high internalized heterosexism, Black bisexual men who reported high levels of disclosing their sexual identity to only their community had a 66.1%

probability of self-reporting an STI. In the event that high levels of both protective factors were reported, in the context of high internalized heterosexism, that probability dropped to 44.9%. In general, when Black bisexual men reported high levels of two protective factors and a low-risk factor (internalized heterosexism), they had the lowest probability of self-reporting or being diagnosed for an STI/HIV. Figure 1 gives a graphical example of the probabilities. For a positive HIV result, Black bisexual men who reported high levels of internalized heterosexism and no protective factors had a 79% probability of testing positive for HIV. On the other hand, individuals with lower levels of internalized heterosexism and two protective factors (disclosure to more family and community members) had only a 1% probability of testing positive for HIV. In the figure, all three sexual health outcomes are presented as a graphical example of how one might visualize probability profiles (see Table 3).

## Discussion

While internalized heterosexism, measured prior to sexual health outcomes, was consistently linked to higher odds of self-reporting and being diagnosed for STIs/HIV, protective factors operated differently for each outcome. Specifically, being out to one's family was not related to lower odds of STI/HIV diagnoses, but disclosure to community was. Community knowledge of sexual identity played a more significant role than that of family member knowledge in predicting lower STI/HIV outcomes. Our findings have implications for interventions that address internalized homophobia (heterosexism), especially among racial minority sexual minorities.

We also found that probabilities of any self-reported STI were higher than actual STI diagnosis probabilities, particularly among Black bisexual men with high internalized heterosexism. One of the more common stereotypes about bisexuality is that bisexual people are carriers of STIs from "diseased" gay men and lesbians to straight populations (Israel & Mohr, 2004). Black bisexual men with high internalized heterosexism and binegativity may have internalized these stereotypes about bisexual people (Flanders et al., 2017); thus, they believe they have HIV or other STIs despite no diagnosis of these conditions. Black bisexual men who believe, without testing, that they have STIs may not pursue STI testing after condomless sex (Eaton et al., 2018). Or, perhaps the opposite is true. Black bisexual men may be more likely to utilize safer sex methods when they believe they have contracted an STI.

We found that religiosity was associated with lower probabilities of HIV and chlamydia/gonorrhea diagnosis, but not self-reported STIs. Religious communities may also be particularly protective for Black bisexual individuals because, although bisexual people report discrimination and stereotypes from both heterosexual people and gay men and lesbians (Roberts et al., 2015), sexual minority people of color also experience racism

**Table 2** Prevalence of sexually transmitted infections/disease bivariate and multivariate logistic regression models

	Bivariate model Odds ratio (95% CIs)	Multivariate model Odds ratio (95% CIs)
Self-reported STI		
Internalized heterosexism	1.33 (1.20–1.55)**	1.27 (1.18–1.66)**
Disclosed sexuality to community	0.48 (0.12–0.77)*	0.58 (0.18–0.97)*
Disclosed sexuality to family	0.24 (0.11–0.63)*	0.38 (0.17–0.77)*
Religiosity	0.87 (0.19–1.81)	Not included
Age	2.05 (1.44–2.91)*	1.82 (1.30–3.00)*
Diagnosed with chlamydia/gonorrhea		
Internalized heterosexism	1.33 (1.04–1.46)**	1.82 (1.11–2.04)**
Disclosed sexuality to community	0.19 (0.04–0.34)*	0.20 (0.10–0.58)**
Disclosed sexuality to family	0.71 (0.21–2.01)	Not included
Religiosity	0.44 (0.24–0.79)*	0.51 (0.12–0.87)**
Age	1.24 (0.83–1.90)	0.93 (0.33–1.54)
Diagnosed with HIV		
Internalized heterosexism	2.03 (1.14–3.48)*	2.00 (1.11–3.74)*
Disclosed sexuality to community	0.33 (0.09–0.88)*	0.62 (0.34–1.03)
Disclosed sexuality to family	0.99 (0.44–1.83)	Not included
Religiosity	0.18 (0.05–0.27)**	0.46 (0.30–0.78)*
Age	1.84 (1.55–2.81)*	1.56 (1.00–3.83)

Outcome variables (e.g., self-reported STI) were measured at the 12-month follow-up, while risk/protective factors (e.g., internalized heterosexism) were measured at the baseline (first) assessment. Parameter estimates under the “Bivariate Model” column were run first to determine statistical significance with each sexual health outcome. When a significant result was found, it was included in the multivariate model, which was run second and after the bivariate models

*CIs* confidence intervals

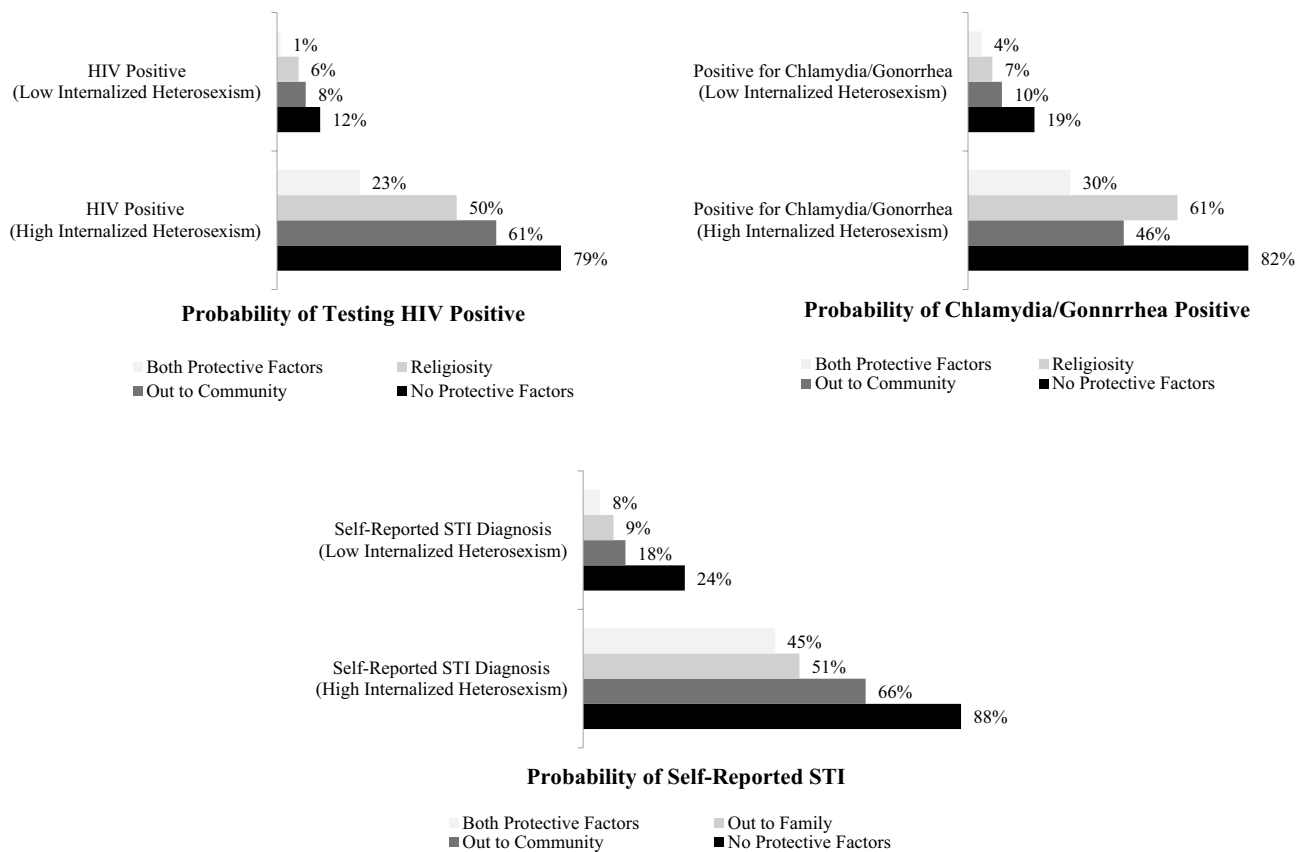
\* $p < .05$ , \*\* $p < .01$

**Table 3** Probabilities of sexual health outcomes by low/high internalized heterosexism and presence of protective factors

No. of factors	Protective factors			Risk factor	
	Disclosed to community	Disclosed to family	Religiosity	High internalized heterosexism	Low internalized heterosexism
Self-reported STI					
0	Low	Low	Not included	88.4	23.8
1	Low	High	Not included	50.6	8.8
1	High	Low	Not included	66.1	18.2
2	High	High	Not included	44.9	7.6
Diagnosed with chlamydia/gonorrhea					
0	Low	Not included	Low	81.9	19.4
1	Low	Not included	High	61.2	7.1
1	High	Not included	Low	45.4	9.9
2	High	Not included	High	23.3	4.0
Diagnosed with HIV					
0	Low	Not included	Low	78.6	12.2
1	Low	Not included	High	50.1	6.0
1	High	Not included	Low	60.8	8.1
2	High	Not included	High	23.3	1.3

in largely White LGBTQ communities (e.g., Bowleg, 2013). Thus, Black bisexual men may feel more accepted in their religious communities than in LGBTQ communities where they

might face both biphobia and racism. Overall, consistent with previous literature, our results suggest that higher levels of religiosity may be protective against diagnoses of HIV and/



**Fig. 1** Probability of testing positive for (1) HIV, (2) chlamydia/gonorrhea, and (3) self-reporting an STI among Black bisexual men with combinations of risk and protective factors

or STIs among Black bisexual men because religious environments can be a source of coping, empowerment, and support (Barnes & Meyer, 2012) particularly in Black communities (Foster et al., 2011; Jeffries et al., 2008)

Disclosure of sexual identity to one's family predicted lower probabilities of self-reported STIs among both bisexual individuals with high and low internalized heterosexism, but did not predict actual diagnosis of chlamydia/gonorrhea and HIV. Though we know support from family members during disclosure is particularly important for bisexual men (Shilo & Savaya, 2011, 2012), we did not test whether these community/family members actually supported the individuals' bisexual identities. Research shows that support from parents predicts lower depressive symptoms among bisexual men, especially when these men experience stress when disclosing to family members (Pollitt et al., 2017). Related to our finding of null results for disclosure to family for most sexual health outcomes, bisexual men who are out to their family members may be less likely to self-disclose that they have an STI because they may not want to jeopardize these family relationships (D'Augelli et al., 1998; Dodge et al., 2008a; Friedman et al., 2008; McGarrity & Huebner, 2014; Scherrer et al., 2015).

The participant operationalization of "disclosure to one's community" may have influenced some of these findings; in particular, the consistent prediction of lower probabilities in self-reported STIs and diagnosed chlamydia/gonorrhea and HIV. Specifically, we are unaware of which community the participants were referring to. On the one hand, perhaps Black bisexual men were referring to disclosing their sexual identities to an LGBTQ or bisexual community, as Atlanta is known for its relatively gay-friendly atmosphere; being out in these communities may be related to support, resources, and organizations related to STI prevention. On the other hand, it is possible these participants were referring to community members as straight and cisgender individuals who are progressive in their views of sexual minority statuses.

### Limitations and Implications

No study is without limitations, and our findings should be interpreted in light of four main limitations. First, though probability profiling is unique, it is used to illustrate the differences between high and low levels of risk/protective factors (10th and 90th percentile). The majority of our sample was included in these percentiles and our analyses, but our analyses do not



include the entire range of protective factors. However, probability profiling allowed us to explore the relation of varying combinations of risk and protective factors to sexual health outcomes across our sample of Black bisexual men. Second, we focused on Black bisexual men in one U.S. city. Large cities (e.g., Atlanta) are known for higher rates of negative sexual health outcomes, but we cannot generalize our findings to other major cities across the U.S. Third, we did not measure whether communities, families, or individuals belonging to participants' churches actually supported and/or accepted their sexual minority identities. In the future, scholars can better understand how social support may act as an additional protective factor in the context of lived experiences where individuals have disclosed their sexual identity. Third, our operationalization of "outness," or disclosure to others of one's sexual identity, was limited: we defined three levels of "outness" (i.e., to nobody, to some, or to all). This did not allow us to consider the complexity of sexual orientation disclosure; thus, future measurement should be attune to individuals who come out to various groups of family (e.g., one parent only, siblings only) and community members at the same and different times. Last, though our study focused on a vulnerable group of men, future research should also continue to consider men and women of multiple race and sexual identities, such as other racial minority groups and transgender individuals across diverse geographical contexts.

Our findings have implications for intervention and prevention strategies. For example, stakeholders can be aware that not all disclosure operates the same for sexual health outcomes among Black bisexual men. When designing intervention/prevention programs or working with Black bisexual clients, clinicians and scholars should be aware that different strategies may be employed to help Black bisexual men who are out in different contexts or who are more involved in their church. This study also has implications for how stakeholders conceptualize *outness* and involvement in religion for Black bisexual men in particular. In summary, disclosure of sexual orientation in different contexts and religiosity are related differently to sexual health outcomes, and depending on the target of intervention or attention (e.g., HIV transmission reduction), different tactics may be employed to best support Black bisexual men.

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