Classes of sexual identity, homophobia, and sexual risk among Black sexual minorities in HPTN 061

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Abstract

Homophobia is associated with sexual risk among sexual minorities, including Black sexual minority men, though experienced homophobia may differ across sexual identities. We conducted latent class analysis of sexual identities and experienced homophobia associated with sexual risk, and tested mediators of this association.

We used longitudinal data from the HIV Prevention Trials Network Study 061 (n=1,553). We generated rate ratios between baseline latent classes of experienced homophobia and sexual identity and 12-month outcomes: Condomless receptive anal intercourse (CRAI), number of partners, and transactional sex. Mediators included 6-month internalized homophobia, depression, social support, and substance use.

We selected the following 7-class model: "Bisexual, rare homophobia" (reference), "Mixed identities, mixed homophobia", "Bisexual, frequent homophobia", "Heterosexual/Same-gender loving, frequent homophobia", "Gay, frequent homophobia", " Gay/Same-gender loving, frequent homophobia," and "Gay, rare homophobia." All other classes had greater CRAI than the reference. For bisexual/mixed/heterosexual classes, approximately 20% of this association was positively mediated through our mediators (p<.05). The Heterosexual/Same-gender loving class had the largest proportion mediated through internalized homophobia. For gay-identifying classes, mediation was marginally significant (.05<p<.10).

Classes of sexual identity and experienced homophobia were associated with CRAI among Black sexual minority men, partially mediated through internalized homophobia, depression, social support, and substance use.

Keywords

Latent variable; LGBT; Men who have sex with men; stigma; sexual behavior; sexuality

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Introduction

HIV persists as a critical public health priority, disproportionally impacting Black sexual minority men (BSMM) (CDC, 2018a). Approximately one-third of BSMM are currently living with HIV and projections suggest 50% will acquire HIV in their lifetime (CDC, 2018a; Hess et al., 2017). BSMM have comparable rates of condomless anal intercourse as their white counterparts, yet they face greater risk for acquiring and transmitting HIV; in large part due to greater experiences of stigma, trauma, and victimization among BSMM, as well as more dense and homogenous sexual networks (Mustanski, 2019; Hall et al., 2017; Kelly et al., 2014). Sexually transmitted infections (STI), including gonorrhea and syphilis, are also disproportionately elevated among BSMM (CDC, 2018b; Ottaway et al., 2017). Given these disparities, there is a heightened need to better understand risk factors for HIV/STI in this population, including sexual risk behaviors. While sexual behaviors are not drivers of racial disparities in HIV/STI risk, they are still important components of overall HIV/STI prevention in this population.

Minority stress theory is a common theoretical framework for understanding how minority-specific stressors, such as homophobic experiences, impact health outcomes and contribute to health disparities, including HIV/STI related disparities (McConnell et al., 2018; Meyer, 1995). Experiences of homophobia can impact several adverse outcomes among BSMM, including internalization of homophobia, depression, substance use, social isolation, and increased sexual risk taking (Anderson-Carpenter et al., 2019; Buttram, 2019; Jeffries & Johnson, 2018; Meyer, 1995; Miltz et al., 2019; Moody et al., 2018; Ogunbajo et al., 2018; Wang et al., 2018). Internalized homophobia may result in feelings of shame, depression, reduced self-esteem, and psychological distress among SMM, leading to maladaptive coping through substance use and sexual risk taking that increases risk of HIV and STI acquisition (Bauermeister et al., 2017; Friedman et al., 2019; Hegazi et al., 2017; Javanbakht et al., 2018; Miltz et al., 2019; Moody et al., 2018; Ogunbajo et al., 2018; Teixeira da Silva et al., 2020). Depression, substance use, and social isolation are also associated with sexual risk behaviors, such as condomless receptive anal intercourse (CRAI) and transactional sex (Bauermeister et al., 2017; Friedman et al., 2019; Hegazi et al., 2017; Javanbakht et al., 2018; Miltz et al., 2019; Moody et al., 2018; Ogunbajo et al., 2018; Teixeira da Silva et al., 2020; Viswanath et al., 2017; Voisin et al., 2017). Thus, experienced homophobia has implications for several health outcomes, including HIV/STI risk, among BSMM, often through the mechanism of internalized homophobia. Notably, while associations between experienced homophobia and sexual risk outcomes are somewhat inconsistent, associations between internalized homophobia and sexual risk are far more pronounced and consistent in the literature (Bauermeister et al., 2017; Friedman et al., 2019; Hegazi et al., 2017; Javanbakht et al., 2018).

BSMM of different sexual identities may experience different forms of homophobia as well, and thus different associations with sexual risk behaviors; there is evidence that sexual minorities of different sexual identities may experience and internalize homophobia differently (Chard et al., 2015). For this reason, examining relationships between sexual identity and homophobia can provide important nuance to understanding this association. We will use latent class analysis (LCA) as it is a useful way to identify latent combinations

of factors and their association with outcomes, and lacks the limitations of other commonly used approaches for this, such as indices that assume equivalence of items, and interaction terms which are limited by extreme sample size power requirements as the number of factors increases (Card et al., 2018; LM, 2010; Turpin et al., 2018). LCA is uniquely suited to understanding how several characteristics interact among individuals.

The purpose of our study is to test for baseline latent classes of sexual identities and experienced homophobia associated with three sexual risk behaviors 12 months later: Condomless receptive anal intercourse, number of sexual partners, and transactional sex. This would further develop knowledge on HIV/STI risk among this population in two important ways. First, this would contextualize the relationship between homophobia and sexual risk behavior with differences in sexual identity; this is an important consideration given that experiences and internalization of homophobia may differ based on one's sexual identity. Second, this will elucidate the role of social and individual factors, including internalized homophobia, as key mediators. These factors could be important targets for intervention, potentially deepening our understanding of research and policy approaches to reducing HIV/STI incidence among BSMM. We also tested if this association was mediated through internalized homophobia, depression, social support, and substance use. We hypothesized that classes characterized by more experiences with homophobia would be associated with greater sexual risk behaviors, and these associations would be mediated in part through each of the aforementioned mediators (Supplementary Figure 1).

Materials and Methods

Participants and Procedures

We conducted a longitudinal analysis using data from the HIV Prevention Trials Network Study 061 (HPTN 061): The Brothers Study (Koblin et al., 2013). This was a prospective cohort of 1,553 Black men who have sex with men in the U.S. recruited between July 2009 and October 2010. Eligibility criteria included self-identifying as a man or having been assigned male at birth, self-identifying as Black, African-American, Caribbean Black, or multiethnic Black, and having had condomless anal intercourse with at least one man in the past six months. Based on National Institutes of Health criteria, these meet the definition for sexual minority men, i.e. BSMM (National Institutes of Health, 2019). Self-reported data were collected via Audio Computer-Assisted Self-Interview at baseline and six- and twelve-month follow-up. All institutional review boards at participating institutions granted study approval. This data has been used in several previous studies of BSMM (Chen et al., 2016; Hall et al., 2017; Hermanstyne et al., 2018; Koblin et al., 2013; Latkin et al., 2017; Levy et al., 2017).

Measures

Sexual identities were self-reported and included Gay/Homosexual, Bisexual, Same-Gender Loving, Queer, Heterosexual/ Straight, Sexual, Two-Spirit, and Unsure/Other measured at baseline. Since these were not mutually exclusive, each sexual identity was used as an individual item (Did not endorse identity/Endorsed identity).

<u>Experienced homophobia</u> measures included 25 baseline self-reported items from the Racism and Life Experiences Scales (Harrell et. al, 1997). These covered several dimensions, including disrespectful treatment, harassment, threats, and violence. Questions include "Have you been treated rudely or disrespectfully" and "Have you been threatened with a knife, gun, or other weapon," for which participants could select if this has occurred due to their sexuality (yes/no). Experienced homophobia reflects participants responding that they have experienced the event due to their sexuality (Not experienced, Experienced). Items demonstrated high internal consistency (Cronbach's α=.94).

<u>Internalized homophobia</u> was our primary mediator, measured at 6-months using a modified version of Herek and Glunt's (1995) Internalized Homophobia Scale (Herek, 1995). The scale included 7 items reflecting internalized homophobia, such as "In the past 90 days, I have tried to stop being attracted to men." Responses were coded in Likert-scale format. Items demonstrated strong internal consistency (Cronbach's α=.91).

<u>Secondary mediators</u> measured at 6 months included depression, social support, and substance use. Depression was measured using the CESD-20 scale, a 20-item scale covering multiple dimensions of depressive symptoms in the past 2 weeks, such as hopelessness, difficulty enjoying usual activities, and feelings of sadness, with each item measured in Likert-scale format (Radloff, 1997). For all analyses, we used a summed index for this measure (range 0 to 80). Social support was measured using a reduced adaptation of the social support scale form the Rand Medical Outcomes Study Social Support Survey (Sherbourne, 1993). This scale consisted of 6 items based on frequency or support (None of the time, A little of the time, Some of the time, Most of the time, All the time), summed into an index (range 0 to 30). Substance use included any use of marijuana, inhaled nitrates, crack, powder cocaine, methamphetamine, heroin, non-prescribed Vicodin/Oxycontin/Xanax, or any other stimulant in the past 6 months, summed into an index (range 0 to 8). All indices demonstrated sufficient internal consistency (all Cronbach's alpha >0.70).

<u>Sexual risk behavior outcomes</u>, measured at 12 months, included frequency of condomless receptive anal intercourse (CRAI) during the past 6 months, number of sexual partners in the past 6 months, and any transactional sex in the past 6 months. Here transactional sex refers to giving or receipt of money, goods, drugs, etc. in exchange for sex. CRAI is particularly salient here, given that data were collected before PrEP was readily available, and before TasP was a standard biomedical approach to HIV prevention. These outcomes were selected to capture different dimensions of HIV/STI risk using measures with well documented associations with HIV/STI acquisition, while maintaining a parsimonious number of outcomes. For bivariate analyses, we dichotomized CRAI (No CRAI, CRAI) and number of partners (Less than 3, 3 or more). Transactional sex was already dichotomous (no transactional sex, any transactional sex). For regression analyses, these were used in their continuous form.

<u>Confounders</u> included age (18 to 34, 35 to 44, 45 to 54, 55 and older), highest education level (High school or less, Vocational or trade school, Some college, College or greater) annual household income ($10,000, $10,000 to $29,999, $30,000 to $49,000, $50,000 or

more), and study site (New York, NY (Harlem), Washington, DC, Boston, MA, Los Angeles, CA, New York, NY (New York Blood Center), San Francisco, CA, Atlanta, GA).

Latent Class Analysis

LCA was conducted using baseline sexual identity and experienced homophobia items. The LCA model was selected based on the −2 log likelihood, Vu-Lo-Mendel-Rubin likelihood ratio test, Bayesian Information Criterion (BIC), and entropy. Minimum class size was measured to identify potential outlier classes. LCA incorporated random effects (a random standard normal value added to probit-transformed class membership probabilities) to address local interdependence and assigned classes using the "classify-analyze" approach. LCA was conducted using R 3.6 (R Core Team, 2013).

Bivariate Analyses

To test associations between our exposures (including latent classes) and outcomes (binary), we used a Chi-Square test for binary/multicategorical exposures and a Cochran-Armitage test for ordinal exposures. This was also used for testing associations between mediators and outcomes. To test associations between exposures and mediators (ordinal), we used a Cochran-Armitage test for binary exposures, a Kruskal-Wallis test for multicategorical exposures, and a Spearman rank-sum correlation test for ordinal exposures.

Regression Modeling

For our quantitative frequency of CRAI and number of partners, we generated cumulative complementary rate ratios for the difference in these outcomes across latent classes. For our binary transactional sex outcome, we used modified Poisson regression models to generate rate ratios reflecting the difference in our sexual risk outcomes across latent classes. For all outcomes we generated an unadjusted model and a model adjusted for age, education level, income, and city. We used Vanderweele's difference method to estimate indirect associations for each of our mediators (internalized homophobia, social support, depression, substance use) by calculating the change in the association estimate when including each potential mediator in the model (VanderWeele, 2015). Both total and mediator-specific percentages of mediated association were calculated. We used bootstrapping to generate 95% confidence intervals for each indirect association.

Missing Data

Missingness ranged from 1% to 11%. We imputed missing multi-item measures, socioeconomic measures (education level, income), and sexual risk behaviors (CRAI, number of partners) using intrascale stochastic imputation, imputing items within scales/ indices/categories. After imputation, analyses were restricted to those who attended all three visits (1,167 participants), as this was necessary to maintain temporal separation between exposures, mediators, and outcomes. Next, a small number of observations (<4%) that maintained missing data after imputation were dropped, resulting in our final analytic sample (1,123 participants).

Quality Assurance

To determine if there was bias introduced to latent classification by restricting analyses based on loss to follow-up, we tested if there were any significant differences in loss to follow-up across latent class assignments. We also tested all regression model terms for intercollinearity by measuring their variance inflation factor. All statistical tests use a two-sided test of significance at alpha=.05. All analyses other than LCA were conducted using SAS 9.4 (SAS Institute Inc., 2014).

Results

Univariate and Bivariate Analyses

Most of the participants identified as either gay/homosexual (51%), or bisexual (38%) (Table 1). Nearly 10% identified as heterosexual/straight. Experiences of homophobia were common, with more than half of participants having experienced at least 21 of the 25 experiences. The majority of the sample had an education of either high school or less or vocational/trade school, an annual household income under $20,000, used at least 2 substances, and had a CESD-20 score of 16 or more, indicative of depressive symptomatology. In the sample, 27% engaged in CRAI, 43% had 3 or more partners, and 9% engaged in transactional sex within the past six months. While few factors were associated with number of partners, experienced homophobia, younger age, education level, income, and internalized homophobia were all associated with both CRAI and transactional sex. Depression, substance use, and lower social support were also associated with transactional sex. Virtually every exposure and covariate was associated with every mediator of interest (Table 2).

Latent Class Analysis Results

We selected a 7-class model for all analyses (Supplement 1). This was based on having the lowest log-likelihood, lowest BIC, and no outlier classes (minimum class size >5% of the total sample). The 7 classes were characterized based on predominant sexual identity and experienced homophobia as follows: 1. Bisexual, rarely experienced homophobia, 2. Mixed identities, mixed experiences with homophobia, 3. Bisexual, often experienced homophobia, 4. Heterosexual/SGL, often experienced homophobia, 5. Gay, often experienced homophobia, 6. Gay/SGL, often experienced homophobia, and 7. Gay, rarely experienced homophobia. All items were significantly associated with latent class membership (Table 3). Additionally, there was no association between baseline latent classes and loss to follow up using a Chi-Square test (p>.05). Proportions of both transactional sex and CRAI were highest among classes characterized by many experiences of homophobia (Figure 1). The bisexual class with many experiences of homophobia had the highest proportions of transactional sex, while the gay/SGL class with many experiences of homophobia had the highest proportions of CRAI. Gay-identifying classes had lower proportions of three or more partners compared to classes of other identities. The heterosexual/SGL class with many experiences of homophobia had the highest depression scores, highest internalized homophobia, lowest social support, and nearly the highest substance use.

Regression Results

We used the bisexual, rarely experienced homophobia class as our reference, as this was the largest class with the lowest experiences of homophobia. Compared to this class, all other classes had higher frequency of CRAI, both before and after adjustment (Table 4). After adjustment, the most frequent CRAI was among the gay/SGL class with many experiences of homophobia. In contrast, there were almost no associations between latent classes and number of partners or transactional sex, with one exception: The latent class characterized by bisexual identity and many experiences of homophobia had more partners compared to the reference class after adjustment.

Mediation Results

We focused mediation analyses on CRAI only given the lack of associations between classes and other outcomes (Figure 2). For latent classes characterized by gay identity, classes were only marginally (.05<p<.10) mediated through these factors. For classes characterized by many experiences with homophobia and other sexual identities, approximately 20% of the association between latent classes and CRAI was mediated through internalized homophobia, social support, depression, and substance use. The Heterosexual/SGL class had the largest proportion mediated through internalized homophobia.

Discussion

Our findings underscore the relevance of minority stress to this population; as a measure of sexual minority stress, classes characterized by experiences of homophobia were strongly associated with depression, substance use, and CRAI; associations with CRAI were in part mediated through internalized homophobia, depression, social support, and substance use. The proportions of experienced homophobia and depression are particularly indicative of important needs to be addressed. The majority of participants had nearly every single experience of homophobia that was measured. Nearly half of participants had a CESD-20 score of 16 or higher, evident of high likelihood of clinical depression. BSMM face a remarkably high burden of experienced homophobia that has significant implications for mental, emotional, and sexual health (Buttram, 2019; Buttram & Kurtz, 2015; Nelson et al., 2017). Though we did not detect significant associations with transactional sex, this was in large part due to the low proportions of transactional sex (9%) in our sample. Despite this, the estimated associations between classes characterized by homophobia and transactional sex were relatively large, and worth future study.

Our use of LCA identified unique combinations of sexual identities and experienced homophobia that would have been otherwise difficult to identify using other methods. While LCA has often been applied to studies of syndemics among BSMM, this method has applications to several other theoretical frameworks, including minority stress theory utilized in our study. The latent classes identified based on unique clustering of various experiences of homophobia and sexual identities highlight the need for tailored approaches to BSMM health equity policy, incorporating the nuances of differences across sexual identities among BSMM. The differences in mediators across profiles was especially evident of this;

experiences of homophobia were associated with depression, social isolation, substance use, and internalized homophobia differently among different sexual identities.

Notably, the heterosexual/SGL identifying class with many experiences of homophobia had the greatest burden of these factors overall. While seemingly counterintuitive, self-identification as SGL can have many reasons. For some BSMM, this identity reflects an intersection of Black and sexual minority pride, similar to the Blaqueer identity (Wilson, 2016). For others, including those in the heterosexual/SGL class, SGL identification may reflect distancing from more common sexual minority identities, such as gay and bisexual. This distancing may be in part driven by internalized homophobia; this is consistent with both minority stress theory and our finding that this profile had the largest association mediated by internalized homophobia. The Gay/SGL class had the largest association with CRAI, and had the most experiences of homophobia compared to any other profile, though internalized homophobia was relatively low. While the findings regarding low internalized homophobia may reflect greater resilience, aligning with the aforementioned intersection of Black and sexual minority pride, the experienced homophobia was still strongly associated with CRAI. This is particularly relevant to HIV/STI risk given this data was collected in 2009 to 2010, before PrEP was readily available. Overall, the classes identified demonstrate how experienced homophobia is associated with sexual risk behavior among BSMM of different sexual identities through different mechanisms.

Given the relevance of internalized homophobia, depression, social support, and substance use identified in our findings, these factors are important considerations in developing sexual risk reduction programming focused on BSMM. Even in the current HIV prevention context, where PrEP and TasP are both core biomedical strategies to reduce HIV transmission, behavioral prevention strategies still have an important role. Moreover, many of these mediators are also core to the mental and emotional wellness of BSMM. Both external and internalized homophobia, depression, social support, and substance use are key factors in developing comprehensive policy to promote not only HIV/STI related health equity, but the overall health wellness of BSMM. It is critical that future HIV/STI prevention strategies are able to reach heterosexual identifying BSMM, as this population bears the greatest burden of key dimensions of minority stress, including depression, social isolation, and internalized homophobia, compared to BSMM of other sexual identities. Despite this increased burden, this population is largely missed by many prevention approaches focused on gay, bisexual, and queer BSMM. More broadly, efforts to engage BSMM in HIV/STI prevention should not be limited to those who self-identify as sexual minorities. It is evident that BSMM of different sexual identities experience and navigate stigma differently, with different implications for sexual risk, such as the greater relevance of internalized homophobia among heterosexual/SGL BSMM. These differences should be incorporated into research and policy intervention approaches to HIV/STI reduction, such as interventions to reduce internalized homophobia among heterosexual-identifying BSMM.

One of the most notable strengths of our study is the use of a large, multicenter cohort of BSMM with sites across the United States, making our results more nationally generalizable to BSMM. The prospective design also preserves temporality, as our exposures, mediators, and outcomes were measured at separate, successive timepoints. All of our exposures and

mediators utilized multi-item scales, covering several difference dimensions of homophobia, substance use, depression, and social support, as well as a wide range of sexual identities. Finally, the use of latent class analyses allows the synthesis of several measures of experienced homophobia without many of the limitations of indices, as there are no assumptions of unidimensionality or linearity. This method also allows for the use of sexual identity measures without assumptions of mutual exclusivity; this was important in our data given that many participants selected more than one sexual identity.

Our research has limitations that should be acknowledged. Our study was limited to BSMM, so our findings are not generalizable to sexual minority men of other racial/ethnic groups, or to heterosexual populations. Given the disproportionate burden of HIV and STIs among BSMM, our focus on sexual risk factors in this population is of public health importance however. The relatively low proportions of transaction sex made analysis of this outcome relatively underpowered, preventing detection of statistical associations. We did find relative large differences in proportions of this outcome across profiles however. Finally, social desirability bias is likely to impact the measures used in our study, particularly underreporting of sexual risk behaviors and experiences of homophobia.

Overall, we found evidence of latent classes characterized by sexual identity and experiences of homophobia that were associated with CRAI among BSMM. This association was mediated in part through internalized homophobia, depression, social support, and substance use. Policies and programs to promote sexual risk reduction among BSMM should incorporate these factors, as well as the nuances of differences between sexual minority identities within this population. More detailed research into internalized homophobia, depression, social support, and substance use among BSMM is recommended for better understanding of these mechanisms. More study into sex work in this population, particularly utilizing purposive sampling of BSMM sex workers, is also recommended.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Data Availability Statement:

Access to HPTN 061 study data can be requested here: https://www.hptn.org/research/studies/hptn061/accesstostudydata

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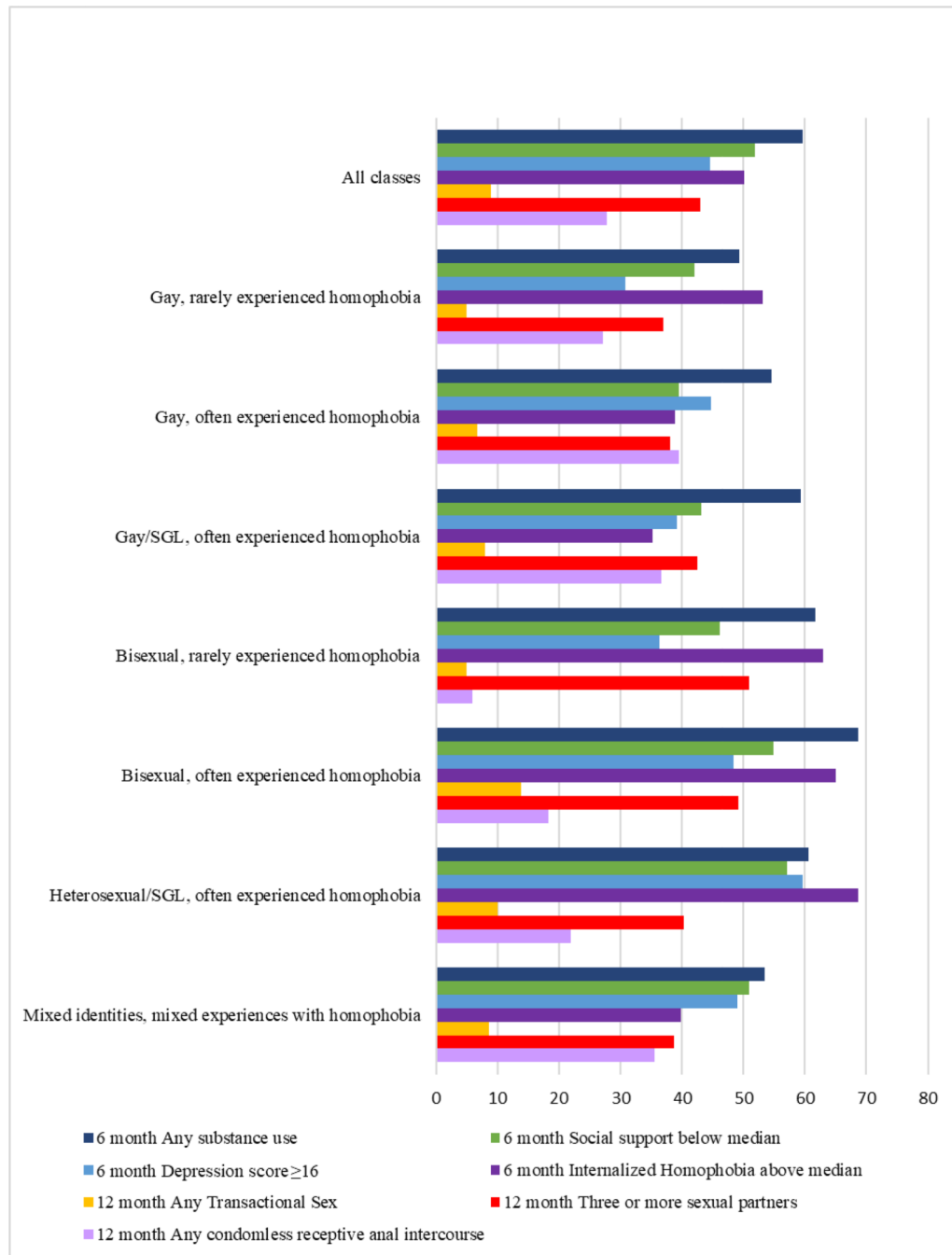
Figure 1.
Median proportions (%) of mediators 6 months from baseline and sexual risk behaviors 12 months from baseline across latent classes among Black men who have sex with men (n= 1,123)
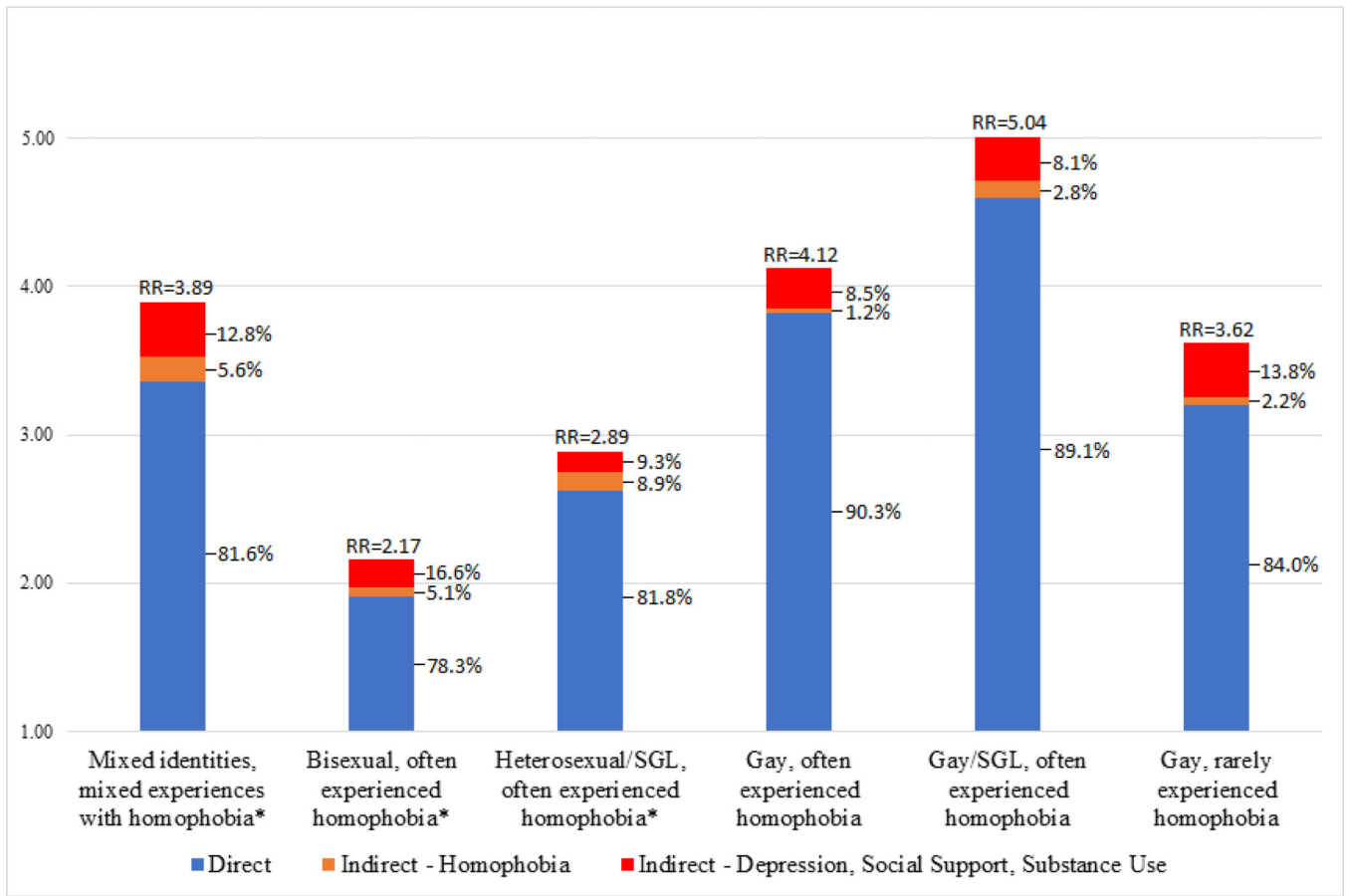
Figure 2.
Cumulative rate ratios for 12 month condomless receptive anal intercourse and proportions mediated (n=1,123).

[1] Reference class "Bisexual, rarely experienced homophobia".

*Statistically significant mediation (<.05) based on bootstrapping of combined indirect association with 1000 repetitions.

All rate ratios adjusted for age, education level, income, and study site. Scaling for bar percentages are based on beta estimates.

Table 1.

Associations between baseline and 6-month measures and 12-month outcomes among Black sexual minority men (n=1,123).

	Total	*12-month Outcome Measures*					
		Any Condomless Receptive Anal Intercourse		**Three or More Sexual Partners**		**% Engaging in Transactional Sex**	
		No (n=811, 72.2%)	**Yes (n=312, 27.8%)**	**No (n=640, 57.0%)**	**Yes (n=483, 43.0%)**	**No (n=1023, 91.1%)**	**Yes (n=100, 8.9%)**
Baseline Measures							
Sexual Identity (%) [1]							
Gay/ Homosexual (n=570)	50.8	**45.1**	**72.3**	51.5	49.3	**54.1**	**36.5**
Bisexual (n=436)	38.8	**31.9**	**6.3**	**36.9**	**42.9**	**37.0**	**50.0**
Same-Gender Loving (n=162)	14.4	**8.8**	**6.8**	**13.2**	**16.9**	16.1	10.6
Queer (n=51)	4.5	2.5	2.7	4.0	5.6	5.3	3.9
Heterosexual/ Straight (n=101)	9.0	**10.2**	**4.5**	9.0	9.1	8.6	8.7
Sexual (n=140)	12.5	11.9	16.2	11.4	14.7	13.2	12.5
Two-Spirit (n=45)	4.0	4.7	3.8	4.5	3.0	4.3	5.8
Unsure (n=29)	2.6	2.0	2.9	2.6	2.4	2.2	1.9
Experienced Homophobia (Median) [2]	21	**19**	**21**	21	21	**20**	**23**
Age (%) [2]							
18 to 34	20.3	**16.5**	**32.2**	19.8	21.3	**21.9**	**11.5**
35 to 44	19.5	**16.9**	**27.4**	20.1	18.1	**19.6**	**20.2**
45 to 54	26.7	**26.2**	**20.4**	27.2	25.6	**24.4**	**26.0**
55 and older	33.6	**40.5**	**20.1**	32.9	35.0	**34.1**	**42.3**
Education Level (%) [2]							
High School or Less	17.1	**15.8**	**14.3**	16.7	18.1	**13.8**	**32.7**
Vocational or Trade School	35.6	**37.8**	**27.7**	35.4	35.8	**34.4**	**41.4**
Some College	34.4	**33.7**	**41.4**	35.8	31.4	**37.5**	**18.3**
College or Greater	12.9	**12.7**	**16.6**	12.1	14.7	**14.3**	**7.7**
Annual Household Income (%) [2]							
Less than $20,000	60.3	**60.5**	**54.5**	60.6	59.6	**57.7**	**71.2**
$20,000 to $29,999	22.9	**23.2**	**22.9**	23.4	21.7	**23.5**	**20.2**
$30,000 to $49,000	9.5	**9.2**	**11.8**	9.0	10.5	**10.0**	**6.7**
$50,000 or more	7.4	**7.1**	**10.8**	7.0	8.3	**8.8**	**1.9**
Site (%) [1]							
New York, NY (Harlem)	9.9	13.1	7.6	9.2	11.3	11.8	10.6
Washington, DC	14.4	11.3	22.0	15.2	12.7	15.1	6.7

	Total	12-month Outcome Measures					
		Any Condomless Receptive Anal Intercourse		Three or More Sexual Partners		% Engaging in Transactional Sex	
		No (n=811, 72.2%)	Yes (n=312, 27.8%)	No (n=640, 57.0%)	Yes (n=483, 43.0%)	No (n=1023, 91.1%)	Yes (n=100, 8.9%)
Boston, MA	15.3	13.5	14.7	15.3	15.3	13.0	21.2
Los Angeles, CA	18.4	18.8	16.2	19.5	16.3	18.9	11.5
New York, NY (New York Blood Center)	10.0	10.6	9.9	9.2	11.7	10.5	8.7
San Francisco, CA	13.2	13.2	13.1	13.2	13.3	12.4	19.2
Atlanta, GA	18.8	19.6	16.6	18.5	19.5	18.4	22.1
6-month Measures							
Internalized Homophobia (Median)[2]	15	**16**	**13**	14	15	**14**	**18**
Depression Scale (Median)[2]	**14**	13	14	14	15	**13**	**20**
Substance Use Index (Quartile 3)[2]	**2**	2	2	2	2	**2**	**3**
Social Support Scale (Median)[2]	**15**	15	16	15	14	**16**	**13**

[1] Tested using Chi-Square test.

[2] Tested using Cochran-Armitage Trend Test.

Significant (p<.05) differences bolded.

Table 2.

Associations between baseline measures and 6-month mediators among Black sexual minority men (n=1,123).

	6-month Measures			
	Internalized Homophobia (Median)	Depression Scale (Median)	Substance Use Index (Quartile 3)	Social Support Index (Median)
Baseline Measures				
Sexual Identity[1]				
Gay/ Homosexual	**13**	**13**	**1**	**16**
Bisexual	**17**	**15**	**2**	**14**
Same-Gender Loving	**13**	**12**	**1**	**17**
Queer	**9**	**15**	**2**	**15**
Heterosexual/ Straight	**20**	**15**	**2**	**12**
Sexual	**15**	**14**	**2**	**15**
Two-Spirit	**17**	**17**	**1**	**14**
Unsure	**17**	**20**	**1**	**12**
Experienced Homophobia (Median)[2,3]	ρ= 0.03	**ρ= 0.18**	ρ= 0.03	**ρ= -0.11**
Age[2]				
18 to 34	**13**	14	**1**	16
35 to 44	**14**	14	**2**	16
45 to 54	**15**	15	**2**	15
55 and older	**16**	14	**2**	13
Education Level[2]				
High School or Less	**16**	**17**	**2**	**12**
Vocational or Trade School	**15**	**15**	**2**	**14**
Some College	**15**	**12**	**2**	**16**
College or Greater	**12**	**12**	**1**	**17**
Income[2]				
Less than $10,000	**15**	**15**	**2**	**13**
$10,000 to $29,999	**14**	**14**	**2**	**16**
$30,000 to $49,000	**15**	**12**	**1**	**17**
$50,000 or more	**12**	**11**	**1**	**18**

[1]Tested using Cochran-Armitage Trend Test.

[2]Tested using Spearman Rank-Sum Correlation.

[3]Correlation coefficient presented in lieu of value categories due to large range of values (0 to 28).

Significant (p<.05) differences bolded.

Table 3.

Probabilities of class membership across baseline sexual identity and experienced homophobia variables among Black sexual minority men (n=1,553).

	Latent Class							p value[1]
	1	2	3	4	5	6	7	
Class Sample Size (n)	347	349	156	149	223	185	121	
Sexual Identity								
Gay/ Homosexual	**.686**	.106	.071	.074	**.991**	**1.000**	.612	<.001
Bisexual	.251	**1.000**	.058	**1.000**	.000	.000	.000	<.001
Same-Gender Loving	.291	.043	.205	.054	.045	**.222**	.107	<.001
Queer	.193	.000	.000	.000	.000	.000	.017	<.001
Heterosexual/ Straight	.020	.026	.180	.054	.000	.005	.091	<.001
Sexual	.205	.092	.186	.094	.027	.097	.174	<.001
Two-Spirit	.043	.034	.103	.040	.014	.022	.041	.001
Unsure	.038	.012	.051	.047	.000	.000	.058	<.001
Experienced Homophobia								
Ignored, overlooked, not given service	.591	**.900**	**.878**	.242	**.883**	**.876**	.223	<.001
Treated rudely or disrespectfully	**.712**	**.948**	**.897**	.168	**.910**	**.930**	.231	<.001
Accused or treated suspiciously	**.539**	**.931**	**.872**	.107	**.892**	**.919**	.182	<.001
Others reacting as if they were afraid	**.623**	**.940**	**.891**	.094	**.901**	**.930**	.190	<.001
Observed or followed in public places	.493	**.920**	**.865**	.107	**.906**	**.924**	.207	<.001
Treated as if you were "stupid"	.432	**.931**	**.814**	.074	**.933**	**.930**	.091	<.001
Ideas/opinions were minimized/ignored	.438	**.940**	**.853**	.013	**.915**	**.957**	.083	<.001
Hearing an offensive joke or comment	**1.000**	**1.000**	**.840**	.000	**1.000**	**1.000**	.000	<.001
Others expect your work to be inferior	.135	**1.000**	**1.000**	.000	**1.000**	**1.000**	.000	<.001
Not being taken seriously	**.510**	**.980**	**.923**	.060	**.946**	**.968**	.099	<.001
Left out of conversations or activities	**.585**	**.954**	**.923**	.081	**.937**	**.930**	.141	<.001
Treated in a superficial way	**.646**	**.954**	**.930**	.121	**.933**	**.978**	.198	<.001
Physically avoided	**.620**	**.954**	**.949**	.114	**.919**	**.962**	.190	<.001
Mistaken for someone serving others	.242	**.883**	**.821**	.094	**.798**	**.784**	.083	<.001
Stared at by strangers	**.758**	**.980**	**.949**	.208	**.973**	**.962**	.265	<.001
Laughed at, made fun of, or taunted	**.775**	**.931**	**.930**	.175	**.960**	**.946**	.157	<.001
Asked to speak for all sexual minorities	**.677**	**.891**	**.872**	.168	**.897**	**.876**	.256	<.001
Considered fascinating/exotic by others	**.723**	**.911**	**.930**	.242	**.901**	**.935**	.355	<.001
Harassed by police or law enforcement	.404	**.923**	**.840**	.134	**.834**	**.827**	.248	<.001
Treated like a sexual object	**.772**	**.894**	**.910**	.262	**.906**	**.881**	.322	<.001
Overlooked for a work promotion	.311	**.805**	**.821**	.107	**.794**	**.735**	.157	<.001
Insulted, called a name, or harassed	**.801**	**.911**	**.878**	.208	**.946**	**.941**	.273	<.001
Threatened with physical violence	**.527**	**.842**	**.756**	.121	**.874**	**.838**	.116	<.001
Punched/kicked/beaten	.378	**.688**	**.680**	.087	**.704**	**.654**	.099	<.001

	Latent Class							p value[1]
	1	2	3	4	5	6	7	
Class Sample Size (n)	**347**	**349**	**156**	**149**	**223**	**185**	**121**	
Threatened with a knife/gun/weapon	.251	**.613**	**.635**	.074	**.574**	**.524**	.099	<.001

[1]Tested using Chi Square test. Class probabilities >.50 bolded

There was no association between latent classes and loss to follow-up (p>.05).

Table 4.

Rate ratios for sexual risk behavior outcomes across latent classes among Black sexual minority men (n=1,123).

Latent Class	Frequency of Condomless Receptive Anal Intercourse[1]		Number of Sexual Partners[1]		Any Transactional Sex[2]	
	Unadjusted	Adjusted[3]	Unadjusted	Adjusted[3]	Unadjusted	Adjusted[3]
Bisexual, rarely experienced homophobia	Reference	Reference	Reference	Reference	Reference	Reference
Mixed identities, mixed experiences with homophobia	5.68 (2.77, 11.67)	3.89 (1.88, 8.08)	1.00 (0.78, 1.28)	1.41 (0.83, 2.40)	1.37 (0.56, 3.38)	1.97 (0.78, 4.97)
Bisexual, often experienced homophobia	2.51 (1.18, 5.32)	2.17 (1.02, 4.63)	1.12 (0.87, 1.44)	1.74 (1.05, 2.90)	2.41 (1.01, 5.73)	2.01 (0.83, 4.85)
Heterosexual/SGL, often experienced homophobia	2.84 (1.27, 6.32)	2.89 (1.29, 6.46)	0.88 (0.66, 1.17)	1.27 (0.70, 2.29)	1.63 (0.60, 4.41)	1.45 (0.54, 3.95)
Gay, often experienced homophobia	5.48 (2.61, 11.47)	4.12 (1.95, 8.67)	0.95 (0.73, 1.24)	1.55 (0.89, 2.70)	1.49 (0.57, 3.87)	1.82 (0.69, 4.80)
Gay/SGL, often experienced homophobia	6.21 (2.95, 13.08)	5.04 (2.38, 10.67)	0.80 (0.60, 1.06)	1.31 (0.73, 2.36)	1.16 (0.41, 3.27)	1.47 (0.52, 4.16)
Gay, rarely experienced homophobia	3.88 (1.73, 8.72)	3.62 (1.61, 8.17)	0.78 (0.56, 1.07)	0.96 (0.48, 1.92)	0.86 (0.24, 3.03)	1.02 (0.29, 3.63)

[1] Cumulative complementary rate ratios calculated using cumulative log-log models.

[2] Rate ratios calculated using Poisson regression models with scale.

[3] Adjusted models adjusted for age, education level, income, and study site.