PATHWAYS TO EMBODIMENT OF HIV RISK: BLACK MEN WHO HAVE SEX WITH TRANSGENDER PARTNERS, BOSTON, MASSACHUSETTS

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A dearth of research to date has explored HIV risk among Black men who report sex with transgender partners. In 2008, 197 Black men residing in Massachusetts were recruited via modified respondent-driven sampling and completed an interviewer-administered survey. Overall, 8% reported sex with a transgender partner in the past 12 months. Over half (56%) reported unprotected sex during their last encounter with transgender partners. Factors significantly associated with having a transgender sex partner: history of substance abuse, incarceration, PTSD symptoms, lower levels of perceived social support, not having been exposed to HIV prevention services in the past 12 months, and endorsement of mobile van services as a comfortable location to access health care. These formative data suggest that Black men who partner with transgender individuals may be at elevated risk for an array of poorer health-related outcomes, including HIV sexual risk, substance abuse, incarceration, psychosocial vulnerability, and lack of access to health care. Theory-driven interventions that consider the broader context affecting the embodiment of HIV risk are warranted for men who have sex with transgender partners.

Black men and women in the United States remain disproportionately affected by the HIV epidemic. According to the Centers for Disease Control and Prevention (CDC), the HIV incidence rate in 2006 (rate of new HIV infections) among Black

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communities was estimated to be more than six times the rate among whites (83.7 per 100,000, compared to 11.5 per 100,000 population) (CDC, 2008; Hall et al., 2008). HIV prevalence data from 2007 also indicates that in each surveillance-based category of HIV transmission, Black men and women bear a disproportionate burden of HIV disease—69% heterosexual contact, 57% injection drug use, and 39% men who have sex with men (MSM) (CDC, 2009). Black Americans are also more likely to be unaware of being HIV positive and/or to be diagnosed with HIV at a later stage of disease, receiving an AIDS-related diagnosis within one year of finding out they are HIV positive (CDC, 2009). In Massachusetts, Black residents remain overrepresented in HIV rates as they do nationally, comprising 6% of the state's population and 28% of living HIV/AIDS cases, with Black men representing more than a quarter (27%) of new HIV infections among Massachusetts men in 2008 (Massachusetts Department of Public Health (MDPH), 2009a, 2009b).

Men who have sex with transgender persons may be at elevated risk for HIV infection due to a host of individual, community, and structural level factors. Several explanations have been offered to account for this elevated risk among Black men with transgender sex partners. First, high rates of HIV infection have been observed among transgender women. A recent meta-analysis by Herbst and colleagues (2008) across 29 studies of male-to-female transgender populations found rates of HIV between 12% and 28%, with even higher rates observed among Black transgender women (31%-56%). Second, men who have sex with transgender persons have been shown to have a variety of sexual identities, behaviors, and partner types which may make reaching this subpopulation of men with HIV prevention efforts difficult (Operario, Burton, Underhill, & Sevelius, 2008). Current categorical HIV surveillance data exemplifies some of the challenges of reaching men who have sex with transgender women. For example, where do we look for Black men who have sex with transgender women-in heterosexual, MSM, and/or injection drug use (IDU) categories of HIV transmission? Although the CDC Enhanced HIV/AIDS Reporting System (eHARS) allows reporting of sex beyond male and female categories and Massachusetts has begun collecting "transgender" as a sex on HIV/AIDS case report forms, the answer might still be in all of them. Third, structural level factors that disproportionately affect Black men, such as low socioeconomic position, incarceration, substance abuse, and stress due to racial discrimination may drive HIV risk behaviors and contribute not only to individual risk, but also to community-level distributions of disproportionate prevalence (Aral, Adimora, & Fenton, 2008).

Few empirical studies have presented data on HIV risk among men who have sex with transgender partners (Bockting, Miner, & Rosser, 2007; Coan, Schrager, & Packer, 2005). For example, Coan and colleagues (2005) surveyed male partners of male-to-female transgender persons in San Francisco and found high risk for HIV acquisition and transmission: 19% were HIV positive, 23% injected drugs, and 44% had unprotected sex with a male, female, or transgender partner in the past six months. Bockting and colleagues (2007) explored sexual behavior with transgender partners in a sample of Latino MSM. Compared to Latino men who did not report sex with transgender partners, those who had sex with transgender partners were more likely to be HIV positive, identify as bisexual or heterosexual, have sex with non-transgender women, and engage in unprotected sex with in the past three months (Bockting et al., 2007). No research to date that we are aware of, however, has examined the sexual behavior of Black men who have sex with transgender partners mers, and the social psychological and structural factors influencing HIV risk among male sexual partners of transgender persons remain unknown.

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The overarching aim of this study was to assess the sexual behaviors of Black MSM in Massachusetts (see Mimiaga, Reisner, Cranston et al., 2009). The current analysis focused on the sexual behaviors of a subset of Black MSM sampled in Massachusetts who reported engaging in sexual behavior with transgender partners (n = 16), compared to MSM who did not (n = 181), and sought to formatively explore some of the social determinants of HIV risk behavior among this subset of men. The overarching goal was to (1) consider what we might learn about racial disparities in HIV acquisition and transmission from this subpopulation, and (2) generate ideas and hypotheses for thinking about future research and interventions with this group, as well as the transgender persons they partner with.

METHODS

DESIGN AND SETTING

Between January and July 2008, 197 Black men who reported having sex with men and who reported residing in Massachusetts were recruited via a modified respondent-driven sampling (RDS) method, completed a quantitative assessment with a trained interviewer, and were offered voluntary HIV counseling and testing. The study was a joint collaboration between Fenway Health (FH), a freestanding health care and research facility specializing in HIV/AIDS care and serving the needs of the lesbian, gay, bisexual, and transgender community in the greater Boston area (Mayer, Mimiaga, VanDerwarker, Goldhammer, & Bradford, 2007); the Multicultural AIDS Coalition (MAC), a community-based HIV/AIDS service organization working within communities of color; the Justice Resource Institute (JRI), one of the largest human service providers in Massachusetts; and the Massachusetts Department of Public Health Office of HIV/AIDS. The institutional review boards at Fenway Community Health (FCH) and JRI approved the study, and all study activities took place at the two participating study sites in Boston: MAC (n = 154) and JRI (n = 43).

ELIGIBILITY

Individuals were eligible for the study if they (1) identified as Black, (2) identified as male, (3) were age 18 years or older, (4) reported living in Massachusetts, and (5) reported having oral or anal intercourse with a man in the preceding 12 months. Each study participant was screened for study eligibility prior to enrollment.

RECRUITMENT

A modified RDS method (Heckathorn, 1997), used successfully in prior studies of MSM in Massachusetts (Mimiaga, Goldhammer, Belanoff, Tetu, & Mayer, 2007; Mimiaga, Reisner, Cranston et al., 2009, Mimiaga, Reisner, Tetu et al., 2009), was utilized to recruit a diverse sample of men. Participants were recruited to function as recruiter "seeds" at each of the participating study sites. Seeds were each asked to recruit up to five individuals in their sexual or social network who in turn recruited a subsequent wave of no more than five participants and so on until the *a priori* determined sample size had been reached. A dual incentive system was used for compensation: participants were offered remuneration for completing the survey (\$25) and for completing the optional HIV test (\$25); in addition, they were offered \$10 for each eligible peer they recruited, up to five, for a maximum of \$100. Additional details of recruitment have been detailed previously (Mimiaga, Reisner, Cranston et al., 2009).

QUANTITATIVE ASSESSMENT AND MEASURES

After providing informed consent, participants completed a quantitative assessment administered by a trained interviewer that lasted approximately one hour.

Demographics. Demographic questions were adapted from the Centers for Disease Control and Prevention's National HIV Behavioral Surveillance Survey, MSM Cycle (Sanchez et al., 2006). Demographic information included age, ethnicity, education, health insurance, housing, and sexual identity (heterosexual, bisexual, or gay).

Sexual Risk. Sexual behavior and sexual partner history questions were adapted from the Centers for Disease Control and Prevention's National HIV Behavioral Surveillance Survey, MSM Cycle (Sanchez et al., 2006). Questions were asked about sexual partners (male, female, and transgender partners) in the past 12 months and their most recent sexual encounter.

Substance Use during Sex. Questions assessed substance use during sex in the prior 12 months, including use and frequency of non-parenteral and injection drug use (IDU).

HIV Status and STD History. Participants were asked about their STD history (syphilis, gonorrhea, chlamydia) in the previous 12 months and ever; they were also asked to report their HIV status. As part of the study procedures, HIV testing and counseling were offered via the rapid HIV antibody test (see procedures below), and HIV status was verified among participants who were HIV tested.

Depression. Depressive symptoms were assessed with the Center for Epidemiologic Studies Depression Scale (CES-D), which has been validated in many populations to assess clinically significant depressive symptoms (Cronbach's alpha = 0.89; Radloff, 1977; U.S. Department of Health and Human Services, 2004). The 20 items were scored on a four-point Likert scale from 0 to 3, where we used the scale score as a continuous variable with higher scores indicating higher depressive distress.

Post-Traumatic Stress Disorder (PTSD) Symptoms. Traumatic symptoms were assessed using the SPAN measure (Startle, Physiological arousal, Anger, and Numbness), which is an abbreviated form of the widely used Davidson Trauma Scale (Davidson et al., 1997). This four-item screener has been shown to be a reliable and valid screening tool for PTSD in individuals who have experienced a trauma (efficiency/accuracy = 0.88, sensitivity = 0.84, specificity = 0.91, positive likelihood ratio = 9.1) (Meltzer-Brody, Churchill, & Davidson, 1999).

Social Support. Perceived social support by friends and peers was assessed using the Multidimensional Scale of Perceived Social Support (MSPSS) friends subscale, a four-item validated scale scored on seven-point Likert scale from 1 to 7 (Cronbach's alpha = 0.88; Zimet, Dahlem, Zimet, & Farley, 2008; Zimet, Powell, Farley, Werkman, & Berkoff, 1990). Scores were summed and high scores indicated greater perceived social support.

HIV Prevention Services. Participants were asked about their exposure to HIV prevention services in the past 12 months, including whether or not they had (1) contact with an HIV prevention outreach worker or peer educator, (2) participated in a

one-on-one prevention intervention, and (3) participated in a group-level HIV prevention intervention. These were collapsed into a single variable to examine overall exposure to HIV prevention services in the past 12 months.

Comfortable Locations to Access Health Care Services. Participants were asked whether they felt comfortable accessing health care services in Massachusetts, including medical and psychosocial care, at four types of service providers: (1) mobile van, (2) community health center, (3) private physician's office, and (4) hospital.

History of Incarceration and Substance Abuse. Participants were asked to report whether they had spent time in jail or prison at any time in their life, as well as the length of time in prison during their most recent incarceration. Individuals reporting 90 days or more of jail time were considered to have a prior history of incarceration; those with fewer than 90 days were not. An incarceration history of 90 or more days was selected based on criminal justice sources which suggest that a three-month incarceration threshold would separate those incarcerated for minor misdemeanor offenses from those who committed more serious crimes (Massachusetts Sentencing Commission, 1998). Participants were queried as to whether they had ever been in substance abuse treatment for drug or alcohol use in their lifetime. Men responding affirmatively were considered to have a history of substance abuse; those who did not were considered to not have a history of substance abuse.

HIV TESTING

After both the consent process and administration of the quantitative assessment, each participant had the option to have a voluntary confidential rapid HIV antibody test. The Food and Drug Administration–approved OraQuick® ADVANCE[™] HIV-1/2 Antibody Test was used for HIV testing [sensitivity = 99.6% (98.5–99.9); specificity = 100% (99.7–100)]. Procedures have been described in detail elsewhere (Mimiaga, Reisner, Cranston et al., 2009).

DATA ANALYSIS

The broad analytic strategy was to compare Black MSM who reported transgender partners to those who did not report transgender partners in the past 12 months. SAS version 9.1.3 statistical software was used to perform each analysis where statistical significance was determined at the $\alpha = 0.05$ level. The distribution and range of each variable were assessed by partner type (transgender, male, and female) and by sexual risk (unprotected versus protected sex). Fisher's exact tests (Fisher, 1922) were used to examine proportional differences between men reporting and not reporting transgender partners-that is, to calculate the total probability of observing data as extreme or more extreme if the null hypothesis were true (here, the proportion of men reporting transgender sex partners and the proportion of men not reporting transgender sex partners were equal across variables of interest, including unprotected sex, STD history, substance use, incarceration history, etc.). Fisher's exact tests were chosen due to small cell sizes (expected values below 5) in order to reduce the probability of type I error and to obtain a conservative estimate based on a hypergeometric probability distribution (Agresti, 1992). Independent two-sample *t*-tests (Rosner, 1999) were used to assess mean differences in depressive symptoms, PTSD symptoms, and social support scores between men reporting and not reporting transgender sex partners.

RESULTS

Overall, 8% (n = 16) of men reported having a transgender sex partner in the past 12 months. Sample characteristics of men who reported a transgender partner in the past 12 months (n = 16) and those who did not (n = 181) are shown in Table 1.

Socioeconomics. A significantly higher proportion of men who reported sex with a transgender partner reported being recently unstably housed (31% vs. 12%; OR = 4.12; 95% CI = 2.95-5.28; p = 0.03) and having public health insurance (100% vs. 80%; OR = 3.97; 95% CI = 1.91–6.03; p < 0.05).

Sexual Identity. None of the men who reported sex with a transgender partner in the past 12 months self-identified as gay. Men with transgender partners were more likely to self-report as bisexual (81% vs. 40%; OR = 6.31; 95% CI = 5.12-7.70; p = 0.003) than were men not reporting transgender partners.

Sexual Risk Behavior. More than half (56%) of men with transgender partners reported unprotected sex during their most recent sexual encounter with a transgender partner. A significantly higher proportion of men with transgender sex partners also reported unprotected sex during their most recent sexual encounter with a female partner (81% vs. 25%; OR = 12.71; 95% CI = 11.42–14.02; p = 0.00001).

Substance Use during Sex. MSM reporting transgender partners had elevated rates of substance use during sex and were significantly more likely to report use of cocaine (50% vs. 19%; OR = 4.32; 95% CI = 3.27-5.37; p = 0.008), crack (31% vs. 13%; OR = 3.12; 95% CI = 1.98-4.27; p < 0.05), and heroin (19% vs. 3%; OR = 8.12; 95% CI = 6.58-9.66; p = 0.02) at least monthly or more frequently during sexual behavior than men without transgender partners.

HIV Prevention Services. Men with transgender partners were less likely to report having been exposed to HIV prevention services in the past 12 months than participants who did not report sex with transgender partners (38% vs. 71%; OR = 0.25; 95% CI = 0.09–0.72; p = 0.01). A higher proportion of men reporting transgender partners endorsed feeling comfortable accessing health care via mobile van services compared to men without transgender partners (63% vs. 35%; OR = 3.12; 95% CI = 2.06–4.18; p = 0.03).

Presenting Psychosocial Difficulties. Compared to men without transgender partners, men reporting transgender sex partners had elevated levels of psychosocial distress (see Table 1). Men with transgender partners had significantly higher mean scores on PTSD symptoms (*t*-test statistic = 2.41; p = 0.03) and significantly lower mean scores on perceived social support from friends/peers (*t*-test statistic = -2.57; p = 0.02).

History of Incarceration and Substance Abuse. Striking disparities were observed when examining history of psychosocial lifetime events among men reporting transgender partners in the past 12 months (see Figure 1). Men who reported transgender partners in the past 12 months were more likely to report a history of substance abuse (88% vs. 39%; OR = 11.10; 95% CI = 9.59–11.61; p = 0.0003) and a history of incarceration for 90 days or more (69% vs. 18%; OR = 9.87; 95% CI =

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	Transgender Partner ($n = 16$) No Transgender Partner ($n = 181$)				
	Mear	Mean (SD)		Mean (SD)	
Age (years)	41.75	(9.69)	38.38 (11.44)	
Depressive symptoms (CES-D) PTSD symptoms (SPAN)* Perceived social support (MSPSS friends subscale)*	19.63 3.06 17.31	19.63 (14.53) 3.06 (2.38) 17.31 (3.48)		12.65 (12.23) 1.58 (2.11) 19.66 (3.77)	
	n	%	n	%	
Ethnicity					
Hispanic/Latino	0	0.0	15	8.3	
African American identified	16	100.0	156	86.2	
Black (not African American) identified	0	0.0	25	13.8	
Non-U.S. born	0	0.0	14	7.7	
Socioeconomics					
High school education or less	5	31.3	82	45.3	
Unstable housing in past 12 months*	5	31.3	18	9.9	
Public health insurance (Medicaid, Medicare, Veteran's Administration)*	16	100.0	145	80.1	
Structural-Level Indicators of "Dispossession"					
History of incarceration (90 days or more)*	11	68.8	33	18.2	
History of substance abuse*	14	87.5	70	38.7	
Sexual Identity					
Heterosexual	3	18.8	15	8.3	
Bisexual*	13	81.2	73	40.3	
Gay*	0	0.0	87	48.1	
HIV and STDs					
HIV positive	2	12.5	33	18.2	
STD history	7	43.8	50	27.6	
Sexual Risk Behavior, Most Recent Sexual Encounter					
Unprotected sex with transgender partner*	9	56.3	0	0.0	
Unprotected sex with female partner*	13	81.2	46	25.4	
Unprotected sex with male partner	6	37.5	93	51.4	
Unprotected sex with serodiscordant male partner	3	18.8	22	12.2	
Drug Use During Sex, At Least Monthly in Past 12					
Months					
Crack*	5	31.3	23	12.7	
Cocaine*	8	50.0	34	18.8	
Heroin*	3	18.8	5	2.8	
Exposure to HIV Prevention Services in the Past 12 Months					
Had contact with an outreach worker, participated a one-on-one or group-level intervention*	in 6	37.5	128	70.7	
Are You Comfortable Accessing Health Care at the					
Following Locations?					
Mobile van*	10	62.5	63	34.8	
Health center	14	87.5	124	68.5	
Doctor	16	100.0	173	95.6	
Hospital	16	100.0	148	81.8	

TABLE 1. Comparing Demographic, Behavioral, Psychosocial, and Health Care Access	Variables a	among
Black Men with $(n = 16)$ and without $(n = 181)$ Transgender Partners		

Note. *p < 0.05 (Fisher's exact tests of significance, 2-tailed)

8.74–10.99; p = 0.00004) than were their counterparts who did not report recent sex with a transgender sex partner.

DISCUSSION

This is the first study the authors are aware of that explores contextual, behavioral, and psychosocial risk factors surrounding HIV prevention among a sample of exclu-

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FIGURE 1. Disparities in History of Incarceration and Substance Abuse Were Considerable between Black Men with (n = 16) and without (n = 181) Transgender Partners *Note*. *p < 0.05 (Fisher's exact tests of significance, 2-tailed)

sively Black men who report partnering with transgender partners. These formative data corroborate prior research documenting elevated risk for HIV and STDs among men who partner with transgender persons (Bockting et al., 2007; Coan et al., 2005). Black men with transgender partners in this sample were at elevated risk for an array of poorer outcomes across multiple health domains, including HIV sexual risk, substance use and abuse, symptoms of PTSD, lower social support, and history of incarceration. Moreover, these men, who appear to be among the most vulnerable in an already at-risk sample, maybe be underserved in current HIV prevention activities. Findings underscore the need for further intervention development at the individual, partner, and network levels-in particular for Black men who may access substance abuse treatment services and/or become incarcerated. As a short-term approach, integrating HIV prevention services in substance abuse treatment, postincarceration release programs, and mobile van services may represent important strategies to reach this population of men. A longer-term approach to addressing disproportionate HIV risk among Black men who partner with transgender persons will necessitate further elucidation of the structural-level factors driving disparities (Aral et al., 2008)—attention to what social psychologists have called the "circuits and consequences of dispossession" (Fine & Ruglis, 2009).

Consistent with past research (Nemoto, Operario, Keatley, Han, & Soma, 2004; Operario, Burton, Underhill, & Sevelius, 2008), data suggest that men who engage in sex with transgender partners represent a challenge for HIV prevention efforts, due to variety in identities, behaviors, and partners. In particular, our findings appear consistent with prior research that has shown that the male partners of transgender persons may not be a cohesive or well-networked collective community (Operario, Burton, Underhill, & Sevelius, 2008). In the current study, an elevated proportion of Black men with transgender sex partners self-identified as bisexual

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or heterosexual and not gay; they reported sex with male, female, and transgender partners. A significantly lower proportion was exposed to recent HIV prevention services, and a lower mean perceived social support score was observed.

These findings appear consistent with research by Operario, Burton, Underhill, & Sevelius (2008) using in-depth interviews with 46 men reporting sex with transgender women. The authors report: "Among this group of men, their one shared characteristic was a history of sex with transgender women. Beyond this, there were no dominant trends in sexual identities, reasons for being attracted to transgender women, or sexual behavioral preferences" (Operario, Burton, Underhill, & Sevelius, 2008, pp. 24-25). As other research has suggested (Bockting & Avery, 2005; Nemoto, Sausa, Operario, & Keatley, 2006; Operario, Burton, Underhill, & Sevelius, 2008; Reisner et al., 2009), efforts to reach partners of transgender persons may be best aimed at transgender individuals who are often networked with other transgender individuals, and may utilize dyads/couples or networks to deliver interventions. For example, sexual scripts have been theorized to guide both the individual's and/or the dyad's expectations and perceptions about sexual behaviors, including interpreting meaning in sexual encounters and interpersonal relationships through socially, culturally, and environmentally shared processes (Simon & Gagnon, 1986). While there may be no or few shared characteristics among Black men who have sex with transgender partners in terms of attractions, behaviors, and identities with transgender partners (Operario, Burton, Underhill, & Sevelius, 2008), the relational and dyadic processes underlying these men's sexual scripts may be shared and warrant future study for intervention research.

There are limitations of our data to report. First and foremost, participants were asked whether they engaged in sex with transgender partners; however, there was no assessment of whether their transgender partners were on the male-to-female (MTF) or female-to-male (FTM) spectrum. Given that HIV risk behaviors and HIV prevalence differ substantially by gender vector (Herbst et al., 2008), this lack of specificity represents a substantial limitation. Relatedly, misclassification is a potential issue as it is possible that men with a transgender partner may have also reported having a female partner (i.e., classifying a given transgender partner as both transgender and female, or as both transgender and male, if pre-operative). We sought to minimize misclassification bias as much as possible in the administration of the assessment by having trained interviewers read an introduction to the sexual behavior portion of the assessment to clarify for participants that the questions that followed would be asked separately for male, female, and transgender partners.

Second, small sample size limits statistical power, and cross-sectional study design limits our ability to infer causality. Third, as with other non-probability sampling methods, modified RDS is subject to potential biases (e.g., selection bias where the non-random selection of initial recruits could have subsequently affected the characteristics of participants recruited). Furthermore, incentives used in modified respondent-driven sampling may have resulted in a more socially marginalized group of Black men, leading to inflated prevalence rates for substance use and/or history of incarceration (i.e., data from participants may not be generalizable across all Black MSM in Massachusetts).

Fourth, transactional sex has been shown to be a risk factor for HIV among transfemales (Operario, Soma, & Underhill, 2008) and has been documented among transmales (Reisner, Perkovich, & Mimiaga, 2010); however, the current study did not assess whether Black men partnering with transgender persons did so in the context of transactional sexual encounters or not. Also of interest is the race/eth-

nicity of the transgender persons that Black men partnered with and which would be important for future research studies on this topic. Additionally, an enrollment criterion for the current study was admitting to being MSM; thus, stigma-related processes may be relevant for understanding current findings, and research with a heterosexual Black male population could have different results.

A final limitation pertains to the absence of any measure examining racial discrimination, which has been shown to be a robust predictor of a variety of negative health outcomes, especially among African-American men and women (Krieger, 2000). Future studies would benefit from including additional measures to assess the direct and indirect effects of racial discrimination on the sexual health of Black men who partner with transgender persons. Furthermore, incorporating measures that comprehensively assess the dynamics of sexual partnerships between non-transgender men and their transgender partners may assist in developing more nuanced prevention interventions with this community (i.e., gender and sexual roles, sexual behavior preferences, etc.).

Despite these limitations, the data presented have several strengths, foremost of which is the study's formative nature and ability to generate ideas for future research. For example, observed disparities among Black men reporting transgender sex partners may help us to begin considering further how to theoretically integrate explanations for the distribution of diseases and health outcomes between individuallevel and population-level approaches to prevention, in particular how structurallevel factors might interact with individual-level, couple-level, and community-based risks to produce and sustain disparities in HIV (Aral et al., 2008). The current study suggests that significant disparities are present among Black men who partner with transgender partners. One implication of current findings for HIV prevention is that the subset of Black men who have sex with transgender partners may be difficult to reach using traditional community-based prevention programming. In fact, the high level of observed risk behaviors among this subset of men and the extent to which they are underserved leads to more questions about the structure of prevention programming and reporting: Is the category-based approach to HIV prevention the most useful approach? Who gets missed in category-based HIV prevention efforts and how do we remedy this?

Moreover, current findings extend prior research (Operario, Burton, Underhill, & Sevelius, 2008) by considering several structural-level factors, including history of substance abuse and history of incarceration, which may be proxies for poverty, lower socioeconomic position, and other factors connected to "fundamental" social determinants of health (Link & Phelan, 1995). Additional research and surveillance efforts are warranted to understand the multi-level factors affecting the sexual health of men who partner with transgender persons, including larger samples that allow for stratified analyses across racial groups, geographic areas, and transgender partner gender (i.e., MTF vs. FTM). Routine collection of socioeconomic information in HIV reporting and surveillance efforts is needed to elucidate structural-level factors driving the disproportionate incidence of HIV among Black men and women (Aral et al., 2008).

Finally, given the risks and vulnerabilities identified among this sample of men who partnered with transgender persons in the past 12 months, these data could offer one potential explanation for the high rates of HIV infection among transgender women. The prevalent psychosocial problems found among men in this sample could also contribute to higher rates of psychosocial health concerns seen among transgender populations more generally. For example, substance use and abuse health behaviors may be reinforced via social norms. Attention to the sexual and social network configurations of transgender persons, including the sexual partner pool which transgender persons access, and to the relational contexts in which HIV risk behavior occurs warrant consideration in future research. HIV prevention research that focuses exclusively on men who partner with transgender persons or solely on transgender individuals themselves is likely to be of limited utility, given that HIV risk occurs within a relational context (dyads). Future research would benefit from adopting a dyadic framework to understand how both partners bring risk into the relationship, including ways to mitigate and change HIV risk behaviors in a relational context and improve "dyadic capacity for successful coordination" (Karney et al., 2010). Characteristics and dyadic processes such as trust, intimacy, satisfaction, communication, commitment, and power (Jones, 2006; Karney et al., 2010) deserve attention in future research and intervention development to address disparities in HIV infection among Black MSM and transgender communities.

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