

SEXUAL HEALTH BEHAVIORS AMONG BISEXUAL MEN IN THE UNITED STATES

By

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To bisexual men and women everywhere

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Throughout the last few decades, the scientific community's interest in bisexual men has substantially increased. Much of the attention to them has been because of their relevance to epidemics of human immunodeficiency virus and other sexually transmitted infections (HIV/STIs). Despite the elevated HIV/STI risks found in some studies, the vast majority of sexual health studies focus on homosexual men, with few distinguishing bisexual men from their gay/homosexual counterparts. Such has resulted in little being known regarding bisexual men's distinct sexual health behavior patterns. This study is unique in its use of sexual behavior, identity, attraction measures to compare sexual health behaviors among bisexual, homosexual, and heterosexual men. Data came from the 2002 National Survey of Family Growth, which has a nationally-representative sample of 3,875 sexually-active men in the United States. I measured sexual health based upon condom use, HIV testing, and the number of recent sex partners. Bivariate and multivariate analyses compared bisexual, heterosexual, and homosexual men on all study measures. The most meaningful differences were observed along sexual behavior. Relative to heterosexual and homosexual men, bisexual men had significantly higher levels of condom use. However, bisexual men had much lower levels of HIV testing than homosexual men and far more sex partners than both heterosexual and homosexual men. Bisexual men also

appear to be at elevated risk levels due to their high likelihoods of drug use and sex work.

Interestingly, the effect of bisexual behavior upon condom use and HIV testing was different for men who identified as bisexual or not. By and large, identity and attraction measures only produced bisexual-heterosexual differences, which tended to disappear in multivariate analyses.

These findings suggest that behaviorally bisexual men are at high risk for HIV infection. I discuss the need for better data and interventions to improve the sexual health behaviors of bisexual men in the United States.

CHAPTER 1  
THEORETICAL AND METHODOLOGICAL CONSIDERATIONS IN THE STUDY OF  
BISEXUAL MEN’S SEXUAL HEALTH

**Introduction**

Sexuality is one of the most important aspects of being human. Generally speaking, our abilities to procreate, become romantically intimate, and acquire sexual pleasure heavily rests upon how we live as sexual beings. Our sexualities, however, are not solely influenced by individual characteristics. For millennia, societies have routinely sanctioned certain types of sexual dispositions and behaviors while condemning those deemed harmful to their respective social settings. Cultures and sub-cultures specific to these milieu subsequently convey implicit endorsements in favor of particular types of sexualities, which are more or less consistent with what the larger society regards as appropriate.

For example, compulsory heterosexuality—the belief that females and males innately have likings for one another and that heterosexuality is the natural form of sexual expression—is an unspoken assumption characterizing the United States. However, if we examine the institutions upon which our society is built, it becomes clear that individuals who are not heterosexual do not possess the same socially-bestowed privileges as heterosexuals. We might consider the denial of same-sex marriage rights, condemnation of homosexuals by many religious organizations, and the military’s policy of “don’t ask, don’t tell” as being examples of how social and cultural phenomena converge to legitimize some sexualities and condemn others.

It is because of these social undercurrents that sexual orientation has emerged as an important area of study among health scientists within a variety of disciplines. Lesbians, gays, bisexuals, and other non-heterosexuals generally have worse health than heterosexuals. Most social scientists would agree that this is because living in social settings that are not supportive of non-heterosexuals results in them not receiving equal health capital. Sub-groups of non-

heterosexuals, of course, are far from equal to each other. Bisexual individuals incur substantially greater social discrimination than all other non-heterosexuals, and they sometimes receive from their lesbian and gay counterparts. As I outline in this chapter, anti-bisexual sentiments persist by way of institutions, public representations, and discourses that give primacy to gay and lesbian issues.

The recognition of bisexual individuals' social marginalization gave me the desire to conduct research on their health. My general interests in sexual health and HIV led me to investigate the sexual health behaviors that place bisexual men and their partners at risk for human immunodeficiency virus (HIV) and other sexually transmitted infections (STIs). My reading of the literature, much of which is presented in the subsequent pages of this dissertation, suggested that this project was very timely. With the prevalence of HIV/STIs substantially increasing each year, I reasoned that bisexual men would be more adversely affected than other men. Thus, to understand male bisexuality in relation to health behaviors would provide much-needed knowledge in the area of men's health and well-being.

Throughout the last several decades, the scientific community's interest in bisexual men has steadily increased. Most of the focus on them stems from their categorization as a risk group within the HIV epidemic. Our initial curiosity in bisexual men was based in the belief that a "bisexual bridge" existed. That is, their sexual behaviors with men had the potential to spread HIV from populations of high-risk homosexual men to women. In light of their epidemiological relevance, one would think that a substantial amount of scientific literature would be published about them. To the contrary, many of the assumptions regarding bisexual men's harmful health behaviors have emerged by way of conjecture, with little empirical evidence being generated to validate such claims.

It is for this reason that the current study fills important knowledge gaps within the social and health sciences. As I demonstrate below, we suffer from a lack of understanding of bisexuality as a distinct sexuality among men. Therefore, I argue that sexual behaviors, identities, and attractions are important dimensions by which sexual orientation (broadly speaking) and bisexuality (in particular) are configured and, consequently, conceptualized and measured. The consideration of these dimensions within a single study is an important shift away from the predominant strategy of using only one measure (i.e., behavior) of bisexuality.

In this chapter, I begin with a critique of the scientific community's use of "men who have sex with men" (MSM). Next, I contend that we should prioritize a research agenda that examines the sexualities and health behaviors of bisexual men as separate and distinct from gay/homosexual and heterosexual men. In doing so, I highlight the relevance of sexual identities, behaviors, and attractions as potential mediators of bisexual men's health behaviors. I proceed with a discussion of intersectional issues that are relevant in understanding men's dispositions for bisexuality and various health behaviors. This chapter concludes with an acknowledgment of the limitations inherent in my approach to studying bisexual men's health as well as an introduction to the three empirical chapters comprising the heart of this dissertation.

### **Public Health's Use of MSM Category**

The category MSM has dominated the HIV/STI literature since the early 1990s (Dowsett, 1990). The term typically refers to men who have some type of anal or oral sexual encounter with men during a specified time frame. While researchers prefer to operationalize it based upon recent sexual contact (e.g., sex with another man in the past year), studies have identified men as MSM if they had sexual contact with a man during the past five years (Montgomery et al., 2003) or even during the course of their lifetimes (Valleroy et al., 2000). To the extent that sexual orientation is often behaviorally defined, MSM is commonly understood as a proxy for "gay and

bisexual men.” Some researchers use both terms interchangeably or when discussing MSM as having “gay and bisexual” men’s issues (Wolitski et al., 2001, p. 883). Sex with women is typically ignored, although it has been partially recognized with the newly coined “men who have sex with men and women” or “MSMW” (see Hightow et al., 2006).

Young and Meyer (2005) provided two reasons for the proliferation of “MSM.” First, it served the epidemiological purpose of avoiding “complex social and cultural connotations that, according to a strict biomedical view, have little to do with epidemiological investigations of diseases” (p. 1144). In this sense, “MSM” emphasizes that behaviors are more efficient predictors of HIV risk than identities alone. This is ironic given that during the earliest phases of the HIV epidemic the homosexual identity, rather than homosexual behavior *per se*, was typically regarded as the primary determinant of HIV risk (Shilts, 1987). The second argument supporting the use of “MSM” was made by social scientists embracing the tenets of social constructionism. This view contends that sexualities are created by social processes, which often result in historical and contextual shifts in the meanings given to these sexualities. Consequently, sexual categories are not fixed and, therefore, will be difficult to interpret in relation to HIV risk behaviors. Constructionists also argue that the complexity of sexualities is such that sexual identities, behaviors, and desires are not always congruent. These aspects of sexuality are distinct and should be recognized as such. For this reason, the constructionist sentiment is that we must specifically recognize and measure sex with men because it places men at risk for HIV above risks associated with heterosexual intercourse alone.

Given our knowledge of the risks associated with male-male anal sex, to categorize men as MSM is, in some ways, warranted. Anal sex with men has been and continues to be associated with a relatively high likelihood of HIV infection (Page-Shafer et al., 1997). Currently, MSM

comprise half of all HIV infections in the United States (CDC, 2008a). Recent data clearly suggest that the prevalence of HIV among U.S. MSM, particularly black MSM, is comparable to rates among people living in sub-Saharan Africa (CDC, 2005a; see also Valleroy et al., 2000).

However, one problem with “MSM” is that it erases the particularities of bisexuality. By combining all MSM, studies gloss over sexuality differences that distinguish bisexual and other non-heterosexual men. In so doing, the sexual identities, behaviors, and attractions that constitute diverse sexualities are not fully recognized. More often than not, bisexual men become marginalized as discussions of MSM give primacy to gay men’s issues. This ultimately results in bisexuality not being recognized to the extent of gayness/homosexuality. Such continually marginalizes bisexuality as a topic worthy of distinct recognition.

Consider, for example, Pathela and colleagues’ (2006) article published in the *Annals of Internal Medicine*. Using a sample of New York City men, the authors distinguished straight-identified heterosexually-active men, straight-identified MSM, and gay-identified MSM. They then compared these men according to sociodemographic and sexual risk measures. They excluded men who had bisexual experiences during the past year ( $n = 30$ ) or identified as bisexual ( $n = 30$ ). Despite the relatively small sub-samples of bisexual men, the authors could have at least conducted bivariate tests so that men with any indication of bisexuality could be compared to the other men. Yet, the authors argue that they did not because “[b]ehaviorally bisexual persons have been found to differ in behavior and risk from those who exhibit exclusively homosexual behavior.” The authors’ assertion is correct, as is illustrated in the following literature review of HIV-related risk behaviors. Yet, would it not be reasonable to see if purported differences—largely drawn from convenience samples—persist in the probabilistic sample that Pathela et al. used? Also, given that relatively few studies have examined bisexual

men in comparison to other men, would it not be reasonable to perform analyses of bisexual men?

In a more recent article published in the *American Journal of Public Health*, Schwartz et al. (2007) examined HIV prevalence and predictors of high-risk behaviors among MSM living in San Francisco. Their tables indicated that 2.3% of the HIV-positive MSM had sex with a woman in the past year, whereas 9.6% of the HIV-negative MSM engaged in this behavior ( $p < .001$ ). The ratio of HIV-negative to HIV-positive MSM was about three. Thus, HIV-negative MSM were far more likely than HIV-positive MSM to be bisexually-active. This association would suggest that the MSM who have engaged in behaviors to protect themselves from HIV are also the ones who tend to be bisexually-active. Yet, the authors provide no comment regarding the implications this finding could have for understanding male bisexuality or risks of HIV/STI transmission to women. In neither the results nor discussion sections is the finding even mentioned.

The previous two examples illustrate a trend in which bisexuality is ignored in studies of MSM. Although the purpose of this chapter is not to provide a thorough survey of these studies, others document the problems associated with the MSM paradigm (Young & Meyer, 2003; Ford, 2006). It has certainly had detrimental impacts on our understanding of male bisexuality and other male sexualities. Particularly problematic is that the proliferation of this term has conditioned the public health community to understand men in relation to their sex with other men, broadly speaking, with little attention being devoted to specific behaviors or sex with women (see Wolitski et al., 2001). “MSM” has been institutionalized such that public health researchers are pressured to employ this reductionist term to male sexuality because their investigations occur in contexts supportive of it (Ford, 2006). Because the scientific community

recognizes the utility of “MSM”, it is fair to say that funding streams, publication opportunities, and the peer-review process are partial its use.

### **Importance of Bisexuality for Public Health Research**

We would be wise to draw upon social science research highlighting the distinctiveness of bisexuality. If bisexuals are unique relative to gay/homosexual and heterosexual men, then they have the potential to have health profiles that distinguish them from gay/homosexual and heterosexual men as well. Herein we recognize that sexual interactions with women among those who also have sex with men change the dynamics of health behaviors and risk of HIV transmission/acquisition. In light of this, we recognize that the way in which bisexuality is associated with disparate health outcomes is different from that of homosexuality and heterosexuality. I now discuss conceptual issues regarding bisexuality and the implications it has for men’s health.

In the examination of bisexuality and health, one may wonder: “What *is* bisexuality?” The constitution of bisexuality as a legitimate sexual orientation is a fairly recent phenomenon. It is a product of late 19th/early 20th century thought that began to recognize sexuality, like race/ethnicity and gender, as a major component of personhood (Angelides, 2007). It was at this time that we began to see sexuality as not merely what we do, but who we are as human beings (i.e., heterosexual or homosexual individuals). Sexuality and sexual orientation emerged as ways to categorize people. One unfortunate consequence of sexual categorization is that social stratification resulted from differential categorizations (Foucault, 1980). (As we shall see, bisexuals were placed on the bottom of the sexual hierarchy.)

In this sociohistorical context emerged the heterosexual-homosexual binary. Western characterizations of personhood already had clearly defined black-white, male-female, and man-woman binaries existing for race/ethnicity, sex, and gender, respectively. The heterosexual-

homosexual binary was perhaps a direct extension of these dichotomous understandings of social location. The construction of sexuality, however, rested heavily upon the “one-drop rule,” the notion that any inclination toward or manifestations of same-sex sexual preference is sufficient to regard one as “homosexual” (Zinik, 2000). Many also believed that due to the costs (e.g., social discrimination) involved in engaging in homosexual activity, one would not voluntarily choose homosexual behaviors unless “some deep dispositional feature” inclined one to be homosexual (Blumstein & Schwartz, 1976, p. 349). In this regard, having any proclivity toward homosexuality, irrespective of opposite-sex experience or desire, was indicative of a true “homosexual” orientation. This was presumed to be fixed over the life course (Fox, 1995). For these reasons, a number of preeminent scholars writing as late as the latter half of the 20th century routinely supported the heterosexual-homosexual binary to the exclusion of bisexuality (see Bieber et al., 1962; Bergler, 1956; Ruitenbeek, 1973).

More recent scholarship has come to recognize the legitimacy of bisexuality, and researchers have drawn upon various data sources and theoretical lens’ to characterize it. One of the best constructionist descriptions came from Weinberg et al. (1994, p. 49), who regard bisexuality as “a mingling of sexual feelings, behaviors, and romantic inclinations that does not easily gel with society’s categories of typical sexuality.” The authors’ recruitment of individuals possessing bisexual identities suggests that this “mingling” could also incorporate bisexual and other identities that may also be inconsistent with society’s prescriptions. We see similar depictions, though not as explicit, in works by others (see Paul, 2000; Rust, 1996, 2000a). Because multiple dimensions comprise bisexuality (and sexual orientation more broadly) and these dimensions can shift over time, queer theorists have been instrumental in emphasizing the fluid nature of bisexuality (Hall & Pramaggiore, 1996). They stress that life course progression

and other situational factors will affect how and when individuals embrace bisexual identities and behaviors. Fluidity also means that bisexual individuals rarely can be pigeon-holed into one category in which their attractions, behaviors, and identities are congruent (Angelides, 2006).

It is this multidimensional characterization that warrants the use of multiple measures of bisexuality (see Goodenow et al., 2002). Researchers embracing affirmative stances on bisexuality have attempted to recognize social, behavioral, and intrapsychic dimensions pertinent to its construction. Sexual identity, behavior/practice, and attraction/desire, respectively, correspond to each of these and are typically the measures employed in bisexuality's operationalization (Diamond, 2000; see also Laumann et al., 1994).

Aside from different sexual identities, behaviors, and/or attractions, bisexual men are distinct from their gay/homosexual and heterosexual counterparts in significant ways. First, the process of coming to terms with their sexualities is markedly more difficult for bisexual men. For the last several decades, gay men have been privileged by a fairly institutionalized "coming out" narrative (Cass, 1979; Troiden, 1988a). It posits that men with same-sex desires initially experience some level of identity confusion, which may be sparked by childhood or adolescent same-sex activity. They progress to eventually experiment with homosexual behavior and develop a sense of commitment to a gay identity. Gay men are later expected to "come out" by openly expressing their gay identities and commitment to the gay and lesbian community to others.

An equivalent model simply does not exist for bisexual men. Thus, their inward and outward negotiation of bisexuality, relative to the normalization and formal recognition of gay identities, may be marked by greater psychological distress (McLean, 2007). Moreover, many refrain from coming out as bisexual due to the stigma associated with expressing preferences for

men and women (Balsam & Mohr, 2007). Weinberg and colleagues (1994, p. 34) have effectively illustrated the “continued uncertainty” bisexual individuals face due to society’s misconception that bisexuals are confused and not accepting of their true homosexual identities.

Multiple negative stereotypes of bisexual men contribute to bisexuality being considered an illegitimate sexuality. In lay discourse and the media, bisexual men are still regarded as vectors of HIV (see Ballard, 20001; Denizet-Lewis, 2003; King, 2004). Supporting this belief is the notion that there is a “bisexual bridge” such that bisexual men are able to acquire HIV from homosexual men and then transmit it to female partners. (The “bridge” discussion rarely considers the potential of bisexual men acquiring HIV and other STIs from female partners.) Although the bridge theory has largely been disproven (Ekstrand et al., 1994; Kahn et al., 1994; Prabhu et al., 2004), gay/lesbian and heterosexual people often use it to denigrate bisexual men (Eadie, 1999). Many embrace the belief that bisexual men refuse to come out as gay because they want to maintain heterosexual privilege (Israel & Mohr, 2004) or that they are unwilling to commit to heterosexual or gay/lesbian communities (Herek, 2002). Others contend that bisexuals choose to seek the sexual and emotional pleasure of the gay community without the homosexual stigma that gay men acquire (Zinik, 2000). Still, some regard bisexuals as promiscuous, untrustworthy, and thus not worth pursuing for committed relationships (McLean, 2007; Israel & Mohr, 2004). These beliefs undergird the notion that bisexuality is purely transitional to a life-long homosexual or heterosexual orientation and, thus, cannot be maintained over one’s life course (Zinik, 2000). Such discourse clearly supports the claim that bisexuality is an attempt to hide true homosexual preferences (Blumstein & Schwartz, 2000; Weinberg et al., 1994).

Because of these stereotypes, social scientists have argued that sexual stigma particular to bisexual individuals exists. Biphobia, prejudice and discrimination against bisexuals, is noted as pervasive in heterosexual and homosexual communities (Blumstein & Schwartz, 1976a, 1976b; Eliason, 1997; Fox, 1996; Mulick & Wright, 2001; Ochs, 1996; Paul, 2000; Rust, 1992; Udis-Kessler, 1991). Its existence underscores why same-sex attraction and behavior among both bisexual and gay men should not lead us to assume that these men are the same. The stigma that bisexual men face—even from their homosexual counterparts—makes it worse than that which gays/homosexuals acquire from heterosexual people alone.

In explaining the origins of biphobia, Ochs (1996) and Rust (1992) contend that gay/lesbian communities perceive bisexuality as a threat: if bisexuals can make legitimate claims for affection toward men and women, then they blur heterosexual-homosexual differences. Thus, bisexuals call into question the political struggles endured by gays and lesbians throughout recent decades. On the behalf of homosexuals, biphobia is more or less an unconscious or conscious attempt to validate gay and lesbian identities. The same may be true in the case of heterosexuals, who may also embrace biphobia as an extension of homophobia (Mulick & Wright, 2001). Like homophobia, biphobia can be internalized and serve as the source of significant maladjustment to sexual stigma (Ochs, 1996) while, excluding bisexuals from the benefits of gay/lesbian and heterosexual communities (Kennedy & Doll, 2001). Whatever the reasons for its existence, biphobia has the potential to adversely affect bisexual men's health and quality of life.

Unlike gay/homosexual men, bisexuals lack a sexual community affirming of their identities. Much of gay recognition in the United States is due to the visibility of the “gay community,” which provides social and emotional support to people who identify as lesbian or

gay (Rust, 1996). It serves as a forum for sociopolitical matters—such as repeals of sodomy laws and marriage rights—affecting gays and lesbians (Seidman et al., 1999). The gay community has been instrumental in championing civil rights protections that affirm gay identities and lifestyles (Gamson, 1995). Yet, bisexual individuals do not readily benefit from the social and emotional support provided through this community. (Even attempts to use inclusive terminology, such as the “LGBT community,” generally refer to “gay and lesbian” in actuality.) Indeed, they often experience rejection and outright hostility when attempting to participate in it (Rust, 1993). Many times, they are forced to hide by assuming gay or heterosexual identities if participating in the social networks gay and heterosexual people, respectively (McLean, 2007; Ochs, 1996).

Despite the development of small bisexual communities (primarily in New York and San Francisco) during the last two decades, bisexuals also lack a viable community of their own (Hutchins, 1996). Thus, whereas gays and lesbians have a collective voice that grants them political power in matters affecting their lives, bisexuals do not. Being marginal to heterosexual and homosexual communities may result in bisexuals not receiving the psychosocial benefits that gay and straight people acquire from the communities that continually affirm their sexualities (Ochs, 1996).

It is these psychosocial differences, particularly in community, between bisexual and gay/homosexual men that beg one of the most pertinent questions regarding the health of bisexual men: Do bisexual men reap the sexual health benefits that are typically available to gay-identified men? During the early years of the HIV epidemic, the gay community rallied to provide knowledge of HIV to gay men (Shilts, 1987). It provided a conduit for safe sex messages and interventions that eventually led to substantial decreases in HIV incidence rates.

Gays and lesbians burdened by the plights of gay men were at the forefront of AIDS activism. Given bisexual men's relatively low participation in and connection to the gay community (Balsam & Mohr, 2007), scholars question whether the gay community has provided comparable preventive information to bisexual men (Heckman et al., 1995; Kennedy & Doll, 2001). This is no light matter given the disproportionate focus on gay men in interventions targeting MSM (CDC, 2005b).

Also, if bisexual men experience low levels of integration and acceptance in the gay community and/or do not identify as gay, then they may shun interventions and safe sex messages that are targeted to gay men, irrespective of community. It is unclear whether messages targeted to heterosexual men will garner better reception as they generally focus on opposite-sex behaviors alone (Neumann et al., 2002). The lack of acceptance by gay and heterosexual communities could result in increased risk behaviors among bisexual men if, as scholars have effectively argued, bisexual men are socially distinct. Moreover, the negative stereotypes of bisexual men as well as the biphobia that they encounter could result in decreased self-efficacy needed to engage in safe sex behaviors. This is further complicated by the lack of a bisexual community which, if in existence, could provide a forum for the dissemination of HIV prevention messages.

### **Sexual Identity and Bisexual Men**

In bringing bisexuality to the fore of sexual health studies, we must acknowledge the unique potential of bisexual identities in men's lives. For some individuals, the act of naming oneself as bisexual validates sexual attractions and behaviors because it is an outward sign that one is a person worthy of special recognition (i.e., "bisexual"). Thus, the uncertainty associated with dual attraction may be attenuated in the presence of a self-validating identity (Weinberg et al., 1994). Equally important is the recognition that identities give meaning to sexual

preferences and behaviors (Paul, 2000; Young & Meyer, 2005). In this regard, identifying as bisexual is socially significant because it organizes bisexual preferences and practices in a world that denigrates bisexuality and privileges heterosexual and, more recently, gay/lesbian identities.

Based upon the meaning that bisexual identities have for some men, what are the implications of the bisexual identity for men's sexual health? If the adoption of a bisexual identity is a reflection of their attractions to and/or sex with both men and women, then this identity will convey the salience of bisexual activity and attraction. In doing so, it may regulate men's sexual activities and thus serve as an underlying determinant of sexual risk and/or protection with men and women. For example, if men identifying as bisexual practice concurrent sex with men and women because they believe bisexual activity defines them as bisexual, then they may maintain relatively high levels of bisexual activity, which could place them at high risk for HIV/STIs. Thus, the configuration of sexual practices around identities would provide considerable insight into behavior-based sexual health studies by suggesting reasons why some men choose to have sex with men and women.

Given the sociopolitical ramifications of sexual identities, identifying as bisexual could determine, more or less, receptivity to public health interventions. Some men embrace the bisexual label as a way to distinguish themselves from gay men. For others it may indicate some level of affinity to a larger sexual minority or LGBT community (Weinberg et al., 1994). In this regard, if studies were to find associations between being bisexual-identified and engaging in harmful sexual health behaviors, then interventionists could gauge the extent to which prevention efforts should be specifically tailored to bisexual-identified men. Also important is the way a bisexual identity could mediate the effectiveness of sexual health interventions (Stewart et al., 2000). If bisexual men see themselves as more or less at-risk for HIV/STIs than heterosexual

and gay men, then their willingness to internalize safe sex messages may be a direct function of their bisexual identities.

Bisexual-identified men may garner psychosocial benefits by identifying as bisexual. Gay identities have certainly provided gay men with a community that, in many ways, embraces safe sex messages as a way to curb the spread of HIV among its members. This community helps to buffer homophobia and internalized homophobia by providing social support to gay men (Herek et al., 1998). A similar mechanism could exist for bisexual identities among bisexual men. Although bisexual men largely lack a bisexual community, validation by other bisexual individuals or sexual minorities who are accepting of bisexuality may provide essential socioemotional support (see Strathdee et al., 1998). This may help to shield internalized biphobia, which may underlie some bisexual men's reasons for engaging in HIV-related risk behaviors. While researchers' arguments regarding the adverse health effects of internalized biphobia are largely theoretical (see Dworkin, 2001; Hutchins, 1996), we certainly know that internalized homophobia can result in inconsistent condom use and shunning of HIV interventions (Huebner et al., 2002; Williamson, 2000). Therefore, it is not wholly unreasonable for bisexual identities to similarly provide protection to bisexual men.

Notwithstanding the importance of bisexual and other identities for sexual community, politics, and/or expression for some individuals, we must not essentialize identities. The use of statistical models in research often necessitates the categorization of individuals based upon the sexual identity labels they possess. This strategy clearly facilitates the investigation of identities in relation to sexual practices and other health-related behaviors. However, by categorizing individuals based upon these identities we may assume that these identities are essential to the individual (Rust, 2000a). In doing so, we risk minimizing the social, historical, and political

processes that make identities meaningful to bisexual individuals. This was the case in much of gay and lesbian scholarship up until the 1990s, as many gay and lesbian researchers focused on the biological origins of sexual orientation in order to normalize their sexualities and validate civil rights protections acquired for them (Gamson, 1995). This strategy was invaluable in light of discriminatory practices that could be upheld if sexual minority status could be viewed as something gay and lesbian people “choose” to embrace. Problematic have been attempts by bisexual scholars and activists to apply the same self-validating strategies to bisexual individuals (Rust, 1996). In doing so, they risk encountering the deconstructionist critiques that have been raised against essentialist and constructivist approaches to gay and lesbian sexualities.

Change in sexual identity, although difficult to interpret with most quantitative and qualitative methodologies, is something that we must acknowledge. Because of the lack of social validation available to bisexual-identified persons, many find it difficult to sustain their bisexual identities over time (Weinberg et al., 1994). Others may adopt identity labels that are consistent with their current relationships; thus, they may identify as heterosexual if actively engaged in a sexual relationship with a person of the opposite sex, but identify as gay/homosexual if in a same-sex relationship (Blumstein & Schwartz, 2000; McLean, 2007). For these reasons, measuring sexual identity at one point in time—the most common strategy in survey methodology—limits our understanding of the dynamic nature of sexual identity throughout an individuals’ life course. Acknowledging this limitation brings us closer to understanding the realities of sexual identity and the way in which it affects health.

Rust (1996) draws our attention to changes in social contexts and discourse, which determine how bisexual persons can temporally shift their identities. The emergence of a bisexual movement in a few large cities has provided some social support for individuals who

choose to identify as bisexual. Whereas gay/lesbian and straight/heterosexual were the primary identity options in the past, sociohistorical changes recognizing the diversity of sexual expression have also made bisexual identities available for people with affections to women and men (Herdt, 2001; Klein, 1993). Consider, for example, the institutionalization of “LGBT,” which at least makes us more aware that some sexual minorities describe themselves as bisexual. Nonetheless, others may very well transition to gay/lesbian or heterosexual identities upon realizing that such labels are more aligned with their lifelong sexual and romantic preferences (Weinberg et al., 1994).

### **Sexual Attraction**

The question of what one likes sexually and the implications this liking has for sexual health has received little attention from the scientific community. Yet, sexual attraction undergirds many of the assumptions we hold in regard to sexual identities and behaviors as well as the relationships they engender. Scientific investigations and popular opinion largely presume that individuals have sex with males and/or females because they enjoy it. Indeed, many bisexual individuals report sex with both men and women as proceeding from their attractions to men and women (Blumstein & Schwartz, 2000; Muñoz-Laboy, 2004). They may also identify as bisexual because they have bisexual attractions (McLean, 2007). For these reasons, sexual attraction, as a precursor to sexual behaviors and identities, may be causally linked to sexual health outcomes known to be associated with behaviors and identities. Consider, for example, that a study were to find male bisexual behavior to be associated with an elevated number of sexual partners (see Hightow et al., 2006). We may then reason that men’s bisexual attractions, which precede their behaviors, provide the foundation allowing bisexual behavior to lead to greater numbers of sexual partners.

Bisexuality forces us to consider the degree to which gender situates sexual preference. The notion of having *bisexual* attraction largely assumes a dichotomous view of both sex (female-male) and gender (woman-man). In a culture in which this dichotomy typically goes unquestioned, one would expect individuals expressing bisexual attractions to report some degree of attraction to both men and women. Scholars embracing the centrality of gender for understanding sexual attractions, therefore, believe that “gender is the building material from which [bisexuals] put together their sexuality” (Weinberg et al., 1994, p. 57; see also Muñoz-Laboy, 2004; McLean, 2007). This view has been questioned by others, who contend that bisexual attractions transcend gender (Parker et al., 2007; Zinik, 2000). For them, to be bisexual means that individuals do not base their sexual attractions on compartmentalized attractions to men and women. Rather, sexual attraction proceeds from a liking of particular qualities that either men or women (or transgender individuals) can possess.

As is the case for sexual identity, we should not essentialize sexual attraction. Attractions, like other aspects of sexuality, do not emerge in a vacuum. Settings supportive of bisexual attraction will likely contribute to men’s willingness to express such attraction (see Rust, 1992; Weinberg et al., 1994). Similarly, we should not regard sexual attraction as fixed. Bisexual attraction has the potential to shift throughout one’s life course, and this shift may be affected by sociohistorical changes in sexual norms and culture (Rust, 1996). Thus, men may be more apt to outwardly express bisexual attractions in times that regard such attractions as legitimate. Still, subjective attractions may not directly correspond to physiological arousal (Rieger et al., 2005). It is important to acknowledge that men may express attractions to men and women that do not reflect the degree to which they are “turned on” by men and women. Last, we who categorize men on the basis of bisexual, homosexual, and heterosexual attractions risk ignoring the fluid

nature of attractions (see Kinsey et al., 1948). That is to say, if sexual attraction is constructed along a continuum of sexual feelings toward women and men, then grouping men into discrete attraction-based categories potentially undermines this continuity.

### **Sexual Health Behaviors and Bisexuality**

This dissertation will investigate the relationship of bisexuality to condom use, HIV testing, and the number of recent sexual partners among men. These behaviors are important because they can place men and their partners at more or less risk for HIV infection. Condom use, for example, decreases the chances that sexually active men will be exposed to HIV or another STI during the course of sexual acts. Yet, HIV testing among men will inform men of their HIV serostatuses and can result in them making decisions that protect their sexual health (CDC, 2006a; Valdiserri et al., 1999). Because an increasing number of sexual partners is almost invariably associated with more per-contact exposure to HIV and other STIs (Laumann et al., 1994; Rosenberg et al., 1999; Valleroy et al., 2000), knowing factors associated with increasing numbers of partners can provide understanding as to why certain groups of men are at more or less risk.

For investigations of bisexual men's sexual health behaviors, the central question is often whether or not bisexuality, however defined, is associated with more risk than heterosexuality and homosexuality. The existing literature provides conflicting evidence of increased risk among bisexual men, in part due to different sexual orientation measures producing varying risk estimates. This literature demonstrates the need to employ multiple measures that capture the multidimensionality of bisexuality within single studies. Many questions remain unanswered as previous studies have been limited by inadequate sampling, improper measurement, and failure to adjust for residual confounding.

Some behavior-based studies have found bisexual men to use condoms at lower rates during same-sex encounters than their homosexual counterparts (Goodenow et al., 2002; Greco et al., 2007; Stokes et al., 1997). Lower use may be due to bisexually-active men having lower intentions to use condoms during sexual encounters than homosexually-active men (Heckman et al., 1995). On the other hand, a recent nationally-representative study showed that bisexually-active men had an increased odds of using condoms during their most recent sexual encounters than both homosexually- and heterosexually-active men (Jeffries & Dodge, 2007). Others have found comparable condom use among behaviorally bisexual and homosexual men (Wold et al., 1998). Interestingly, having both male and female partners (versus male partners alone) has been found to be associated with substantially increased likelihoods of HIV infection in Los Angeles County, California (Brooks et al., 2003) and moderately increased likelihoods of infection among young MSM recruited from seven U.S. cities (Valleroy et al., 2000). The latter findings must be interpreted with caution given that group differences in condom use and other risk behaviors are not always responsible for increased rates of HIV infection among MSM (Millett et al., 2007). Studies that compare bisexually-, homosexually-, *and* heterosexually-active men are rare (Goodenow et al., 2002; Jeffries & Dodge, 2007), although this may be due to risks for HIV acquisition being relatively low among men who only have sex with women.

Identity-based findings are similarly conflicting, but most suggest that bisexual identities may be protective among men. In their study of young Latino men, Agronick and colleagues (2004) found that identifying as bisexual (versus gay) was predictive of an increased odds of unprotected insertive anal intercourse with their most recent non-main partners. Yet, having a bisexual identity was associated with a decreased odds of unprotected *receptive* anal sex—the most risky sexual act—with their most recent main partners. Jeffries & Dodge (2007) found no

identity-based differences in condom use with male and female partners, but they did not examine this behavior with bivariate tests. Recent studies of Internet-recruited men (Gullette & Turner, 2004), urban MSM (Relf et al., 2004), and MSM with unrecognized HIV infections (MacKellar et al., 2005), on the other hand, have found bisexual (versus gay) identities to be associated with increased condom use. Moreover, gay-identified men have been shown to have higher HIV rates—arguably due to greater appeal to gay culture and sexual risks stemming from it—than men with other sexual identities (Catania et al., 2001; Kral et al., 2004). Yet, as is the case for behavior, higher HIV rates may not necessarily result from less condom use among gay-identified men, particularly if the partner pool available to them has a disproportionate number of HIV-infected men.

If bisexual men, relative to their gay/homosexual and heterosexual counterparts, are at high risk of HIV infection, then HIV testing among them could be a very important preventive strategy. Few studies have investigated the relationship between behavior- or identity-based sexual orientation and HIV testing. Other than Kalichman et al. (1998), who found that bisexually-active men were to be less likely to be ever tested than homosexually-active men, studies were primarily conducted outside the United States (Jin et al., 2002; Myers et al., 1993, 1996; Van de Ven et al., 2000; Wang et al., 1997). Myers et al. (1993, 1996) found that bisexual, relative to homosexual, past-year behavior was associated with a moderately decreased likelihood of ever being tested in Canada. Jin et al. (2002) and Wang et al. (1997) found that having a bisexual, rather than gay, identity, was associated with moderately decreased likelihoods of being HIV tested in the past year and ever, respectively. In Van de Ven et al.'s (2000) sample, bisexual men were less likely to “have HIV test results.” Although findings from these three studies are insightful, they all combined bisexual- and heterosexual- (and sometimes

other-) identified men into subsamples, so we do not know whether bisexual-heterosexual differences exist among these men. Moreover, most of these findings resulted from bivariate analyses, which do not adjust for confounding.

Some domestic studies have found identity-related HIV testing differences, but their drawbacks are equally disconcerting. In Do et al.'s (2006) sample, being bisexual-identified was associated with a substantial decrease in the odds of being tested in the past year. Rotheram-Borus et al. (1997) found that bisexual- and heterosexual-identified youth had substantially lower odds of ever being tested than gay youth. Although findings from these two studies are insightful, their sampling frames were limited to Asian and Pacific Islander MSM and homeless, runaway, and other high-risk youth, respectively. We do not know the extent to which these findings are generalizable to other ethnic groups and non-high-risk populations.

Other domestic studies' findings are limited by their measurement of sexual orientation. For example, researchers have found that being less "out" (MacKellar et al., 2006), having fewer friends "who understand sexual orientation" (Povinelli et al., 1996), and having fewer gay friends (Van de Ven et al., 2000) is negatively associated with being HIV tested. Although prior research suggests that gay-identified men (and, presumably, men who have proportionally more homosexual sex) are more inclined than bisexual men to have these characteristics (McKirnan et al., 1995), we do not know whether such measures are adequate sexual orientation proxies. Yet, researchers sometimes cite these studies with the presumption that non-gay-identified men will inevitably be at greater risk for not being tested (see Do et al., 2006, p. 52). On the other hand, one recent nationally representative study found that gay-identified MSM are more likely than their non-gay-identified counterparts to be tested for HIV, although this difference disappeared upon controlling for race/ethnicity, education, and age (Jeffries, in press a).

Fewer data exist to confirm whether or not bisexual men have relatively more sexual partners than their gay/homosexual and heterosexual counterparts. We must first acknowledge that being bisexually-active—that is, having sex with men and women during a specific time frame—inevitably places behaviorally bisexual men in a higher risk categorization if homosexually- and heterosexually-active men only need to be categorized as such by having one partner of either sex. Nonetheless, two probability-based studies have identified behavioral bisexuality, versus behavioral homosexuality and heterosexuality, in relation to an increased number of partners in the past three months (Goodenow et al., 2002) and year (Jeffries & Dodge, 2007). Although these findings were drawn only from bivariate analyses, this relationship has persisted in adjusted models (Hightow et al., 2006; see also Greco et al., 2007). Increasing risk, particularly with male partners, for bisexually-active men could be due to them having relatively fewer committed relationships with men (Stokes et al., 1997).

Studies examining identity-related constructs and the number of sexual partners, while limited in scope, provide a slightly different illustration of bisexual men. Doll and colleagues (1992) found that among MSM, men identifying as bisexual (versus gay) had fewer male partners in their lifetimes and since the HIV-epidemic began. Bisexual men had more female partners. Jeffries (in press a) had similar findings, although his study is limited due to bisexual-identified MSM being combined with other MSM who did not identify as gay. One recent study of MSM on the down low—among whom 65% were bisexually-active and 91% did not identify as gay—found that identifying as down low was predictive of fewer male partners over a 30-day period (Wolitski et al., 2006). When we consider that U.S. men's higher HIV prevalence relative to women's makes HIV acquisition risk highest when men have sex with other men, these

studies suggest that being bisexual-identified may be protective for MSM. To be acknowledged, however, are risks transmitted to and acquired from bisexual men's female partners.

Sampling limitations greatly limit our understanding of bisexuality and sexual health behaviors. Some of the studies that have examined differences between behaviorally bisexual and homosexual men have used only samples of HIV-infected men (Chu et al., 1992; Doll et al., 1992; Hightow et al., 2006; Montgomery et al., 2003). These men differ from non-infected men because they inevitably engaged in some level of risk in order to become infected. Findings derived from these samples may lead us to draw false conclusions regarding the risk behaviors of bisexual men. Also, it goes without saying that the vast majority of studies exclusively focus on men residing in large urban areas. In addition to many of these men being recruited on the basis of high-risk activity, few of these samples are probabilistic in nature (see Ekstrand et al., 1994; Mills et al., 2001). For this reason, it is difficult to know the extent to which findings drawn from such samples are representative of men at local or national levels. Also, the use of urban, opportunistic samples likely provides little representation of men who abide in non-urban areas.

Models employed in the investigation of bisexual men's sexual health behaviors must consider risk factors that confound the relationship between bisexuality and our primary outcomes of interest. Studies repeatedly find that, relative to other men, behaviorally bisexual and bisexual-identified men are more likely to engage in sex work in exchange for money or drugs, intravenous drug use, and sex while intoxicated with drugs or alcohol (Agronick et al., 2004; Goldbaum et al., 1998; Goodenow et al., 2002; Hightow et al., 2006; Jeffries & Dodge, 2007). These behaviors undoubtedly place bisexual men at greater risk for HIV infection. Male sex workers, for example, generally have more partners, which will increase the likelihood of them acquiring HIV infection. Having sex while under the influence of drugs and alcohol can

decrease risk perceptions and the chances of using condoms during sexual encounters.

Intravenous drug use has long been noted as a predictor of HIV infection among men, even in the absence of other risk behaviors. Yet, men who engage in these types of behavioral risks tend to be tested for HIV more readily, which is likely due to the perception that they have placed themselves at risk for HIV (Leaity et al., 2000; MacKellar et al., 2006). Consequently, we must employ models that take into account bisexual men's proclivities for risks that confound bisexuality's relationship with other behaviors.

As this analysis of studies examining male bisexuality in relation to condom use, HIV testing, and multiple sexual partnerships suggests, there is still much that we do not know about the relative risks and protective factors associated with bisexuality. The use of single measures of bisexuality (identity or behavior) in the overwhelming majority of studies limits our understanding of the degree to which multiple measures simultaneously influence bisexual men's sexual health behaviors. Moreover, as most studies employ additive models, we do not know if the relationship between bisexuality and selected health behaviors is multiplicative. Given the complexity of the relationship between sexual identities and behavior, for example, one might ask, "Does the effect behavioral bisexuality has on HIV testing differ for men of different sexual identities?" or "Is the relationship of bisexual identity to the number of sexual partners dependent upon whether or not men engage in bisexual behavior?" It is also reasonable to consider if bisexual attraction—given its distinctiveness in relation to identity and behavior—is ever a relevant predictor of risk. The aforementioned discussion of attraction draws our attention to its potential as a determinant of sexual health behaviors, but to my knowledge no domestic studies have investigated the relationship of sexual attraction to condom use, HIV testing, or concurrent partnerships (see Greco et al., 2007).

## **Intersectional Issues Relevant to Bisexual Men's Sexual Health**

One of the greatest challenges in social scientific investigations is determining factors causally related to our outcomes of interest. We who study the relationship between bisexuality and health must be attentive to social location because it influences men's general proclivities for bisexual orientations and their health behaviors. Race/ethnicity, age, socioeconomic status, and gender (masculinity in particular) cannot be ignored in organizing bisexual men's lives and health potential. Because these factors situate men in social settings, we must also shun reductionist attempts to merely view them as bisexual or not.

Sociologists sometimes discuss the importance of taking intersectional approaches when investigating quality of life outcomes. While these approaches have mostly been applied to the study of racial/ethnic minority women (see Collins, 1998), the stigmatization of sexual minority individuals makes intersectional theorizing relevant in sexuality studies (Gamson & Moon, 2004; Green 2007; Young & Meyer, 2005). Men's embodiment of sexualities is highly dependent upon race/ethnicity, gender, socioeconomic status, age, etc. Even so, these factors are important because they alone are determinants of men's sexual health behaviors. What the following analysis suggests is that men's health behaviors do not emerge in a vacuum; rather, they arise within a complex matrix of identities, behaviors, and statuses that is difficult to grapple. Given this complexity, we must resourcefully engage discussions of the multiple factors that influence men's proclivities for bisexuality and sexual health behaviors.

In the United States, where constructions of race/ethnicity and sexuality have been inextricably linked throughout history, the influence of race on various dimensions of sexuality cannot be ignored. Legalized slavery and colonization permitted the routine separation of men of African descent from their female partners. White men maintained sexual access to many black women (typically through force or coercion), leaving their men helpless in the process.

White men unmistakably owned black men's bodies, which were used in the production of slaves as well as a socioeconomic system that reinforced black men's inferiority to white men. The residual effects of slavery and colonization similarly impacted indigenous men throughout Latin America (Lancaster, 1992; Lumsden, 1996). These historical realities are currently perpetuated by conventional means of masculine role fulfillment (e.g., quality education and employment) often being denied to men of indigenous and African descent in the United States (Young, 2004).

What such an analysis suggests is that the social positioning of non-heterosexual men of color may incline them to be bisexually-active. Sex is one of the few things many black and Latino men, especially those who are economically disadvantaged, have to aid in the construction of masculinity. Given the conflation of masculinity and heterosexuality—in order to be a man one must have sex with women—it would follow that men who historically have been emasculated in a system of white domination would use heterosexual prowess to prove their masculinities (Whitehead, 1997). It should come as no surprise, then, that among MSM Latino and black men are more likely than their white counterparts to also have opposite-sex encounters and relationships (Binson et al., 1995; Heckman et al., 1995; Jeffries & Dodge, 2007; Prabhu et al., 2004; Stokes et al., 1997). In this regard, bisexuality aids in the construction of masculinity, which is compromised if men have no sexual contact with women.

In a society that marginalizes men of color, it is important to recognize the racial/ethnic dynamics that affect the sexual identities that these men embrace. Researchers discuss the implications of racism perpetrated in the white gay community as a continuation of racism generated within society at-large (Battle & Crum, 2007; Diaz et al., 2001; Teunis, 2007). Being marginalized by white gay men often leads sexual minority men of color to shun gay identities

and maintain close ties to their ethnic communities. Notwithstanding the presence of homophobia within these communities (see Lewis, 2003), many men adopt sexual identities presenting the least amount of threat to their ethnic identities. Bisexual identities offer comfort zones for these men, helping to allay homosexual stigma and, simultaneously, express a sexuality that is neither heterosexual nor gay (as defined by white gay men). For this reason, ethnic minority men are more likely than white men to identify as bisexual (McKirnan et al., 1995). Given that gayness is often perceived as weakness and inferiority, sexual minority men of color's embrace of bisexuality is often an attempt to assert masculinity in a context where their racial/ethnic identities already render them subordinate. A prominent example is the adoption of "down low" sexualities. Many non-heterosexual black and Latino men embrace down low profiles in efforts to emphasize strong ethnic affiliations, likings for women, and (less commonly) behavioral bisexuality (see Collins, 2004; Malebranche, 2008; Muñoz-Laboy, 2008; Wolitski et al., 2006).

Race/ethnicity is also important given its relation to sexual health outcomes. Despite black and Latino men's disproportionately high rates of HIV and other STIs, studies repeatedly find them to report more consistent condom use than their white counterparts (CDC, 2006b; Gullette & Turner, 2004; Jeffries & Dodge, 2007; Laumann et al., 1994). Since the 1990s, studies specific to MSM find black MSM to have higher rates of condom use than white MSM (Millett et al., 2006). Although sexual minority men of color tend to have more female sexual partners than white men, they tend to have fewer male partners (Bingham et al., 2003; Harawa et al., 2004; Millett et al., 2007; Stokes et al., 1996a). Similarly, racial/ethnic minorities report higher rates of recent and lifetime HIV testing than their white counterparts (CDC, 2001). Given minority men's comparable or lower risk levels in comparison to white men, researchers have

begun to offer alternative explanations (e.g., having older partners, greater background HIV prevalence, lower rates of circumcision) for their high HIV rates (see Harawa et al., 2004, Millett et al., 2007).

Like race/ethnicity, SES influences men's dispositions toward bisexual behaviors. Sexual scripts for men of low SES emphasize the importance of heterosexual encounters for masculine identities (Walker, 2006; Whitehead, 1997). For poor and working class men, therefore, relatively greater social status results from having sex with women. They are also more likely than middle- and upper-class men to have opposite-sex encounters early in life (Laumann et al., 1994). For this reason, low SES men who engage in homosexual behavior may be more likely to also have sex with women than men of higher SES. Indeed, one recent study found that bisexually-active men were less educated and had less income than homosexually-active men (Jeffries & Dodge, 2007).

It is also possible that poorer men may be more inclined to engage in sex with both men and women due to situational factors. Sex work, for example, disproportionately occurs among men with relatively few socioeconomic means (Aggleton, 1999). Thus exchanging sex for money, housing, and/or drugs could result in bisexual behavior being more prevalent among poor men. Also to be considered is the role of incarceration among men of low SES. Among men with predominantly heterosexual experiences, being in prison or jail could increase the likelihood of having male partners and, thus, make men behaviorally bisexual (Doll & Becker, 1996).

High SES provides men with power to make choices regarding their sexual identities. Thus, the social and cultural capital generated by greater education and income leads many sexual minority men to adopt gay identities rather than bisexual identities. A recent

representative study of MSM in the United States found that men who embrace bisexual and other identities have less education and income than gay-identified men (Jeffries, in press a). Similarly, we know that education and income provide men with access to gay communities and gay identities embraced by men who live in these communities (Mills et al., 2001). What these findings suggest is that the degree to which men identify as bisexual is highly dependent upon their socioeconomic positions. Men with greater education and income will more readily identify as gay because of access to the aforementioned privileges associated with gay identification. Also to be considered is the relatively greater amount of homosexual stigma that exists in poor communities. With poor people expressing relatively greater disdain toward homosexuality (Gibson & Tedin, 1988), poor MSM likely express more willingness to identify as bisexual or heterosexual than MSM of high SES.

As is the case for health behaviors in general, SES impacts men's sexual health behaviors. Throughout the HIV/STI risk literature, increasing education is positively associated with condom use (Jeffries & Dodge, 2007; Laumann et al., 1994). Less consistent results are found for income—notably in the bivariate case—with the latter being sometimes negatively associated with condom use (see Anderson et al., 1998). Yet, income has been found to be positively associated with condom use among gay- and bisexual-identified men (Gullette & Turner, 2004). Consistently, increasing education and income are associated with a greater likelihood of being tested for HIV (Hart et al., 2002; MacKellar et al., 2006). Fewer studies have examined the relationship between SES and the number of recent sexual partners. Using nationally-representative data, however, Laumann et al. (2001) found that college graduates had more lifetime and recent sexual partners than men who did not graduate from college.

Age also has implications for understanding bisexuality. Sexual minority men coming of age today may be more likely to embrace bisexual identities than older men because bisexuality is more acceptable than it was in the past. Indeed, some have found bisexual-identified men to be younger than their gay-identified counterparts (Agronick et al., 2004). Conversely, some men may come to define themselves as bisexual at later ages due to the confusion they experience upon initially feeling attractions to both sexes (Weinberg et al., 1994: 291). As men progress through the life course, they certainly will have more opportunities to engage in sex with both men and women, and this behavior may increase their willingness to identify as bisexual. Previous studies, however, have found that men who engage in recent bisexual behavior tend to be younger than those engaging in exclusively homosexual behavior (Hightow et al., 2006). These findings may result from sexual experimentation being relatively more common among younger men (Berg-Kelly, 2002).

Age is also a determinant of sexual health behaviors among men. Studies have found age to be positively associated with increasing condom use among men (Gullette & Turner, 2004; Jeffries & Dodge, 2007; Relf et al., 2004; Valdiserri et al., 1988). The extent to which greater condom use may be offset by more sex altogether is unknown. In this regard, older men's greater likelihood of consistent condom use may not decrease their risk levels if they engage in more sexual activity and/or have a greater amount of partners. As men progress through the life course, however, having more acquaintances who are affected by HIV/STIs may lead to them being more willing to consistently use condoms (Laumann et al., 1994). Studies have also found older age to be positively associated with recent and lifetime HIV testing (Anderson et al., 2005; Kellerman et al., 2002). Indeed, as men age they have more time and opportunities to be tested. Older men, on the other hand, tend to report greater numbers of lifetime sexual partners,

although younger men often report more recent and concurrent partnerships (Adimora et al., 2007; Catania et al., 1992; Laumann et al., 1994).

Further, we must consider the degree to which men's romantic partnership statuses are related to their sexual identities and behaviors. Many bisexual men choose identity labels that are consistent with their relationship patterns. They often choose to identify as heterosexual or bisexual if in relationships with women, but may prefer to identify as gay/homosexual if partnered with men (Weinberg et al., 1994). Conversely, men may choose relationship patterns that are consistent with their sexual identities. Thus, they may actively seek out relationships with women if they consider themselves heterosexual or bisexual, while they may be inclined to have relationships with only men if they identify as gay/homosexual. It is likely that men's behavior patterns are also affected by their relationship statuses; men who are in committed relationships with women may be more likely to forego sexual encounters with men, particularly in contexts where commitment is understood to entail monogamy.

Relationship status is important because of its ability to directly affect men's sexual health behaviors. Particularly important are marriage and cohabitation. In their analyses of nationally-representative data from U.S. adults, Laumann and colleagues (1994, p. 429) found that relative to unmarried men/non-cohabiting men, men who were currently married/cohabiting had lower levels of condom use during sexual encounters and lower rates of HIV testing. While these differences may be perceived as risks on the behalf of married/cohabiting men, married/cohabiting men also had fewer concurrent sexual partners than their unmarried/non-cohabiting counterparts. Men who had ever been married also had a lower likelihood of ever contracting an STI when other risk and sociodemographic factors were held constant. What these findings suggest is that marriage is protective for men's sexual health, at least in terms of

concurrent sexual partnerships and STIs (see also Waite & Gallagher, 2000). Given that heterosexually-active men are more likely to be married/cohabiting with women than bisexually-active men, who are more likely to be married/cohabiting with women than their homosexually-active counterparts (Jeffries & Dodge, 2007), studies of sexual orientation differences in sexual health behaviors should recognize the protective benefits of marriage and cohabitation.

Cities provide environments where sexual minority men experience relatively little sexual prejudice and where they likely feel most comfortable living (Snively et al., 2004). The availability of community and social support networks, acceptance of homosexuality, and more sexual minority people arguably make men more likely to embrace non-heterosexual identities in urban areas. We currently know that gay-identified men are more likely than other MSM to live in urban, gay neighborhoods, and living in these neighborhoods is associated with receiving gay media and participation in the social activities of the gay community (Mills et al., 2001; see also Jeffries, in press a). One study also found that among adolescent males, bisexually-active men were less likely than their heterosexually- and homosexually-active counterparts to attend urban schools, which suggests that relatively more bisexual adolescents live in non-urban settings (Goodenow et al., 2002). For these reasons, urban residence likely acts as a predictor of sexual identity.

Level of urbanicity is also relevant given its ability to promote sexual risk, especially with male partners. Cities not only have greater numbers of HIV cases, but they have greater prevalence levels than suburban and rural areas (CDC, 2008a). Thus, the likelihood of having sexual contact with a person infected with HIV is greater for urban-dwelling men. Cities are conducive to having an increased number of sexual partners given that relatively more men are seeking out sex. Bathhouses and sex clubs are almost exclusively present in large cities, and

most men using them live in cities (Woods et al., 2007). Elevated risk behaviors in these venues suggest that many provide atmospheres conducive to sexual risk (Binson et al., 2001; Xia et al., 2006). Yet, relative to rural and suburban men, HIV/STI prevention campaigns more often occur in cities. Urban men, therefore, likely encounter more messages encouraging condom use and HIV testing. Moreover, urban men have more places to seek confidential HIV counseling and testing. For this reason, it is likely that urban MSM are more readily HIV tested than non-urban men (see Myers et al., 1993, 1996). Some researchers have discussed high homophobia in rural areas as a precursor to MSM's risk behaviors and the avoidance of HIV testing (Preston et al., 2000; Preston et al., 2007).

This examination of race/ethnicity, SES, age, marital/cohabitation status, and urbanicity illustrates the complex relationship between sexual orientation, sociodemographic factors, and sexual health among men. It calls our attention to the intersecting forces that make men more or less inclined to both bisexuality and HIV-related risk behaviors. To recognize these intersections requires carefully conceptualized models that utilize multiple measures of bisexuality and sexual health behaviors. At the very least, we who employ quantitative methodologies should control for the effects of these variables as they clearly confound the relationship between bisexuality and sexual health behaviors. When appropriate, however, we should also critically engage discussions of these key social location factors and the ways in which they mediate the relationship between bisexuality and sexual health. Such will make our statistical models more aligned with men's lived realities.

### **Structure of Dissertation**

This chapter has raised important issues relevant to the study of bisexual men's health. Lay discourse has largely regarded bisexuality as an illegitimate sexuality, and this viewpoint has had deleterious impacts upon scientific inquiry. It is only within the last few decades that we

have seen a fair number of studies that address issues related to bisexuality. Yet, the use of samples in which bisexual and other non-heterosexual men are combined or regarded as “MSM” has resulted in inattention to health-related issues specific to bisexual men. Among studies that have investigated bisexuality, they have mostly employed single measures of the construct rather than examining the effects of both sexual identity and behavior, with virtually none examining sexual attraction. Moreover, the vast majority of samples have been opportunistically derived from urban areas. In this dissertation, I address these limitations by explicitly studying the relationship between bisexuality and sexual health behaviors, employing (where appropriate) multiple measures of bisexuality, and using a probabilistic sample that is representative of men in the United States. I do so with sensitivity to intersections of race/ethnicity, gender, social class, age, relationship status, and place.

Each of the three empirical chapters examines a specific sexual health behavior: condom use, HIV testing, or the number of recent sex partners. I present each chapter as a journal article, so each contains a distinct introduction, methods, results, and discussion section. This format will elucidate empirical distinctions between these three outcomes and, simultaneously, help to avoid confusion regarding variable selection. At times, for example, control variables are different for analyses of condom use, HIV testing, and number of recent sex partners. Also, number of partners is used as a control variable for the other outcomes. Confining each outcome to a chapter of its own allows readers to recognize these distinctions.

In comparing bisexual men to their heterosexual and homosexual counterparts, I employ three measures sexual orientation: behavior, identity, and attraction. Men are behaviorally bisexual if they had past-year sexual contact with women and men; they are heterosexual or homosexual if they had contact with women or men, respectively. I measure sexual identity

based upon self-identification. Similarly, bisexual attraction is defined as any level of self-reported attraction to women and men, while heterosexual and homosexual men report attraction to only one sex. Behavioral bisexuality is the primary independent variable in analyses of HIV testing and number of recent partners, while sexual identity is the primary predictor of condom use. With sexual attraction being the least commonly used, these three indicators are standard measures for sexual orientation in the social sciences.

I recognize that categorizing men into sexual orientation groups could subject me to critique. Many queer theorists would argue that my quantitative distinction of bisexual, homosexual, and heterosexual men essentializes their sexualities. According to them, my approach would ignore change occurring throughout the life course as well as the fluidity that occurs among men belonging to a particular group at one point in time (see Gamson & Moon, 2004; Green, 2007). However, I emphasize that sexual categories, especially identities, are meaningful to the people possessing them and, consequently, have the potential to affect their behavior and quality of life (Gammon & Isgro, 2006; see also Epstein, 2007). As the following chapters illustrate, it is important to recognize that the marginalization of bisexuality and the social meanings attached to it—despite its socially (de)constructed nature—potentially result in adverse health outcomes for bisexual men. Without explicit examination of bisexuality's impact upon health, I risk subverting the health needs of bisexual men (see Gamson, 1995). Ultimately, the group-based distinctions inherent in my independent variables are useful because—as is well-documented for race/ethnicity, gender, and social class—the social construction of sexualities produces very real group-based disparities in health.

The final chapter summarizes the major empirical findings and discusses how they can inform a broad research agenda on bisexuality and health. Here, I emphasize the importance of

using multiple sexual orientation measures. This chapter concludes with some insight into the design of effective public health interventions for bisexual men. Such can inform researchers' and policy makers' efforts to improve the health of bisexual men in the United States.

## CHAPTER 2 CONDOM USE

### **Introduction**

Each year, more than 56,000 individuals in the United States become infected with human immunodeficiency virus (HIV; Hall et al., 2008). Case loads from other sexually transmitted infections (STIs) are much greater, with about 19 million new cases occurring annually (Weinstock et al., 2000). Increasing HIV/STI incidences in some populations mandate more thorough investigations into the sociosexual factors that lead to disparate sexual health outcomes. Such would appear most needed among non-heterosexual men, among whom the prevalence of HIV/STIs is greatest (CDC, 2008a, 2008b).

This paper examines the relationship between condom use and bisexuality among men in the United States. Condom use is effective in reducing sexually-active men's exposure to HIV/STIs (Office of the Surgeon General, 2001). Understanding sexual orientation's relation to condom use can shed light on the prevention needs of men with different sexualities. While numerous studies have investigated condom use among gay and other MSM, relatively few have examined the extent to which different sexual orientation dimensions predict condom use among men. This paper makes an important step toward understanding if and how condom use differs among heterosexual, homosexual, and bisexual men, a group which may be at elevated risk of HIV/STIs.

### **Previous Studies of Condom Use**

Comparative studies employing behavioral definitions of sexual orientation have yielded mixed condom use results. Some studies show bisexual (versus same-sex) activity to be predictive of low condom use (Goodenow et al., 2002; Greco et al., 2007; Muñoz-Laboy & Dodge, 2007) or lower intentions to use them during future sexual encounters (Heckman et al.,

1995). Others have found no differences among bisexually- and homosexually-active men (Kalichman et al., 1998), while some report that bisexual behavior is predictive of greater rates of condom use than homosexual behavior (Jeffries & Dodge, 2007). Researchers rarely account for bisexual men's lower likelihood of engaging in anal (versus oral) sex with men, which may explain some differences in condom use overall (Stokes et al., 1997; Wold et al., 1998). Nonetheless, studies have repeatedly found bisexually-active men to report relatively high amounts of unprotected vaginal and anal sex with women and men (Stokes et al., 1996a; Weatherburn et al., 1998). This behavior sometimes occurs subsequent to HIV seroconversion or concurrent to sex with multiple partners (McKirnan et al., 1995; Montgomery et al., 2003).

Although less has been published on the relationship between sexual identity and condom use, identity may be a vital predictor of this behavior. While some associate bisexual (versus gay) identification with less condom use (Gullette & Turner, 2003), other studies show that gay-bisexual differences can shift depending upon the type of partners with whom sex occurs (Agronick et al., 2004). Nonetheless, three recent studies of non-heterosexual men highlight lower condom use among gay-identified men (Gullette & Turner, 2004; MacKellar et al., 2005; Relf et al., 2004). Still, some would suggest that condom use does not vary by sexual identity (Greco et al., 2007; Jones et al., 2008; Mills et al., 2001).

Given the significance of both sexual identity and behavior, some researchers investigate the potentially mediating roles these dimensions of sexual orientation have with condom use (Jeffries & Dodge, 2007; Zellner et al., 2009). They argue that aside from the independent effects of identity and behavior, the effects of each can be different for men with different behaviors and identities, respectively. In this regard, the extent to which men's behaviors and identities are congruent affects their risk levels. Implicit in this argument is that men who

possess sexual identities that concord with their sexual behavior patterns experience less psychological distress than men whose identities and behaviors are incongruent. Men who have sex with men and women (or only men) but do not identify as bisexual are presumed to be less receptive to prevention messages that are targeted to men who identify as bisexual or gay (Goodenow et al., 2002; Pathela et al., 2006). For this reason, condom use may be lower among men whose identities and behaviors are discordant.

### **The Current Project**

This paper addresses key gaps in the literature on male bisexuality and condom use. First, it examines distinctions that exist among men with different sexual identities. Men often name themselves heterosexual, gay, bisexual, or something else because of membership in these respective communities. The examination of distinct sexual identities in relation to condom use, therefore, is important. The history of gay communities' public involvement in HIV prevention as well as gay men's elevated risks for HIV infection have allowed safe sex to become normative in many segments of the gay community (Brooks et al., 2008). In light of bisexual and other non-gay-identified men being relatively less integrated into the gay community and having less social support for their sexualities, they could be less influenced by social norms favoring condom use (Agronick et al., 2004; Stokes et al., 1993). This may be worse for bisexual (versus heterosexual) men given that they have no equivalent bisexual community that could be a conduit for HIV/STI prevention messages (Hutchins, 1996). By contrast, it is possible for condom use to be relatively low among gay-identified men because sexual risk behaviors may be appropriated in the construction of gay identities (Shernoff, 2006). Heterosexual-identified men, however, may maintain relatively low condom use due to misperceptions of HIV affecting only gay men (Greene & Banerjee, 2006).

Second, this paper investigates sexual attraction. While studies rarely consider it as a covariate of sexual health behaviors (Greco et al., 2007), it is commonly understood as a precursor to sexual behavior patterns and identities. Indeed, bisexual men often identify as bisexual and have sex with men and women because they are attracted to both men and women (Blumstein & Schwartz, 2000; McLean, 2007). If bisexual behavior and identity are related to condom use, then sexual attraction could be implicated in this occurrence. Yet, as is the case with identity and behavior, the effect of bisexual attraction could be different for men who possess different sexual identities or behaviors.

Third, I used a probability-based sample that is representative of men in the United States. Researchers have grown increasingly critical of behavioral studies based upon opportunistically-derived samples (Jeffries, in press a; Mills et al., 2001; Pathela et al., 2006). They argue that such samples do not adequately represent men about whom conclusions from these studies are drawn. Undoubtedly, the vast majority of studies conducted on bisexual men utilize samples of urban, high-risk, and/or HIV-infected men, with many of them including only MSM (for examples, see Agronick et al., 2004; Chu et al., 1992; Doll et al., 1992; Gullette & Turner, 2004; Heckman et al., 1995; Kalichman et al., 1998; McKirnan et al., 1995; Montgomery et al., 2003; Muñoz-Laboy & Dodge, 2007; Stokes et al., 1996b; Valdiserri et al., 1988; Wold et al., 1998; Zellner et al., 2009). These samples likely overestimate risks that truly exist among U.S. bisexual men (Jeffries & Dodge, 2007).

Multiple social and risk characteristics confound the relationship between bisexuality and condom use. Studies repeatedly find condom use to be more common among men who are racial/ethnic minorities, young, of higher socioeconomic status, and not married or cohabiting (Anderson et al., 1998; CDC, 2006b; Gullette & Turner, 2004; Millett et al., 2006; Jeffries &

Dodge, 2007; Laumann et al., 1994; Stokes et al., 1996a). Condom use may vary among men with differential risk exposures, such as exchange sex, drug use, and multiple sex partners (Chu et al., 1992; Doll & Beeker, 1996; Feinleib & Michael, 2001; Jeffries & Dodge, 2007). Yet, relative to homosexual and heterosexual men, bisexual men differ along race/ethnicity, age, socioeconomic status, and marital status. They are also more likely to engage in many HIV-related risk behaviors (Agronick et al., 2004; Goldbaum et al., 1998; Goodenow et al., 2002; Hightow et al., 2006; McKirnan et al., 1995), but may be less likely than gay/homosexual men to have anal sex with men (Stokes et al., 1997). This paper is sensitive to covariation along sociodemographic and risk lines.

Analyses proceeded with following research questions:

- Do bisexual men have different likelihoods of condom use than heterosexual and homosexual men?
- If so, then which measures of bisexuality are independently associated with condom use?
- Under which conditions are relationships between bisexual identity, attraction, and behavior multiplicative?

## **Methods**

### **Sample**

Data came from the 2002 cycle of the National Survey of Family Growth (NSFG), a nationally-representative, stratified-cluster sample of 4,928 U.S. household-abiding males between the ages of 15 and 44 (Groves et al., 2005; National Center for Health Statistics, 2005). The sampling frame consisted of 121 primary sampling units taken from the 2000 U.S. Census. Female interviewers used computer-assisted personal interviewing (CAPI) to collect most data, but the men utilized audio computer-assisted self-interviewing (ACASI) during the last portion of the interview. This section included questions on sensitive information, including sexual orientation. With ACASI, participants used laptop computers in order to hear, read, and answer

these sensitive questions. Interviews occurred between March 2002 and 2003 and averaged 60 minutes in length. The response rate was 78 percent, and participants received \$40 in compensation.

## **Measures**

### **Dependent variables**

Condom use at last sexual encounter was ascertained in the ACASI portion of the interview. Men who reported any lifetime occurrence of same-sex activity were asked, “The last time you had oral or anal sex with a male, was a condom used?” The NSFG ascertained lifetime oral, anal, and vaginal sex with females and condom use during the last occurrences of each type of sex. Men who reported at least two types of female sexual contact and condom use during at least one type of sex provided information on condom use the very last time they had sex. I considered all types of sexual activity and condom use responses to create a variable measuring condom use at men’s last sexual encounters with females. Vaginal, anal, and oral sex were considered in the creation of this measure in order that it was comparable to the NSFG’s measurement of condom use with men’s last male partners.

The NSFG also ascertained condom use with recent female partners in the CAPI section of the interview, which contained no information on male partners. Men reported the frequency of sex and condom use with all partners during the previous four weeks. Men who reported contraception use with their last (but not current) female during the previous year provided the frequency of condom use with this partner. (Differential measurement of condom use with current female partners precluded analysis of this item.) Although these frequency items did not have equivalent measures for men who had past-year male partners, I used them to supplement the dichotomous measures provided in the ACASI section.

## **Independent variables**

The men provided the gender(s) of past-year partners in the ACASI section of the interview. Using dichotomous (1,0) variables, I deemed men with male and female, only male, and only female partners as bisexually-, homosexually-, and heterosexually-active, respectively. Dichotomous (1,0) sexual identity measures came from the following: “Do you think of yourself as heterosexual, homosexual, bisexual, or something else?” I acknowledged men who answered “refused” as a separate category, while men who answered “don’t know” and “something else” were collapsed together. These categories are useful given that some men distinguish themselves from heterosexual-identified men, yet shun more conventional non-heterosexual identity labels (Stewart et al., 2000). I also created a bisexual behavior-identity interaction term to measure non-additivity among bisexuality indicators.

Sexual attraction measures came from: “Are you only attracted to females, mostly attracted to females, equally attracted to females and males, mostly attracted to males, only attracted to males, or not sure?” I created dichotomous (1,0) variables to distinguish men whose attractions were bisexual (any degree of attraction to females and males), heterosexual (only attracted to females), and homosexual (only attracted to males). I also recognized “other” attraction by collapsing men who responded with “not sure,” “refused,” or “don’t know.”

## **Sociodemographic control variables**

Race/ethnicity measures took into account participants’ self-reported races and Latino ethnicities. I created five dichotomous variables (1,0) to distinguish men who were Mexican, non-Mexican Latino, non-Latino black, non-Latino other, and non-Latino white. The NSFG measured age based upon participants’ birthdates. Education level was measured with participants’ total years of completed schooling, which ranged from nine years or less (9) to 7 or more years of college (19). I also used a poverty-level household income measure. Based upon

2001 poverty level definitions provided by the U.S. Census Bureau, this variable was weighted by the average threshold income of families the size of participants' families.

Participants stated their heterosexual marital status as married, cohabitating with an opposite sex partner, widowed, divorced, separated, or never been married. I created dichotomous variables (1,0) to distinguish married, unmarried cohabiting, non-cohabiting previously-married, and never-married men.

### **Risk control variables**

Exchange sex was measured with: "In the past 12 months has a male given you money or drugs to have sex with him?" A parallel question applied to exchange sex with females. I considered heterosexually- and homosexually-active men who answered "yes" to the appropriate questions as having exchanged sex. I considered bisexually-active men as having exchanged sex if they answered "yes" to either question.

I measured intoxication during sex with: "In the last 12 months, how often were you 'high' on alcohol or drugs when you had sex with a male?" A parallel question applied to sex with females. Responses for both questions were coded as a frequency ranging from never to always. Men who were ever high during sex were distinguished from those who were not. Heterosexually- and homosexually-active men's coding came from the first question, whereas bisexually-active men's coding came from both.

An intravenous drug use measure came from the following: "During the last 12 months, how often have you taken non-prescription drugs using a needle, that is, you took them only for the experience or feeling it caused? This includes 'shooting up' and 'skin-popping'." The NSFG similarly measured crack and cocaine use. "Illicit drug use" was defined as any level of past-year use of these drugs.

STI history was ascertained with: “In the past 12 months, have you been treated or received medication from a doctor or other medical care provider for a sexually transmitted disease like gonorrhea, Chlamydia, herpes, or syphilis?”

Men provided the number of past-year male and female sex partners. For female partners, responses ranged from 0 to 20, with 20 representing 20 or more partners. For male partners, responses ranged from 0 to 6, with 6 representing 6 or more partners. In order to make both measures comparable, I assigned a cut-off of 6 or more for female partners. The sum of male and female partners became the total number of partners for bisexually-active men, and men with six or more partners were collapsed into the highest category.

The NSFG ascertained the men’s same- and opposite-sex behavior patterns. Using several questions, it measured lifetime occurrences of all orifice-specific types of sex with males and females. Men who only had oral sex with males or females were distinguished from others (1,0). An additional variable matched to the gender of the partner with whom condom use was measured was created for inclusion in multivariate analyses.

Risk behaviors were measured with ACASI technology. For all risk measures excluding the number of partners and having oral sex only, men who answered “don’t know” were placed in the risk category so that those with affirmative (i.e., “no”) responses could be distinguished. Given the stigma attached to these behaviors, I reason that men who did not engage in these behaviors would readily admit such. Moreover, a “don’t know” response casts doubt on one’s avoidance of past HIV risks (e.g., if a man does not assuredly know that he has not engaged in intravenous drug use, then he is more likely a risk-taker than those who avoided this behavior). This strategy helped to maintain the size of the final analytic sample, which contained a relatively small number of bisexually-active men.

## Statistical Analyses

This study utilized the sub-sample of men who had sex during the past year ( $N = 3,875$ ). I used proportion  $t$ -tests to compare bisexual and other men on race/ethnicity, age, education level, income, marital status, risk covariates, and condom use. Comparisons were specific to identity-based, attraction-based, and behavioral dimensions of sexual orientation. I employed the analogy of Bonferroni's correction for tests of highly significant differences by using alpha levels of .010, .013, and .017, respectively. These corrections adjusted for type I errors (Agresti & Finlay, 1997).

A nested multivariate design was used in order that any statistical effects of sexual orientation upon condom use could be measured relative to the effects of control variables. Because heterosexual men were generally the most distinct, they comprise the referent for each model. I used binomial logistic regression to model the odds of condom use at the men's last sexual encounters. Because this behavior was specific to male and female partners, two sets of analyses were required. I used ordinary least squares regression to model the frequency of condom use with all female partners during the previous four weeks. Analyses on condom use frequency with the last female partner could not be conducted; the NSFG's restriction of this question to men reporting contraception use resulted in too few bisexual men to detect statistical differences. Diagnostic tests confirmed some collinearity between indicators of heterosexuality and homosexuality if sexual identity, attraction, and behavior were used in the models. For this reason, a dichotomous measure distinguishing bisexually-active men from other men was used as the sexual behavior measure in multivariate analyses.

I used the SAS® System for Windows Version 9.1.3 for analyses and data management (SAS Institute, Inc., 2004). All analyses applied scaled sampling weights to adjust for oversampling, noncoverage, and nonresponse. Logistic and linear regression analyses used the

PROC SURVEYLOGISTIC and PROC SURVEYREG procedures, respectively. These applications weighted the multivariate analyses by accounting for the NSFG's complex survey design (Lepkowski et al., 2006). I reported only statistically significant findings in the text.

## **Results**

### **Bivariate Findings**

#### **Identity-based comparisons**

Table 1 presents sexual identity-based comparisons for sociodemographic, risk, and condom use measures. The bisexual-identified sub-sample had proportionally fewer men of Mexican origin than the other-identified and refused sub-samples; yet, it included more white men than were in the other and refused sub-samples. Bisexual-identified men had more education and income than other-identified and refused men. Fewer bisexual-identified than heterosexual- and other-identified men had ever married or cohabited with women, but more bisexual than homosexual-identified men had ever married or cohabited with women.

Relative to heterosexuals, bisexual-identified men were more likely to have illicit drug use or multiple sex partners. However, proportionally fewer bisexual-identified than gay men were high during sex (marginal,  $p = .03$ ) or had multiple partners. While bisexual-identified men had higher likelihoods of same-sex encounters than heterosexual, other, and refused men, they had lower likelihoods than gay men. Among those who ever had sex with males, however, bisexual-identified were less likely than heterosexual men but more likely than gays to only have oral sex. The majority of all men ever had sex with females. But, bisexual-identified men were less likely than heterosexuals and more likely than gays to do so.

Regardless of the sex of their most recent partners, bisexual-identified men had a higher likelihood of condom use with their last partners than heterosexual-identified men. With their

last female partners, bisexual-identified men also had a higher condom use frequency than their heterosexual counterparts.

### **Attraction-based comparisons**

Table 2 contains sexual attraction-based comparisons of men on all study covariates. Relative to heterosexual men, bisexual-attracted men were more likely to be of any Latino descent. The bisexual-attracted sub-sample also contained marginally more Mexican ( $p = .03$ ) and other Latino men ( $p = .04$ ) than did the homosexual sub-sample. White men, however, were less likely to be bisexual-attracted than heterosexual- or homosexual-attracted. Bisexual-attracted men were younger and had less income than homosexual-attracted men. They were less likely than heterosexual-attracted but more likely than homosexual-attracted men to have ever married a woman.

Bisexual-attracted men had higher likelihoods of using illicit drugs, being treated for an STI, and having multiple partners than heterosexual-attracted men. Relative to homosexual-attracted men, however, proportionally fewer bisexual-attracted men exchanged sex or had multiple partners. While bisexual-attracted men were more likely than heterosexual-attracted and less likely than homosexual-attracted men to ever have sex with males, they were less likely than heterosexual-attracted and more likely than homosexual-attracted men to have only oral sex with males. The majority of all sub-groups had engaged in sex with females, but bisexual-attracted were less likely than heterosexual-attracted and more likely than homosexual-attracted men to do so. Among those with opposite sex encounters, proportionally fewer bisexual-attracted than homosexual-attracted men only had oral sex with females.

Regardless of the sex of their most recent partners, bisexual-attracted men had a higher likelihood of condom use at last encounter than heterosexual-attracted men. In consideration of all female partners during the previous 4 weeks, they had a higher condom use frequency than

heterosexual-attracted men. For their last female partners, bisexual-attracted men had a higher frequency of condom use than homosexual-attracted men.

### **Behavior-based comparisons**

In table 3, I present sexual behavior-based comparisons of all study measures. Proportionally more men of Mexican descent were in the bisexually-active sub-sample relative to the homosexually-active sub-sample, while the proportion of white men was lowest in the bisexually-active sub-sample. Bisexually-active men were younger and had fewer years of education than homosexually-active men, but they had lower incomes than heterosexually- and homosexually-active men. They were less likely than heterosexually-active but more likely than homosexually-active men to have ever married a woman.

Bisexually-active men had higher likelihoods of exchange sex, illicit drug use, STI treatment, and multiple partners than heterosexually-active men. (Homosexually-active men were also significantly more likely than heterosexually-active men to possess these characteristics.) Relative to their homosexual counterparts, bisexually-active men had higher likelihoods of intravenously use drugs (data not shown), have multiple partners, and exchange sex (marginal,  $p = .03$ ). While bisexually-active men were more likely than heterosexually-active men to ever have same-sex encounters, they were less likely than heterosexually-active and more likely than homosexually-active men to restrict their behaviors to oral sex. Bisexually-active men had a higher likelihood of having opposite-sex encounters than homosexually-active men, but lower likelihoods of only having oral sex with women than their heterosexual counterparts.

Regardless of the sex of bisexually-active men's most recent partners, proportionally more of them than heterosexually-active men used condoms with their last partners. Relative to homosexually-active men, bisexually-active men's condom use was only greater when measured

with their last female partners. Bisexually-active men had significantly greater condom use frequencies with all female partners during the last 4 weeks and their last female partner than heterosexually-active men.

### **Multivariate Findings**

Table 4 presents results for analyses of condom use at the men's most recent sexual encounters, with condom use being measured with bisexually-active men's last male partner. Model 4 depicts condom use as a function of all sexual orientation indicators. Homosexual-, other-, and bisexual-attracted men had a higher odds of condom use than their heterosexual counterparts. Given the significance of the identity-behavior interaction term, men who possessed both bisexual identification and behavior had a four-fold increase in the odds of condom use relative to men who possessed only bisexual identification or behavior.

As shown in model 5 of Table 4, accounting for sociodemographic factors did little to attenuate the effect of the behavior-identity interaction term. Having both bisexual identification and behavior positively predicted condom use; however, the effects of sexual attraction were no longer significant. Men who were non-white, younger, more educated, and not currently married or cohabiting had a higher odds of condom use relative to men who were white, older, less educated, and married, respectively.

Model 6 controls for sociodemographic and risk covariates. Here, the identity-behavior interaction term remained positively associated with condom use. Although homosexual identification became marginally predictive of a lower odds of condom use ( $p = .10$ ), all other sexual orientation indicators remained non-significant. Similarly, the effects of sociodemographic factors persisted, with statistical significance becoming marginal for non-Mexican ethnicity ( $p = .10$ ). While the odds of condom use increased with the number of past-year sex partners, condom use was relatively lower among men who were intoxicated during sex

or used illicit drugs. Having only oral sex during one's lifetime substantially decreased the odds of condom use relative to men who ever engaged in anal or vaginal intercourse.

Table 5 presents results based upon the men's most recent sexual encounters, but condom use is specific to bisexually-active men's last female partners. In none of the models is the bisexual behavior-identity interaction term significant. When adjusting for sexual orientation indicators alone in model 4, bisexual- and other-attracted men had a higher odds of condom use than heterosexual-attracted men. Similarly, bisexual behavior was associated with greater condom use relative to men who engaged in heterosexual or homosexual behavior.

The effects of sexual orientation indicators waned across models. Bisexual attraction became only marginally associated with increased condom use in models 5 and 6 ( $ps = .10$ ). Although bisexual behavior was associated with a marginally increased odds of condom use in model 5 ( $p = .09$ ), it was not significant in model 6. Sociodemographic and risk covariates' relationships with condom use were nearly identical to those observed in the prior analyses. Being non-White (versus white), younger, more educated, and not currently married or cohabiting (versus married) predicted greater odds of condom use. Moreover, condom use was predicted to be greater among men who were not intoxicated during sex, did not use illicit drugs, had more sex partners, and ever had anal or vaginal sex.

Table 6 presents results in which condom use, among men reporting female partners during the CAPI portion of the interview, was measured as a frequency throughout the previous four weeks. Identity and attraction measures only consider men who were bisexually- or heterosexually-active as these men were the only ones reporting female partners. In bivariate models, the percentage of times bisexual-attracted and bisexually-active men used condoms with women was greater than that of their heterosexual counterparts. Model 4, which adjusts for all

sexual orientation indicators, conveys substantial interaction between bisexual identity and behavior. Bisexually-active men who identified as bisexual had a much higher frequency (49% greater) of condom use than bisexually-active men who did not identify as bisexual, while bisexually-active men who did not identify as bisexual were not statistically different from heterosexually-active men. On the other hand, bisexual-identified men who engaged in heterosexual behavior had less frequent condom use than heterosexual-identified men who had heterosexual behavior. Bisexual attraction marginally predicted more condom use than heterosexual attraction ( $p = .09$ ).

Models 5 and 6 append the previous model with sociodemographic and risk factors, respectively. The bisexual behavior-identity interaction term remained significantly predictive of greater condom use. However, bisexual-identified men who had heterosexual behavior acquired only a marginally lower condom use frequency than their heterosexual-identified counterparts ( $p = .06$ ). Although no statistical significance was observed for sexual attraction, sociodemographic and risk covariates' relations to condom use were similar to findings for condom use with the men's last partners. Being black (versus white), younger, and not currently married or cohabiting (versus married) were associated with greater condom use in the reduced and full models, while the significance for education only persisted in the reduced model. A higher frequency of condom use was observed among men who were not intoxicated during sex, did not use illicit drugs, and had more past-year sex partners.

For the three sets of multivariate analyses, I tested statistical interaction between bisexual attraction and behavior and bisexual attraction and identity. I also tested interactions between homosexual identification, attraction, and behavior. None of these interaction terms were significantly associated with condom use.

## Discussion

By and large, bisexuality was associated with greater condom use relative to other sexual orientations, with differences being most notable when bisexual men were compared to heterosexuals. Across all sexual orientation dimensions, and along multiple condom use measures, bisexual identification, attraction, and behavior were associated with higher levels of condom use relative to heterosexuality. For two condom use measures, bisexual behavior and attraction predicted greater condom use than equivalent homosexuality indicators. While these findings are contrary to those of some studies examining sub-groups of bisexual men (Agronick et al., 2004; Goodenow et al., 2002; Gullette and Turner, 2003; Muñoz-Laboy & Dodge, 2007), they are consistent with others having more robust sampling criteria (Gullette & Turner, 2004; Jeffries & Dodge, 2007; MacKellar et al., 2005; Relf et al., 2004). It should be noted, however, that the protective effect of bisexuality did not exist independent of sociodemographic and risk factors that covary with bisexuality and condom use. With the exception of the behavior-identity interaction term, controlling for these factors largely resulted in bisexual-heterosexual differences disappearing.

Although the main effects of bisexuality indicators were insightful, the multiplicative relationship between identity and behavior provided a more nuanced depiction of bisexuality. For two of the three sets of multivariate analyses, the effects of bisexual identification and behavior were dependent upon each other. Among men who identified as bisexual, having sex with men and women (versus only men or women) increased the likelihood of condom use. Similarly, among men who had sex with men and women, identifying as bisexual (versus heterosexual) was associated with greater condom use. This finding is consistent with non-additivity highlighted in other studies of bisexual men (Jeffries & Dodge, 2007; Zellner et al.,

2009). Having both bisexual identity and behavior appeared to be provide more protection than one of these characteristics alone.

Both main effects and multiplicative findings have critical implications for our understanding of bisexuality and HIV/STI risk. First, they suggest that bisexual men are inclined to take some precautionary measures when having sex. It is likely that bisexual men know the risks associated with their sexual and substance use behaviors. Both scientific (Adimora & Fullilove, 2006; Kahn et al., 1997; O’Leary & Jones, 2006; Prabhu et al., 2004) and lay communities (Boykin, 2005; Denizet-Lewis, 2003; King, 2004; King & Carreras, 2005; Vargas, 2003) have increasingly engaged discussions of the elevated risks, particularly for women, presumed to result from male bisexuality. While most of these discussions have focused on non-Hispanic black men’s contribution to the spread HIV among black women, they have in many respects increased the public’s overall awareness of bisexuality and HIV risk. Given that nearly two-thirds of bisexually-active men used condoms with their last female partners, with bisexually-active and bisexual-identified men having comparably high condom use frequencies with females, they may perceive elevated precautions to be most warranted with women. Indeed, in some qualitative studies bisexual men have openly acknowledged how their behaviors pose risks to their female partners (Dodge et al., 2008; Muñoz-Laboy & Dodge, 2005). Nonetheless, bisexual men may underestimate risks to female partners (Gullette & Turner, 2004), and this should prompt more thorough intervention efforts among prevention scientists.

Second, the significant effect of the interaction term supports the notion that bisexual men whose sexual identities and behaviors are concordant are more inclined than discordant bisexual men to engage in condom use (Pathela et al., 2006; Jeffries & Dodge, 2007). To my knowledge, the current study is the first to find statistical interaction specific to indicators of bisexuality, as

other studies have examined effects of heterosexual identification among bisexually-active men (Jeffries & Dodge, 2007; Zellner et al., 2009). Most likely, factors specific to bisexuality can be implicated in identity-behavior concordant men having greater condom use than discordant men. If bisexuality increases men's awareness of risk for themselves and their partners—which again seems likely given scientific and lay communities' connection of bisexuality to HIV risk—then bisexual-identified men who have male and female partners may receive a “double-dose” of risk awareness. Related may be a psychological effect by which bisexually-active men who, for whatever reasons, identify as bisexual experience less sexuality-related cognitive dissonance than bisexually-active men who do not identify as bisexual. Research among diverse samples of bisexually- and homosexually-active men supports this argument (Goodenow et al., 2002; Mays et al., 2004; Wohl et al., 1994; Pathela et al., 2006). However, future research is needed to examine mechanisms linking such an effect to bisexual identification in particular.

Notwithstanding bisexual men's greater condom use, their overall risks for HIV/STIs was high. Bisexual (versus heterosexual) identification, attraction, and behavior were generally associated with greater levels of sexuality- and substance use-related risks (i.e., exchange sex, illicit drug use, past STIs, and more sex partners). Notable behavioral risk differences were also apparent between bisexually- and homosexually-active men. These findings are consistent with elevated risk levels known to exist among bisexual men, especially those who engage in bisexual behavior (Agronick et al., 2004; Chu et al., 1992; Doll et al., 1992; Doll & Beeker, 1996; Goldbaum et al., 1998; Goodenow et al., 2002; Hightow et al., 2006; Jeffries & Dodge, 2007; Robin et al., 2002). It is difficult to ascertain whether relatively high levels of condom use could offset the greater HIV/STI exposures bisexual men incur due to their overall high-risk profiles. In these analyses, for example, bisexual-attracted and bisexually-active men were more likely to

be treated for a past-year STI than their heterosexual counterparts, so greater condom use was not as protective as one might have expected.

Ascertaining bisexual men's overall HIV/STI risk is further complicated by their relative disinclination for anal sex. In comparison to homosexual men, bisexual-identified, bisexual-attracted, and bisexually-active men were 12, 8, and 6 times more likely, respectively, to only have oral sex with men during their lifetimes. With overall STI risks from oral sex being lower than risks from anal sex, and HIV risks from oral sex being minimal (Edwards & Carne, 1998; Vittinghoff et al., 1999), it is likely that bisexual men's relatively high likelihood of only having oral sex plays a substantial role in decreasing their risk for HIV/STIs (Jeffries, in press a). This likely would be most apparent among the sub-group of men who only had oral sex during their lifetimes.

The relative benefits of greater condom use among bisexual men could be better understood with precise HIV prevalence data. Currently, no reliable estimates exist for the number of bisexual men who are HIV-infected (Adimora & Fullilove, 2006). One study of urban men reports bisexually-active men's HIV prevalence as being only one-half that of homosexually-active men (Catania et al., 2001), but others report moderately (Valleroy et al., 2000) or substantially (Brooks et al., 2003) greater HIV prevalences among bisexually-active men. Some suggest bisexual-identified men to have much lower HIV rates than gay men, but their samples have been limited to urban and/or high-risk MSM (Catania et al., 2001; Kral et al., 2005; Rietmeijer et al., 1998). Better sexual orientation-specific HIV prevalence data may be useful in determining how an important behavior like condom use measurably influences men's health outcomes.

This study's findings are subject to several limitations. Two condom use measures, including the only measure of condom use with male partners, were only specific to the men's last sexual encounters. These measures were taken from the ACASI portion of the survey, which was the only section to ascertain men's sexual behaviors with men. Here, condom use was not linked to the type of sex (oral, vaginal, or anal) that men had. It is impossible to know whether men who had only vaginal or anal sex at their last encounter had different likelihoods of condom use than men who had oral sex. Condom use frequencies with the men's last partner during the past year and all partners during the previous four weeks were taken from the CAPI portion of the NSFG. These measures were only specific to men who reported female partners in this section, which was less than the number reporting female partners via ACASI technology. This was likely a function of men not being as comfortable directly reporting sensitive sexuality-related information to interviewers (Adimora et al., 2008). Moreover, the NSFG did not measure the frequency of condom use with male partners. Better condom use measures would have considered the frequency of condom use for specific sexual acts occurring with different types of male and female partners (e.g., casual versus steady). Future studies will benefit from the inclusion of multiple condom use measures for all sex partners.

The NSFG included no measure of same-sex relationship status. Some of the bisexually- and homosexually-active men were likely in long-term partnerships with men and, as was observed for heterosexual marriage and cohabitation, they were likely less inclined than non-partnered men to use condoms. The inability to control for this inhibited the detection of condom use variation by relationship status. Additionally, the use of STI treatment as a covariate is limited because many men are unaware of their STIs. Determining STI history using blood specimens would have been more appropriate. Given the sub-sample chosen for these

analyses, findings are only generalizable to sexually-active U.S. men between the ages of 15 and 44. Last, the cross-sectional design of the study limits the ability to make causal inferences.

Condom use remains essential to the health of all sexually-active men. However, bisexual men's increased likelihoods for many risk behaviors suggests that this behavior may have relatively greater importance for them. Many bisexual men do not consistently use condoms, which places them and their partners at risk for HIV/STI acquisition. Currently, no interventions address the sexual health needs of bisexually-active or bisexual-identified men (Brooks et al., 2003; O'Leary & Jones, 2006), and they are unlikely to be reached by efforts targeted to homosexual and heterosexual men (Goodenow et al., 2002; Stokes et al., 1997). For this reason, prevention efforts need to be especially tailored for bisexuals. Interventions will be most effective if they acknowledge that men who possess bisexual identities, attractions, and behaviors are socially and behaviorally distinct from gay/homosexual and heterosexual men. It would be wise to holistically approach prevention by considering the risks posed by behaviors other than unprotected sex, such as substance use. Ultimately, prioritizing HIV/STI prevention among bisexual men will contribute to the improved health and quality of life of this vulnerable group.

Table 2-1. Sexual identity-based distribution of sociodemographic factors, risk covariates, and condom use measures

	Hetero- sexual n = 3,471	Homo- sexual n = 110	Other n = 175	Refused n = 29	Bisexual n = 90
Race/ethnicity (%)					
Mexican	9.7	8.8	23.9	38.4	7.2 <sup>cd</sup>
non-Mexican Latino	5.8	4.6	9.5	17.8	8.5
black	11.8	9.3	21.0	14.7	12.8
other	4.7	1.5	4.2	6.9	4.9
white	67.9	75.8	41.5	22.2	66.6 <sup>cd</sup>
Age (yrs.)	30.9	30.7	30.0	29.4	31.9
Education (yrs.)	13.2	13.5	11.0	11.1	13.2 <sup>cd</sup>
Poverty-level income (mean percentage)	303.8	303.8	199.2	153.4	312.5 <sup>cd</sup>
Marital status (%)					
unmarried, cohabiting	10.1	13.2	23.6	21.1	2.3 <sup>bcd</sup>
unmarried, widowed/divorced/separated	7.3	1.7	5.9	8.0	11.6 <sup>b</sup>
unmarried, never married	31.8	78.8	31.6	28.4	50.8 <sup>abc</sup>
married	50.8	6.3	38.9	42.5	35.3 <sup>ab</sup>
Risk covariates					
exchange sex (% , past yr.)	1.2	6.8	5.4	4.4	3.8
high during sex (% , past yr.)	40.9	56.2	40.1	16.0	40.7
illicit drug use (% , past yr.)	8.0	18.2	9.4	7.0	19.0 <sup>a</sup>
STI treatment (% , past yr.)	2.3	10.2	6.0	7.2	5.4
number of partners (past yr.)	1.5	2.7	1.8	1.5	2.2 <sup>ab</sup>
ever had sex w/ males (lifetime)	3.4	76.0	13.1	2.7	59.3 <sup>abcd</sup>
oral sex only w/ males (lifetime) <sup>e</sup>	57.9	2.9	39.5	--	35.6 <sup>ab</sup>
ever had sex w/ females (lifetime)	100.0	75.9	98.8	100.0	96.1 <sup>ab</sup>
oral sex only w/ females (lifetime) <sup>e</sup>	2.3	7.4	3.1	0.0	2.7
Condom use					
last time, w/ male if bisexually-active (% , past yr.)	27.8	35.0	32.4	32.8	40.0 <sup>a</sup>
last time, w/ female if bisexually-active (% , past yr.)	27.9	34.7	34.7	32.8	41.2 <sup>a</sup>
frequency w/ female partners (% , 4 wks.) <sup>f</sup>	25.1	21.9	30.0	39.0	25.7
frequency w/ last female (% , past yr.) <sup>g</sup>	54.6	54.9	59.3	66.3	74.1 <sup>a</sup>

Note: All comparisons are based upon *t*-tests employing Bonferroni's test of highly significant differences. <sup>a</sup> Statistically different than heterosexual-identified ( $p < .01$ ); <sup>b</sup> Statistically different than homosexual-identified ( $p < .01$ ); <sup>c</sup> Statistically different than other-identified ( $p < .01$ ); <sup>d</sup> Statistically different than those who refused to answer ( $p < .01$ ); <sup>e</sup> Likelihoods of having only oral sex with males and females are based upon sub-groups of men having same- and opposite-sex encounters during their lifetimes; <sup>f</sup> 2,569 men had complete data on this question (2,411 heterosexual, 9 homosexual, 104 other, 16 refused, and 29 bisexual); <sup>g</sup> 1,785 men had complete data on this question (1,662 heterosexual, 10 homosexual, 70 other, 9 refused, and 34 bisexual).

Source: *National Survey of Family Growth, 2002*, National Center for Health Statistics

Table 2-2. Sexual attraction-based distribution of sociodemographic factors, risk covariates, and condom use measures

	Hetero- sexual n = 3,505	Homo- sexual n = 81	Other n = 25	Bisexual n = 264
Race/ethnicity (%)				
Mexican	10.2	6.1	5.0	15.9 <sup>a</sup>
non-Mexican Latino	5.8	2.6	15.2	9.9 <sup>a</sup>
black	12.0	9.7	24.8	14.4
other	4.7	1.4	11.4	4.3
white	67.3	80.3	43.6	55.5 <sup>ab</sup>
Age (yrs.)	30.9	32.4	31.0	29.9 <sup>b</sup>
Education (yrs.)	13.1	13.6	12.7	13.2
Poverty-level income (mean percentage)	299.1	355.9	232.1	283.8 <sup>b</sup>
Marital status (%)				
unmarried, cohabiting	10.7	3.3	0.0	14.1 <sup>b</sup>
unmarried, widowed/divorced/separated	7.1	4.4	14.5	8.6
unmarried, never married	31.1	85.6	65.1	50.1 <sup>ab</sup>
married	51.1	6.7	20.3	27.2 <sup>ab</sup>
Risk covariates				
exchange sex (% , past yr.)	1.3	15.2	0.6	2.6 <sup>b</sup>
high during sex (% , past yr.)	40.7	48.8	37.6	45.7
illicit drug use (% , past yr.)	7.9	17.1	14.1	15.9 <sup>a</sup>
STI treatment (% , past yr.)	2.2	9.2	9.3	9.2 <sup>a</sup>
number of partners (past yr.)	1.5	3.1	1.8	2.1 <sup>ab</sup>
ever had sex w/ males (lifetime)	2.7	90.5	23.5	46.2 <sup>ab</sup>
oral sex only w/ males (lifetime) <sup>d</sup>	60.6	3.8	38.8	33.9 <sup>ab</sup>
ever had sex w/ females (lifetime)	100.0	65.8	96.8	97.6 <sup>ab</sup>
oral sex only w/ females (lifetime) <sup>d</sup>	2.3	11.8	0.0	2.7 <sup>b</sup>
Condom use				
last time, w/ male if bisexually-active (% , past yr.)	27.4	42.0	56.6	39.7 <sup>a</sup>
last time, w/ female if bisexually-active (% , past yr.)	27.5	36.8	57.8	43.6 <sup>a</sup>
frequency w/ female partners (% , 4 wks.) <sup>e</sup>	24.8	17.5	60.0	36.5 <sup>a</sup>
frequency w/ last female (% , past yr.) <sup>f</sup>	54.7	15.2	72.3	61.1 <sup>b</sup>

Note: All comparisons are based upon *t*-tests employing Bonferroni's test of highly significant differences. <sup>a</sup> Statistically different than heterosexual-attracted ( $p < .013$ ); <sup>b</sup> Statistically different than homosexual-attracted ( $p < .013$ ); <sup>c</sup> Statistically different than other-attracted ( $p < .013$ ); <sup>d</sup> Likelihoods of having only oral sex with males and females are based upon sub-groups of men having same- and opposite-sex encounters during their lifetimes; <sup>e</sup> 2,569 men had complete data on this question (2,431 heterosexual, 9 homosexual, 12 other, and 117 bisexual); <sup>f</sup> 1,785 men had complete data on this question (1,657 heterosexual, 5 homosexual, 15 other, and 108 bisexual).

Source: *National Survey of Family Growth, 2002*, National Center for Health Statistics

Table 2-3. Sexual behavior-based distribution of sociodemographic factors, risk covariates, and condom use measures

	Heterosexually- active n = 3,674	Homosexually- active n = 124	Bisexually- active n = 77
Race/ethnicity (%)			
Mexican	10.5	3.6	16.6 <sup>b</sup>
non-Mexican Latino	5.9	9.8	10.0
black	12.1	13.0	17.7
other	4.7	1.1	5.4
white	66.8	72.5	50.3 <sup>ab</sup>
Age (yrs.)	30.9	32.0	29.0 <sup>b</sup>
Education (yrs.)	13.1	13.6	12.6 <sup>b</sup>
Poverty-level income (mean percentage)	298.7	366.6	202.7 <sup>ab</sup>
Marital status (%)			
unmarried, cohabiting	11.0	0.5	7.1 <sup>b</sup>
unmarried, widowed/divorced/separated	7.2	6.6	11.0
unmarried, never married	31.5	92.4	63.2 <sup>ab</sup>
married	50.4	0.5	18.6 <sup>ab</sup>
Risk covariates			
exchange sex (% , past yr.)	1.2	8.3	18.5 <sup>a</sup>
high during sex (% , past yr.)	40.8	46.5	52.5
illicit drug use (% , past yr.)	8.2	18.2	18.2 <sup>a</sup>
STI treatment (% , past yr.)	2.3	12.1	20.5 <sup>a</sup>
number of partners (past yr.)	1.5	2.6	4.8 <sup>ab</sup>
ever had sex w/ males (lifetime)	3.2	100.0	100.0 <sup>a</sup>
oral sex only w/ males (lifetime) <sup>c</sup>	62.9	4.7	29.1 <sup>ab</sup>
ever had sex w/ females (lifetime)	100.0	66.2	100.0 <sup>b</sup>
oral sex only w/ females (lifetime) <sup>c</sup>	2.3	7.1 <sup>a</sup>	7.1 <sup>a</sup>
Condom use			
last time, w/ male if bisexually-active (% , past yr.)	27.9	41.1 <sup>a</sup>	45.1 <sup>a</sup>
last time, w/ female if bisexually-active (% , past yr.)	27.9	41.1 <sup>a</sup>	61.5 <sup>ab</sup>
frequency w/ female partners (% , 4 wks.) <sup>d</sup>	25.1	NA	52.7 <sup>a</sup>
frequency w/ last female (% , past yr.) <sup>e</sup>	54.8	NA	75.5 <sup>a</sup>

Note: All comparisons are based upon *t*-tests employing Bonferroni's test of highly significant differences. <sup>a</sup> Statistically different than heterosexually-active ( $p < .017$ ); <sup>b</sup> Statistically different than homosexually-active ( $p < .017$ ); <sup>c</sup> Likelihoods of having only oral sex with males and females are based upon sub-groups of men having same- and opposite-sex encounters during their lifetimes; <sup>d</sup> 2,569 men had complete data on this question (2,534 heterosexual and 35 bisexual); <sup>e</sup> 1,784 men had complete data on this question (1,744 heterosexual and 40 bisexual).

Source: *National Survey of Family Growth, 2002*, National Center for Health Statistics

Table 2-4. Binary logistic regression analyses of condom use at last sex regressed on sexual orientation indicators, sociodemographic factors, and risk covariates (male partner of bisexually-active men)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Sexual identity						
bisexual	1.72*			0.85	0.83	0.83
homosexual	1.40			0.77	0.51	0.49†
other	1.25			1.13	1.16	1.13
refused	1.27			1.05	1.07	0.87
heterosexual (referent)						
Sexual attraction						
bisexual		1.75***		1.66**	1.31	1.29
homosexual		1.92*		2.38*	2.01	1.55
other		3.46**		3.33*	1.88	1.95
heterosexual (referent)						
Sexual behavior						
bisexual			2.10*	1.06	0.71	0.84
non-bisexual (referent)						
Interaction (identity x behavior)				4.35*	4.10*	5.05*
Race/ethnicity						
Mexican					1.60**	1.53*
non-Mexican Latino					1.64**	1.34†
black					2.15***	1.82***
other					1.80*	1.77*
white (referent)					1.00	1.00
Age (yrs.)					0.97***	0.96***
Education level (yrs.)					1.08**	1.07**
Poverty-level income					0.95†	0.95
Marital status						
currently cohabiting					0.90	0.94
widowed/divorced/separated					2.98***	3.10***
never married					4.97***	5.60***
married (referent)					1.00	1.00
Risk characteristics						
exchange sex (past yr.)						1.64
high during sex (past yr.)						0.67***
illicit drug use (past yr.)						0.54***
STI treatment (past yr.)						1.45
number of partners (past yr.)						1.12***
oral sex only (lifetime)						0.12***
N	3,875	3,875	3,875	3,875	3,875	3,833
-2 log likelihood	4864.3	4845.2	4865.9	4837.3	4124.3	3960.2
Degrees of freedom	4	3	1	9	19	25
Wald chi-square	7.12	24.0***	6.2*	31.3***	322.3***	476.5***
Log odds of intercept	-0.41	-0.42***	-0.20	-0.98***	-1.60***	-1.30***

Note: Odds ratios are presented. In order to produce meaningful odds ratios for income, poverty-level income was measured with a six-category ordinal variable ranging from less than 100 percent to 500 percent or more.

\*\*\*  $p < .00$  \*\*  $p < .01$  \*  $p < .05$  †  $p < .10$

Source: *National Survey of Family Growth, Cycle 6—2002*, National Center for Health Statistics

Table 2-5. Binary logistic regression analyses of condom use at last sex regressed on sexual orientation indicators, sociodemographic factors, and risk covariates (female partner of bisexually-active men)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Sexual identity						
bisexual	1.81*			0.80	0.77	0.76
homosexual	1.37			0.87	0.58	0.61
other	1.37			1.21	1.27	1.22
refused	1.26			1.07	1.11	0.89
heterosexual (referent)						
Sexual attraction						
bisexual		2.05***		1.82***	1.44†	1.44†
homosexual		1.54		1.59	1.27	1.04
other		3.62*		3.41*	1.92	1.97
heterosexual (referent)						
Sexual behavior						
bisexual			4.06***	2.43*	1.91†	1.39
non-bisexual (referent)						
Interaction (identity x behavior)				2.58	2.08	2.51
Race/ethnicity						
Mexican					1.63***	1.53*
non-Mexican Latino					1.61**	1.33†
black					2.19***	1.87***
other					1.77*	1.75*
white (referent)					1.00	1.00
Age (yrs.)					0.97***	0.96***
Education level (yrs.)					1.08***	1.07**
Poverty-level income					0.95	0.95
Marital status						
currently cohabiting					0.91	0.94
widowed/divorced/separated					2.94***	3.05***
never married					5.15***	5.76***
married (referent)					1.00	1.00
Risk characteristics						
exchange sex (past yr.)						1.77
high during sex (past yr.)						0.67***
illicit drug use (past yr.)						0.57***
STI treatment (past yr.)						1.57
number of partners (past yr.)						1.11***
oral sex only (lifetime)						0.09***
N	3,875	3,875	3,875	3,875	3,875	3,833
-2 log likelihood	4877.8	4854.2	4863.6	4837.1	4114.6	3946.3
Degrees of freedom	4	3	1	9	19	25
Wald chi-square	8.64†	24.2***	17.9*	38.8***	315.4***	476.9***
Log odds of intercept	-0.36	-0.26***	0.47	-0.98***	-1.72***	-1.38***

Note: Odds ratios are presented. In order to produce meaningful odds ratios for income, poverty-level income was measured with a six-category ordinal variable ranging from less than 100 percent to 500 percent or more.

\*\*\*  $p < .001$  \*\*  $p < .01$  \*  $p < .05$  †  $p < .10$

Source: *National Survey of Family Growth, Cycle 6—2002*, National Center for Health Statistics

Table 2-6. Ordinary least squares regression analyses of condom use frequency for opposite-sex encounters during the past 4 weeks regressed on sexual orientation indicators, sociodemographic factors, and risk covariates

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>Sexual identity</b>						
bisexual	0.57			-17.17**	-9.47*	-8.00†
homosexual	-3.23			-2.75	-6.10	-8.25
other	4.86			3.60	5.54	4.92
refused	13.87			10.59	9.85	9.00
heterosexual (referent)						
<b>Sexual attraction</b>						
bisexual		11.69*		10.64†	5.18	5.16
homosexual		-7.29		-9.33	-4.09	-7.97
other		35.12†		31.39	24.02	23.51
heterosexual (referent)						
<b>Sexual behavior</b>						
bisexual			27.63***	13.81	6.29	-4.12
heterosexual (referent)						
<b>Interaction (identity x behavior)</b>						
				49.16**	30.71*	36.29*
<b>Race/ethnicity</b>						
Mexican					0.80	0.61
non-Mexican Latino					2.53	-0.09
black					9.36**	6.50*
other					5.69	5.55
white (referent)						
<b>Age (yrs.)</b>						
					-0.85***	-0.83***
<b>Education level (yrs.)</b>						
					0.85*	0.69
<b>Poverty-level income</b>						
					-0.01	0.22
<b>Marital status</b>						
currently cohabiting					0.95	2.77
widowed/divorced/separated					22.12***	21.12***
never married					38.04***	37.62***
married (referent)						
<b>Risk characteristics</b>						
exchange sex (past yr.)						5.70
high during sex (past yr.)						-5.87**
illicit drug use (past yr.)						-9.74***
STI treatment (past yr.)						2.84
number of partners (past yr.)						2.75**
oral sex only (lifetime)						-2.37
<b>N</b>						
	2,569	2,569	2,569	2,569	2,569	2,549
<b>Degrees of freedom</b>						
	4	3	1	9	19	25
<b>Adjusted R<sup>2</sup></b>						
	0.000	0.004	0.003	0.008	0.23	0.24
<b>Intercept</b>						
	25.1***	24.7***	25.1***	24.6***	28.9***	29.2***
<b>Model F statistic</b>						
	0.43	2.37†	7.85**	5.41***	27.47***	27.32***

Note: Coefficients represent percentages of times the men used condoms. In order to produce meaningful coefficients for income, poverty-level income was measured with a six-category ordinal variable ranging from less than 100 percent to 500 percent or more.

\*\*\*  $p < .001$  \*\*  $p < .01$  \*  $p < .05$  †  $p < .10$

Source: *National Survey of Family Growth, Cycle 6—2002*, National Center for Health Statistics

## CHAPTER 3 HIV TESTING

### **Introduction**

In August 2008, the CDC released findings characterizing the domestic human immunodeficiency virus (HIV) epidemic as much worse than previously thought (Hall et al., 2008). Using statistical methodologies modified to produce more accurate population-level estimates than acquired in the past, the CDC estimated that 56,300 (rather than the previously-derived 40,000) people became infected with HIV in 2006. This rate has been roughly stable throughout the past decade. This report underscores the continuing sexual orientation disparity in HIV as men who have sex with men continue to comprise at least half of all new infections in the United States. These findings beg for more thorough examinations of the social and behavioral factors that underlie the unabated spread of HIV among non-heterosexual men.

HIV testing, though alone insufficient, remains an essential preventive strategy. Upon testing, and presumably learning one's HIV serostatus, men can take steps to safeguard their sexual health. Receiving positive test results may result in infected individuals decreasing their numbers of sex partners (CDC, 2000), increasing rates of condom use (Colfax et al., 2002; MacKellar et al., 2005; Marks et al., 2005; Weinhardt et al., 1999), and accessing treatments that decrease overall infectivity, morbidity, and mortality (Chesney & Smith, 1999). Testing also yields HIV serostatus disclosure to potential sex partners (Wolitski et al., 1998). Among HIV-negative men, testing may facilitate the avoidance of current and future risk behaviors (Leaity et al., 2000). Because nearly one-third of all HIV-infected individuals (Hall et al., 2008) and half of HIV-infected MSM (CDC, 2005a) are not aware that they have HIV, testing is an important step in risk reduction at the population level (CDC, 2006a; Valdiserri et al., 1999).

## **HIV Testing Among Bisexual Men**

Men's sexual orientations affect the extent to which they are at risk for HIV. Of all social groups in the United States, men who have sex with men have been most adversely affected, maintaining prevalences comparable to those of populations in sub-Saharan Africa (CDC, 2008a). Still, recent reports suggest that being bisexual, and having sex with men and women in particular, may pose additional risk for men. Some studies have identified bisexually-active men as having higher HIV prevalences than homosexually-active men (Brooks et al., 2003; Valleroy et al., 2000). Numerous studies identify behavioral and identity-based bisexuality in relation to illicit drug use, exchange sex, and a high number of sex partners (Agronick et al., 2004; Goldbaum et al., 1998; Goodenow et al., 2002; Greco et al., 2007; Hightow et al., 2006; Jeffries & Dodge, 2007; Robin et al., 2002), which alone pose substantial risks for HIV. Even studies that show bisexual-identified or bisexually-active men to have lower HIV rates than their homosexual counterparts convey bisexual men's relatively high prevalences (Catania et al., 2001; see also Kral et al., 2005; Rietmeijer et al., 1998).

Despite the benefits of HIV testing and the elevated HIV risks of bisexual men, few U.S. studies have investigated the relationship between HIV testing and male bisexuality. Other than Kalichman et al. (1998), who found that bisexually-active men were less likely to ever be tested than homosexually-active men, studies were primarily conducted outside the United States (Jin et al., 2002; Myers et al., 1993, 1996; Van de Ven et al., 2000; Wang et al., 1997). Notwithstanding national and cultural differences that differentiate U.S. and non-U.S. bisexual men (Aggleton, 1996), international studies have found that bisexually-active men are less likely than homosexually-active men to ever be tested for HIV (Myers et al., 1993, 1996). Some underscore bisexual (versus homosexual) identification in relation to moderately decreased likelihoods of being ever and recently tested (Jin et al., 2002; Wang et al., 1997) or having HIV

test results (Van de Ven et al., 2000). Although findings from these three studies are insightful, they all combined bisexual- and heterosexual-identified men into sub-samples, so differences between bisexual and other non-heterosexual men cannot be determined. Most findings also resulted from bivariate analyses, which do not adjust for confounding with sociodemographic and risk factors known to distinguish bisexual from homosexual and heterosexual men.

Some U.S. studies have found identity-related HIV testing differences, but their drawbacks are equally disconcerting. In Do et al.'s (2006) sample of MSM, being bisexual-identified was associated with a substantial decrease in the odds of being tested in the past year. Rotheram-Borus et al. (1997) found that bisexual- and heterosexual-identified youth had substantially lower odds of ever being tested than gay youth. These studies' sampling frames were limited to Asian and Pacific Islander MSM and high-risk youth, respectively. Thus, the extent to which these findings represent bisexual men of other racial/ethnic groups and non-high-risk populations is unknown.

Other domestic studies' findings are limited by inadequate sexual orientation measurement. For example, researchers have found that being less "out" (MacKellar et al., 2006), having fewer friends "who understand sexual orientation" (Povinelli et al., 1996), and having fewer gay friends (Van de Ven, 2000) is negatively associated with being HIV tested. Although homosexual-identified men—and presumably those with relatively more same-sex behavior—are more inclined than bisexual men to have these characteristics (McKirnan et al., 1995; Weinberg et al., 1994), these measures may not accurately reflect men's sexual identities. Yet, researchers sometimes cite studies using these proxies with the presumption that non-homosexual-identified men will inevitably be at a greater risk of not testing (see Do et al., 2006, p. 52).

## **The Current Project**

An understanding of bisexuality in relation to HIV testing requires measures accounting for the multidimensional nature of sexual orientation and the potentially mediating roles these dimensions have in relation to each other. Throughout the last few decades, social scientists have become more discerning of the complexity by which sexual behaviors, identities, and attractions determine HIV-related health behaviors (Laumann et al., 1994; Rust, 2000a; Weinberg et al., 1994). Researchers increasingly utilize behavioral and identity-based measures of bisexuality in order to draw implications on the independent risks associated with each (Greco et al., 2007; Kalichman et al., 1998; Montgomery et al., 2003; see also Pathela et al., 2006; Wolitski et al., 2006). In this regard, relationships between indicators of bisexuality and HIV testing may change when controlling for multiple dimensions. As is the case for other HIV-related protective behaviors, the relationship between bisexual behavior (or identity) and HIV testing behaviors may differ for men with different identities (or behaviors; see Jeffries & Dodge, 2007; Zellner et al., 2009). The use of multiple bisexuality measures is one step toward uncovering the potentially complex relationship male bisexuality has with HIV testing behaviors.

In order to determine if bisexuality is independently associated with HIV testing, this study recognizes the sociodemographic and risk factors that covary with testing. HIV testing is more common among men who are racial/ethnic minorities (Kellerman et al., 2002), of higher socioeconomic status (Hart et al., 2002; MacKellar et al., 2006), non-married (Laumann et al., 1994), and live in urban environments (Myers et al., 1993, 1996). Studies have identified both older (Kellerman et al., 2002; Maguen et al., 2000; Povinelli et al., 1996; Rotheram-Borus et al., 1997) and younger (Jin et al., 2002; Laumann et al., 1994; Myers et al., 1996) ages as predictors of HIV testing. Ever testing is also more likely among those with access to medical providers (Do et al., 2006; MacKellar et al., 2006).

Higher likelihoods of testing exist among men with characteristics that place them at risk for HIV, such as anal intercourse (Myers et al., 1996), unprotected sex (Do et al., 2006; Maguen et al., 2000), multiple partners (Laumann et al., 1994; Mackellar et al., 2006), or a history of sexually transmitted infections (Hart et al., 2002). Drug use within and outside the context of sexual encounters is also a consistent predictor of HIV testing (Main et al., 1994; Povinelli et al., 1996; Rotheram-Borus et al., 1997). Of note, bisexually-active men are significantly more likely than their monosexual counterparts to possess most of these characteristics (Agronick et al., 2004; Goldbaum et al., 1998; Goodenow et al., 2002; Hightow et al., 2006; Jeffries & Dodge, 2007).

In order to present a more thorough depiction of HIV testing among men in the United States, this paper assesses multiple outcomes: ever testing, purposeful testing, and recent testing. Knowing factors predictive of ever testing for HIV is important as it highlights the types of men to which interventions need to be targeted (Hart et al., 2002; Maguen et al., 2000; Myers et al., 1996). However, given the large proportion of HIV infections that are unrecognized among U.S. men, researchers in recent years have been more apt to measure past-year testing (CDC, 2005a; Do et al., 2006; Jin et al., 2002; MacKellar et al., 2006; see also Brooks et al., 2008; Pathela et al., 2006). Such a measure can more proximately indicate one's HIV status (CDC, 2003). It is also important to understand why individuals test for HIV. Men who test to know their HIV serostatuses are likely more purposeful in thinking about their health and sexual behaviors. For this reason, it is important to distinguish purposefully-tested men from those who test for other reasons (Kellerman et al., 2002).

This study used a nationally-representative, probabilistic sample to examine HIV testing behaviors. Although a few single-city studies of non-heterosexual men have used probability-

based samples (Brooks et al., 2008; Mills et al., 2001), those doing so at the national level are rare in HIV testing studies (Laumann et al., 1994). Probabilistic samples, however, are important for adequate representation of U.S. non-heterosexual men. Analyses are guided by the following research questions:

- How do behavioral, identity-based, and attraction-based measures of bisexuality predict the likelihood of ever, purposefully, and recently testing among men in the United States?
- Does the relationship between behavioral bisexuality and HIV testing behaviors vary by sexual identity?

## **Methods**

### **Sample**

I used the 2002 cycle of the National Survey of Family Growth (NSFG), a nationally-representative, stratified cluster sample of 4,928 household-abiding males between the ages of 15 and 44 (Groves et al., 2005; National Center for Health Statistics, 2005). The sampling frame included 121 primary sampling units derived from the 2000 U.S. Census. This cycle of the NSFG is the first to include men, and it has an oversample of non-Latino blacks, Latinos, and teenagers. Female interviewers used computer-assisted personal interviewing to collect most data, while the men utilized audio computer-assisted self-interviewing (ACASI) on the last section of the interview. This section included questions on sexual orientation and sexual risk behaviors. With ACASI, participants used laptop computers in order to hear, read, and answer questions on these sensitive issues. Interviews averaged 60 minutes in length and occurred between March 2002 and March 2003. Participants received \$40 in compensation. The response rate was 78 percent.

## **Measures**

### **Dependent variables**

The NSFG asked several questions specific to HIV testing separate from and in conjunction with blood donations. For their most recent test, men who tested outside of blood donations indicated up to four of the following reasons: “just to find out if you were infected,” “for a hospitalization or surgical procedure,” “to apply for health or life insurance,” “because of a referral by a doctor,” “to apply for a marriage license,” “for some other reason,” and “don’t know.” The above questions were used to create dichotomous (1,0) variables indicated whether men were ever tested (“refused” and “don’t know” responses coded as missing) and a trichotomous measure distinguishing purposefully-tested, non-purposefully tested, and non-tested men. I considered purposeful testers as those who, at their most recent test, tested to find out if they had HIV. Men who only tested while donating blood were considered non-purposeful testers. Ever-tested men provided dates of their most recent test. I created a variable to measure the number of months since the men’s most recent tests and whether testing was during the past-year. I coded “refused” and “don’t know” responses as missing.

### **Independent variables**

The men provided the gender(s) of past-year partners in the ACASI section of the interview. Using dichotomous (1,0) variables, I deemed men with male and female, only male, and only female partners as bisexually-, homosexually-, and heterosexually-active, respectively. Dichotomous (1,0) sexual identity measurements came from the following: “Do you think of yourself as heterosexual, homosexual, bisexual, or something else?” I acknowledged men who answered “refused” as a separate category, while men who answered “don’t know” and “something else” were collapsed together. These categories are useful given that some men distinguish themselves from heterosexual-identified men, yet shun more conventional non-

heterosexual identity labels (Stewart et al., 2000). I subsequently created a bisexual behavior-identity interaction term to measure non-additivity among bisexuality indicators.

Sexual attraction measures came from: “Are you only attracted to females, mostly attracted to females, equally attracted to females and males, mostly attracted to males, only attracted to males, or not sure?” I created dichotomous (1,0) variables to distinguish men whose attractions were bisexual (any degree of attraction to females and males), heterosexual (only attracted to females), and homosexual (only attracted to males). I also recognized “other” attraction by collapsing men who responded with “not sure,” “refused,” or “don’t know.”

### **Sociodemographic control variables**

Race/ethnicity measurements took into account participants’ self-reported races and Latino ethnicities. I created five dichotomous variables (1,0) to distinguish men who were Mexican, non-Mexican Latino, non-Latino black, non-Latino other, and non-Latino White. The NSFG measured age based upon participants’ birthdates. Education level was measured with participants’ total years of completed schooling, which ranged from nine years or less (9) to 7 or more years of college (19). I also used a poverty-level household income measurement. Based upon 2001 poverty level definitions provided by the U.S. Census Bureau, this variable was weighted by the average threshold income of families the size of participants’ families.

Participants stated their heterosexual marital status as “married,” “cohabitating with an opposite sex partner,” “widowed,” “divorced,” “separated,” and “never been married.” I created dichotomous variables (1,0) to distinguish married, unmarried cohabiting, non-cohabiting previously-married, and never-married men. Based upon participants’ zip codes, NSFG administrators created an urbanicity variable. It denoted the level of urbanicity relative to metropolitan statistical area delineations (central city, suburban, or small town/rural). I created

three dichotomous variables (1,0) to distinguish men dwelling in central cities, suburban areas, and rural areas/small towns.

I measured access to care with: “Is there a place that you usually go to when you are sick or need advice about health?” Men who answered “refused” or “don’t know” were excluded from analyses.

### **Risk control variables**

I created composite sexual risk measures based upon the number of past-year sex partners and condom use. The NSFG asked “Thinking about the last 12 months, how many female sex partners have you had?” A parallel question applied to sex with males. Condom use was ascertained with “Did you use a condom the last time you had vaginal intercourse with a female?” Parallel questions were asked in regard anal sex with women and any sex with men. Based upon responses, I regarded men with no condom use at last encounter but had two or more past-year partners as having engaged in “sexual risk” (see Brooks et al., 2008; Pathela et al., 2006). Because men could report vaginal or anal (or both) sex with women, risk was determined based upon condom use during each type of act. Men who had both vaginal and anal sex with women had to report condom use during each act in order to be considered not at risk. Given the low HIV risk associated with oral sex, men who only engaged in oral sex during their lifetimes were placed in the non-risk category. Risk measures were specific to each sex.

Exchange sex was measured with: “In the past 12 months has a female given you money or drugs to have sex with her.” A parallel question applied to exchange sex with men. I considered heterosexually- and homosexually-active men who answered “yes” to the appropriate questions as having exchanged sex. I considered bisexually-active men as having exchanged sex if they answered “yes” to either question.

Regarding risky sex partners, the NSFG asked: “In the last 12 months, have you had sex with a male who takes or shoots street drugs using a needle?” and “...did you have sex with a male who you knew was infected with the AIDS virus?” Parallel questions applied to female partners. Men who indicated any sex with intravenous drug-using or HIV-infected individuals were coded as having risky partners.

An intravenous drug use measurement came from the following: “During the last 12 months, how often have you taken non-prescription drugs using a needle, that is, you took them only for the experience or feeling it caused? This includes 'shooting up' and 'skin-popping’.” The NSFG similarly measured crack and cocaine use. “Illicit drug use” was defined as any level of past-year use of these drugs.

I measured intoxication during sex with: “In the last 12 months, how often were you ‘high’ on alcohol or drugs when you had sex with a female?” A parallel question applied to sex with males. Responses for both questions were coded as a frequency ranging from never to always. Men who were ever high during sex were distinguished from those who were not. Heterosexually- and homosexually-active men’s coding came from the first question, whereas bisexually-active men’s coding came from both.

STI history was ascertained with: “At any time in your life, have you ever been told by a doctor or other medical care provider that you had genital warts?” Parallel questions applied to herpes and syphilis. Men reporting any infection were coded as having had an STI. The NSFG also measured past-year treatment for STIs by asking: “In the past 12 months, have you been treated or received medication from a doctor or other medical care provider for a sexually transmitted disease like gonorrhea, Chlamydia, herpes, or syphilis?”

For all risk measures, men who answered “don’t know” were placed in the risk category so that those with affirmative (i.e., “no”) responses could be distinguished. Given the stigma attached to these behaviors, I reason that men who did not engage in these behaviors would readily admit such. Moreover, a “don’t know” response casts doubt on one’s avoidance of past HIV risks (e.g., if a man does not assuredly know that he has not engaged in intravenous drug use, then he is more likely a risk-taker than those who avoided this behavior). This strategy helped to maintain the size of the final analytic sample, which contained a relatively small number of bisexually-active men ( $n = 77$ ).

### **Statistical Analyses**

Results are based upon the sub-sample of men who had sex during the past year ( $N = 3,875$ ). I began with cross-tabulations to examine variation among the sexual orientation indicators. Next, I used proportion *t*-tests to compare bisexual and other men on race/ethnicity, age, education level, income, marital status, urbanicity of residence, access to health care, risk covariates, and HIV testing behaviors. Comparisons were specific to behavioral, identity-based, and attraction-based dimensions of sexual orientation. I employed the analogy of Bonferroni’s correction for tests of highly significant differences by using alpha levels of .017, .01, and .013, respectively. These corrections adjusted for type I errors (Agresti & Finlay, 1997).

I used multinomial and binomial logistic regression techniques to model the odds of testing for HIV ever and in the past year, respectively. Multivariate results are presented in a nested design in order that the statistical effects of independent and control variables can be observed across models. Both sets of HIV testing analyses consider non-additivity among bisexual behavior and bisexual identity. Diagnostic tests confirmed high collinearity among indicators of heterosexuality and homosexuality, but not other study covariates. Therefore, sexual identity and attraction measures used in multivariate analyses collapsed men with identities or attractions

that were not bisexual. Sexual behavior, given its proliferation in the HIV literature, served as the primary independent variable. Only statistically significant findings are reported in the text.

I used the SAS® System for Windows Version 9.1.3 for all analyses and data management (SAS Institute, Inc., 2004). All analyses applied scaled sampling weights to adjust for oversampling, noncoverage, and nonresponse. Using the PROC SURVEYLOGISTIC procedure, I applied weights that took into account the complex survey design by properly adjusting standard errors in regression analyses (Lepkowski et al., 2006).

## **Results**

### **Behavior, Identity, and Attraction Covariation**

Marked collinearity existed among indicators of heterosexuality and homosexuality, but not bisexuality (data not shown). Vast majorities of heterosexually-active men identified as heterosexual (93.7%) or were only attracted to women (95.4%); nearly all who identified as heterosexual (99.3%) or had only opposite-sex attraction (99.5%) were heterosexually-active. Most (96.2%) heterosexual-identified men were only attracted to women, and most (94.7%) heterosexual-attracted men were heterosexual-identified. Smaller majorities of homosexually-active men identified as homosexual (74.5%) or were only attracted to men (61.7%), while the homosexually-active were most populous in the sub-samples of homosexual-identified (66.8%) and homosexual-attracted men (81.6%). Although only a slight majority (56.8%) of homosexual-identified men were only attracted to men, a substantial majority (83.6%) of homosexual-attracted men were homosexual-identified.

On the other hand, the largest proportion of bisexually-active men identified as heterosexual (43.6%), and relatively few were bisexual- (28.1%) or homosexual-identified (15.6%). Most (59.7%) bisexual-identified men were heterosexually-active, and merely one-fifth were bisexually- (19.6%) or homosexually-active (20.7%). Although most (54.1%) bisexually-

active men had bisexual attraction, with fewer having heterosexual (33.9%) or homosexual (10.3%) attraction, few of the bisexual-attracted were bisexually-active (13.5%). The majority of them were heterosexually-active (72.7%), and a few were homosexually-active (13.5%). Similarly, while most bisexual-identified men had bisexual attraction (70.6%), most bisexual-attracted men were heterosexually-active (57.5%), and relatively few identified as bisexual (23.8%) or homosexual (8.2%).

## **Bivariate Findings**

### **Behavior-based comparisons**

Table 1 contains results for comparisons on sociodemographic, risk-related, and HIV testing covariates among heterosexually-, homosexually-, and bisexually-active men. Significantly more men of Mexican descent comprised the bisexually-active sub-sample relative to the homosexually-active sub-sample. White men were more likely to be heterosexually- or homosexually-active than bisexually-active. Bisexually-active men were younger and had fewer years of education than homosexually-active men, but they had lower incomes than heterosexually- and homosexually-active men. They were less likely than heterosexually-active, but more likely than homosexually-active, men to have ever married a woman. Bisexually-active men were more likely than heterosexually-active, but less likely than homosexually-active, men to be urban-dwelling. They were marginally less likely than homosexually-active men to have a usual place of health care ( $p = .02$ ).

The behavior-based sub-samples exhibited stark differences in risk profiles. The likelihood of having risky sex with males and females, exchange sex, at-risk partners, illicit drug use, and STIs was much higher among bisexually-active than heterosexually-active men. With the exception of risky sex with females, homosexually-active men were also significantly more likely than heterosexually-active men to possess these characteristics. Relative to their

homosexually-active counterparts, bisexually-active men were more likely to intravenously use drugs (data not shown) and, albeit marginal, exchange sex ( $p = .03$ ).

Although fewer bisexually-active, relative to homosexually-active, men had ever been tested for HIV, they did not differ from heterosexually-active men. They and homosexually-active men were more likely than heterosexuals test in the past year. Fewer months had passed since bisexually- (24.2) and homosexually-active (29.2) men's last tests relative to heterosexually-active men's (45.8). While fewer bisexually-active than homosexually-active men purposefully tested, proportionally more of them tested to apply for a marriage license.

### **Identity-based comparisons**

In table 2, I present sociodemographic, risk-related, and HIV testing covariates as they vary by sexual identity. The bisexual-identified sub-sample included fewer men of Mexican descent than did the other and refused sub-samples; yet, it included more white men than were included in the other and refused sub-samples. Bisexual-identified men had more education and income than other-identified and refused men. Proportionally fewer bisexual- than heterosexual- and other-identified men had ever married, but more bisexual- than homosexual-identified men had ever married. Relative to heterosexual men, bisexual-identified men were more likely to live in both central cities and small towns/rural areas, while they were less likely to live in suburban areas and more likely to be non-metropolitan than homosexual-identified men. Additionally, relative to heterosexual, other, and refused men, bisexual-identified men had a higher likelihood of having a usual place of health care.

I observed significant variation in risk behaviors by sexual identity. Relative to heterosexuals, bisexual-identified men were more likely to have risky sex with males, use illicit drugs, or be diagnosed with an STI. Although they had a lower likelihood of risky sex with males and, albeit marginal, being high during sex ( $p = .03$ ) than gay men, bisexual-identified

men were more likely than their homosexual counterparts to have risky sex with females.

Bisexual-identified men also had higher likelihoods of risky sex with males or having an STI than other-identified men.

Although bisexual- and homosexual-identified men did not differ in the likelihood of ever testing for HIV, the former were more likely to do so than heterosexual, other, or refused (marginal,  $p = .02$ ) men. Bisexual-identified men had a lower time lapse since their most recent tests than heterosexual-identified men. Relative to homosexual-identified men, bisexual men were less likely to purposefully test, but more likely to do so for insurance or other, non-specified reasons. Although they were less likely than other-identified men to test due to hospitalization, bisexual-identified men were marginally more likely to do so for marriage license-related ( $p = .03$ ) or other, non-specified reasons ( $p = .03$ ).

### **Attraction-based comparisons**

Table 3 contains results in which men with different sexual attractions were compared on all study covariates. Bisexual-attracted men were more likely than heterosexual men to be of any Latino descent. The bisexual-attracted sub-sample also contained marginally more Mexican ( $p = .03$ ) and other Latino men ( $p = .04$ ) than did the homosexual sub-sample. Conversely, white men were less likely to comprise the bisexual-attracted sub-sample than the heterosexual- and homosexual-attracted sub-samples. Bisexual-attracted men were younger and had less income than their homosexual counterparts. They were less likely than heterosexual-attracted but more likely than homosexual-attracted men to have ever married. Similarly, relative to heterosexual and homosexual men, bisexual-attracted men were more and less likely, respectively, to be urban-dwelling. They were also less likely than homosexual-attracted men to have a usual place to receive health care.

Bisexual-attracted men had higher likelihoods of risky sex with males, at-risk partners, illicit drug use, an STI, past-year STI treatments, and albeit marginal, risky sex with females ( $p = .02$ ) than heterosexual-attracted men. On the other hand, with the exception of having risky sex with females, bisexual-attracted men were less likely to have risky sex with males, exchange sex, at-risk partners, and past STIs than men with homosexual attraction.

Relative to heterosexual-attracted men, bisexual-attracted men were more likely to ever test for HIV, be recent testers, and test just to know their HIV serostatuses ( $p = .03$ ). However, they were less likely than homosexual-attracted men to purposefully test and less likely than heterosexual men to test for hospitalization purposes.

## **Multivariate Findings**

### **Purposeful and non-purposeful HIV testing**

In table 4, I present results of multinomial logistic regression analyses modeling the odds of HIV testing as a function of sexual orientation, sociodemographic, and risk covariates. Because bivariate analyses confirmed homosexually-active men to be the most distinct, they comprised the referent. Analyses examined the effects of the respective independent variables with purposeful (“just to find out if infected”) and non-purposeful testers simultaneously being compared to those who never tested for HIV.

In model 1, despite the non-significance of the behavior-identity interaction term in predicting purposeful testing, bisexually- and heterosexually- active men had one-fifth the odds of purposefully testing relative to homosexually-active men. However, the interaction was marginally predictive of non-purposeful testing. Bisexually-active men who identified as bisexual had one-fifth the odds of non-purposefully testing than bisexually-active men who did not identify as bisexual. Yet, the odds of being non-purposefully tested increased nearly four-fold for heterosexually- or homosexually-active men who identified as bisexual relative to

heterosexually- or homosexually-active men who did not identify as bisexual. The relationship between the behavior-identity interaction and non-purposefully testing for HIV largely persisted across models, but it became more significant ( $p = .04$ ) in the full model.

Model 3 included all study confounders. Current heterosexual cohabitation, risky sex with males, and illicit drug use predicted higher odds of purposeful testing. Men with Mexican ethnicity and higher incomes were less and more likely, respectively, to be non-purposeful testers. Those who were black, more educated, older, and treated for an STI in the past year simultaneously maintained higher odds of being purposefully- and non-purposefully-tested. Relative to married men, being never married positively predicted purposeful testing but negatively predicted non-purposeful testing. Of note, bisexual attraction and risky sex with males became marginally predictive of non-purposeful testing ( $ps = .06$  and  $.07$ , respectively).

### **Past-year HIV testing**

Table 5 contains results of multivariate analyses of past-year HIV testing. The behavior-identity interaction was significant in neither reduced nor full models, so I presented only main effects of the independent variables. As bivariate analyses confirmed heterosexually-active men to be the most distinct for this outcome, they comprised the referent.

Although being bisexually-active, homosexually-active, and bisexual-attracted positively predicted past-year testing in bivariate models, attraction became insignificant when adjusting for all sexual orientation indicators (model 1). However, bisexually- and homosexually-active men had more than double the odds of past-year testing than heterosexually-active men. In model 4, which adjusts for all study confounders, no sexual orientation measures were predictive of past-year testing. Sociodemographic effects, excluding Mexican ethnicity and education, were fairly consistent across models. Men who were non-Latino black, younger, not currently married or cohabiting, or had a usual place to access health care had greater odds of past-year

testing. Independent of other factors, past-year testing was also more likely among men who had risky sex with males and females or received past-year STI treatments.

### **Discussion**

This analysis investigated the ways in which bisexuality influences men's HIV testing behaviors. It proceeded with recognition of multiple dimensions—behavior, identity, and attraction—along which bisexuality can manifest. In doing so, it demonstrates how these dimensions can differentially affect men's likelihoods of testing for HIV and the reasons they test. This investigation's findings can inform interventions to increase HIV testing and, subsequently, decrease the prevalence of HIV among bisexual men. Yet, they pose important questions relevant to the scientific community's understanding of men's sexualities and HIV risk.

Bisexual activity was independently associated with never being tested for HIV. Relative to homosexually-active men, the bisexually-active at most had only one-fifth the odds of being purposefully tested during their most recent tests. The relationship between bisexual activity appeared to strengthen in multivariate analyses, suggesting that bisexual activity is uniquely associated with a lower likelihood of testing just to know one's HIV status. Although the non-significance of the behavior-identity interaction provided no evidence that purposeful testing among bisexually-active men differs for men who identify as bisexual or not (or vice-versa), this finding is important given comparably high risk levels among bisexually- and homosexually-active men.

On the other hand, the significance of the interaction term in predicting non-purposeful testing suggests bisexual behavior and identification mediated each other's relation to testing for reasons other than wanting to know one's HIV status. Identifying as bisexual (versus not) increased the odds of non-purposeful testing among men who were heterosexually- or

homosexually-active. But, for bisexually-active men, bisexual identification substantially decreased the odds of non-purposeful testing relative to bisexually-active men who did not identify as bisexual. Given the increase in significance for the interaction term across models, we would expect it to be more significant than in bivariate analyses if bisexually-active and bisexual-identified men were equal to their non-bisexual counterparts on all study covariates. Testing for non-additivity among bisexual behavior and identity resulted in bisexually-, homosexually-, and heterosexually-active men not identifying as bisexual being statistically undifferentiated from each other. These findings demonstrate that bisexual identification differentially affects the likelihoods of non-purposeful testing among men with different behavior-based sexual orientations.

That bisexual activity, independent of numerous risk and sociodemographic factors that covary with bisexuality and HIV testing, would pose a risk for the avoidance of HIV testing warrants further comment. Sexualities scholars increasingly underscore the uniqueness of bisexuality such that bisexual men, on any given dimension, should be distinguished from their gay/homosexual and heterosexual counterparts. They draw attention to the marginalization, social discrimination, and hostility that bisexual men face from gay/homosexual and heterosexual communities if their behaviors, identities, and/or attractions become known (see Balsam & Mohr, 2007; Mulick & Wright, 2001; Paul, 2000). Researchers are now more attentive to the ways in which the marginalization of bisexuality engenders negative health behaviors through the lack of social approval for bisexuality and the internalization of anti-bisexual sentiment among bisexual men (Kennedy & Doll, 2001; Ochs, 1996).

Although this study could not directly test for the social marginalization of bisexuality, inferences drawn from this burgeoning literature lend support to its role as an underlying

determinant of relatively low HIV testing. Scientists identify low integration within gay communities as a reason that bisexual men are not reached by efforts to increase rates of HIV testing and other preventive behaviors (Doll & Beeker, 2001; Goodenow et al., 2002; Heckman et al., 1995). In light of gay communities generally embracing norms that encourage HIV testing (Do et al., 2006; Van de Ven et al., 2000), bisexual men, especially those who possess bisexual identification and behavior, may not perceive testing as normative as do homosexually-active men. Other researchers highlight bisexually-active men's low perceived risk for HIV, in spite of high risk levels, as stemming from their marginalization (Evans et al., 1998).

Ignoring differences between bisexually- and homosexually-active men, we might expect bisexually-active men to have much higher likelihoods of testing than their heterosexually-active counterparts. Bisexually-active men engaged in far more HIV risk behaviors than heterosexually-active men, but they were statistically equal on purposeful and non-purposeful testing. This finding underscores the need for interventions to increase HIV testing among bisexually-active men. Similarly, we might have expected heterosexually- and homosexually-active men to be equally likely to have ever tested in multivariate analyses, which was not the case. This may partially reflect some heterosexual men's belief that only gay men are at risk for HIV (see Greene & Banerjee, 2006; Herek & Capitano, 1999).

Among ever-tested men, past-year testing was characteristic of the majority of men who were bisexually-active or homosexual according to any sexual orientation indicator. Relative to their heterosexual counterparts, bisexually-active, homosexually-active, and bisexual-attracted men were more likely to be tested during the past year. However, their non-significant multivariate odds ratios suggested that these men's higher likelihoods of past-year testing was largely due to differences in sociodemographic and risk measures. This finding is consistent

with what we might expect given bisexually- and homosexually-active men's higher risk tendencies, which would more readily prompt them to be recently tested (Brooks et al., 2008).

This study's findings are subject to at least six limitations. First, because all data were simultaneously collected, it is difficult to infer a causal relationship between independent and dependent variables. Also, the NSFG did not ask the men if they received test results after being tested. Testing alone is insufficient as a protective behavior if men are not aware of their serostatuses (CDC, 2003; Van de Ven et al., 2000). A clinical measure drawn from blood specimens might have been a useful covariate as it can yield more nuanced understanding of risk behaviors in relation to HIV susceptibility (see Catania et al., 2001). Third, because these data included no measures for repeat testing, analyses are only specific to each man's most recent test. This is problematic in light of the risks that men can incur after being tested only once (Hart et al., 2002; Leaity et al., 2000). Additionally, the NSFG included no measures of same-sex relationship partnering, which has been found in relation to increased HIV testing (Do et al., 2006). Future studies may benefit from the inclusion of same-sex partnering data as it may covary with men's HIV testing histories. Fifth, analyses of past-year testing were based on a small sample size of bisexually-active men ( $n = 46$ ), which may have inhibited the detection of significant differences observable with a larger sub-sample. Last, this study's findings are only generalizable to men between the ages of 15 and 44 who were sexually-active during the previous year.

Addressing the HIV-related health needs of bisexual men requires careful attention to the ways their behaviors, identities, and attractions dispose them to more or less HIV risk. While this study supports efforts to increase HIV testing among bisexual men, it also shows that interventions need to take account of HIV risks that bisexual men encounter through multiple

sexual and substance use-related risk behaviors. The public health community could benefit from studies identifying structural determinants, such as bisexual stigma, that likely prevent many bisexual men from being tested for HIV. Both research and intervention strategies would be enhanced by acknowledging that bisexual men, on any given indicator, are socially and sexually distinct from heterosexual and homosexual men. As the third decade of the HIV epidemic concludes, research focusing on bisexual men will better our understanding of prevention needs for this vulnerable population.

Table 3-1. Sexual behavior-based distribution of sociodemographic factors, risk covariates, and HIV testing behaviors

	Heterosexually- active n = 3,674	Homosexually- active n = 124	Bisexually- active n = 77
Race/ethnicity (%)			
Mexican	10.5	3.6	16.6 <sup>b</sup>
non-Mexican Latino	5.9	9.8	10.0
black	12.1	13.0	17.7
other	4.7	1.1	5.4
white	66.8	72.5	50.3 <sup>ab</sup>
Age (yrs.)	30.9	32.0	29.0 <sup>b</sup>
Education (yrs.)	13.1	13.6	12.6 <sup>b</sup>
Poverty-level income (mean percentage)	298.7	366.6	202.7 <sup>ab</sup>
Marital status (%)			
unmarried, cohabiting	11.0	0.5	7.1 <sup>b</sup>
unmarried, widowed/divorced/separated	7.2	6.6	11.0
unmarried, never married	31.5	92.4	63.2 <sup>ab</sup>
married	50.4	0.5	18.6 <sup>ab</sup>
Urbanicity of residence (%)			
rural area/small town	18.7	4.6	16.9 <sup>b</sup>
other metropolitan/suburban	48.2	30.6	33.6
central city	33.1	64.8	49.5 <sup>a</sup>
Usual place of health care (%)	72.3	86.7	74.0
Risk characteristics (%)			
risky sex w/ males	0.0	24.9	30.0 <sup>a</sup>
risky sex w/ females	11.7	0.0	29.0 <sup>a</sup>
exchange sex (past yr.)	1.2	8.3 <sup>a</sup>	18.5 <sup>a</sup>
at-risk sex partner (past yr.)	2.8	20.6 <sup>a</sup>	21.9 <sup>a</sup>
illicit drug use (past yr.)	8.2	18.2 <sup>a</sup>	18.2 <sup>a</sup>
high during sex (past yr.)	40.8	46.5	52.5
genital warts/herpes/syphilis (ever)	5.3	19.5 <sup>a</sup>	24.8 <sup>a</sup>
STI treatment (past yr.)	2.3	12.1 <sup>a</sup>	20.5 <sup>a</sup>
Ever had HIV test (%)	68.6	83.9	66.7 <sup>b</sup>
Tested in past yr. (%)	30.8	52.2	57.3 <sup>a</sup>
Months since last test (#)	45.8	29.2	24.2 <sup>a</sup>
Reasons for last HIV test (%) <sup>c</sup>			
“just to find out if infected”	36.8	77.1 <sup>a</sup>	49.3 <sup>b</sup>
hospitalization or surgery	6.4	3.0	4.1
insurance application	12.4	1.1 <sup>a</sup>	6.3
physician referral	3.2	3.9	8.6
marriage license application	7.6	0.6 <sup>a</sup>	7.2 <sup>b</sup>
other, not specified	39.5	26.4	26.7

Note: All comparisons are based upon *t*-tests employing Bonferroni's test of highly significant differences. <sup>a</sup> Statistically different than heterosexually-active ( $p < .017$ ); <sup>b</sup> Statistically different than homosexually-active ( $p < .017$ ); <sup>c</sup> Proportions for testing reasons consider only men who ever tested for HIV (1,794 heterosexually-active, 100 homosexually-active, and 46 bisexually-active men).

Source: *National Survey of Family Growth, 2002*, National Center for Health Statistics

Table 3-2. Sexual identity-based distribution of sociodemographic factors, risk covariates, and HIV testing behaviors

	Hetero- sexual n = 3,471	Homo- sexual n = 110	Other n = 175	Refused n = 29	Bisexual n = 90
Race/ethnicity (%)					
Mexican	9.7	8.8	23.9	38.4	7.2 <sup>cd</sup>
non-Mexican Latino	5.8	4.6	9.5	17.8	8.5
black	11.8	9.3	21.0	14.7	12.8
other	4.7	1.5	4.2	6.9	4.9
white	67.9	75.8	41.5	22.2	66.6 <sup>cd</sup>
Age (yrs.)	30.9	30.7	30.0	29.4	31.9
Education (yrs.)	13.2	13.5	11.0	11.1	13.2 <sup>cd</sup>
Poverty-level income (mean percentage)	303.8	303.8	199.2	153.4	312.5 <sup>cd</sup>
Marital status (%)					
unmarried, cohabiting	10.1	13.2	23.6	21.1	2.3 <sup>bcd</sup>
unmarried, widowed/divorced/separated	7.3	1.7	5.9	8.0	11.6 <sup>b</sup>
unmarried, never married	31.8	78.8	31.6	28.4	50.8 <sup>abc</sup>
married	50.8	6.3	38.9	42.5	35.3 <sup>ab</sup>
Urbanicity of residence (%)					
rural area/small town	18.0	8.0	27.3	15.7	31.5 <sup>ab</sup>
other metropolitan/suburban	49.0	37.1	36.3	37.0	21.1 <sup>ab</sup>
central city	33.0	54.9	36.4	47.4	47.4 <sup>a</sup>
Usual place of health care (%)	72.7	82.1	61.2	57.8	87.3 <sup>acd</sup>
Risk characteristics (%)					
risky sex w/ males	0.2	22.3	1.5	0.0	7.4 <sup>abc</sup>
risky sex w/ females	11.7	2.9	15.2	11.8	11.3 <sup>b</sup>
exchange sex (past yr.)	1.2	6.8	5.4	4.4	3.8
at-risk sex partner (past yr.)	3.1	15.3	2.5	7.2	7.5
illicit drug use (past yr.)	8.0	18.2	9.4	7.0	19.0 <sup>a</sup>
high during sex (past yr.)	40.9	56.2	40.1	16.0	40.7
genital warts/herpes/syphilis (ever)	5.3	18.2	5.6	9.4	17.7 <sup>ac</sup>
STI treatment (past yr.)	2.3	10.2	6.0	7.2	5.4
Ever had HIV test (%)	68.4	84.1	66.5	62.3	83.9 <sup>ac</sup>
Tested in past yr. (%)	30.5	58.8	33.0	26.8	43.7
Months since last test (#)	46.7	27.2	35.6	34.8	25.3 <sup>a</sup>
Reasons for last HIV test (%) <sup>e</sup>					
“just to find out if infected”	36.2	78.1	50.4	31.2	38.5 <sup>b</sup>
hospitalization or surgery	6.0	3.6	15.7	0.0	1.9 <sup>c</sup>
insurance application	12.8	0.0	7.5	12.7	7.7 <sup>b</sup>
physician referral	3.3	3.4	3.4	0.0	4.6
marriage license application	8.0	0.5	0.0	24.9	4.5
other, not specified	40.0	23.3	27.7	31.2	45.1 <sup>b</sup>

Note: All comparisons are based upon *t*-tests employing Bonferroni's test of highly significant differences. <sup>a</sup> Statistically different than heterosexual-identified ( $p < .01$ ); <sup>b</sup> Statistically different than homosexual-identified ( $p < .01$ ); <sup>c</sup> Statistically different than other-identified ( $p < .01$ ); <sup>d</sup> Statistically different than those who refused to answer ( $p < .01$ ); <sup>e</sup> Proportions for testing reasons consider only men who ever tested for HIV (1,691 heterosexual-identified, 87 homosexual-identified, 88 other-identified, 11 refused, and 63 bisexual-identified men).

Source: *National Survey of Family Growth, 2002*, National Center for Health Statistics

Table 3-3. Sexual attraction-based distribution of sociodemographic factors, risk covariates, and HIV testing behaviors

	Hetero- sexual n = 3,505	Homo- sexual n = 81	Other n = 25	Bisexual n = 264
Race/ethnicity (%)				
Mexican	10.2	6.1	5.0	15.9 <sup>a</sup>
non-Mexican Latino	5.8	2.6	15.2	9.9 <sup>a</sup>
black	12.0	9.7	24.8	14.4
other	4.7	1.4	11.4	4.3
white	67.3	80.3	43.6	55.5 <sup>ab</sup>
Age (yrs.)	30.9	32.4	31.0	29.9 <sup>b</sup>
Education (yrs.)	13.1	13.6	12.7	13.2
Poverty-level income (mean percentage)	299.1	355.9	232.1	283.8 <sup>b</sup>
Marital status (%)				
unmarried, cohabiting	10.7	3.3	0.0	14.1 <sup>b</sup>
unmarried, widowed/divorced/separated	7.1	4.4	14.5	8.6
unmarried, never married	31.1	85.6	65.1	50.1 <sup>ab</sup>
married	51.1	6.7	20.3	27.2 <sup>ab</sup>
Urbanicity of residence (%)				
rural area/small town	18.8	1.7	28.6	15.8 <sup>b</sup>
other metropolitan/suburban	48.3	35.3	35.6	40.4 <sup>a</sup>
central city	32.9	63.0	35.8	43.8 <sup>ab</sup>
Usual place of health care (%)	72.7	86.8	75.6	66.8 <sup>b</sup>
Risk characteristics (%)				
risky sex w/ males	0.2	25.4	2.8	6.8 <sup>ab</sup>
risky sex w/ females	11.5	2.2	20.5	16.8 <sup>b</sup>
exchange sex (past yr.)	1.3	15.2	0.6	2.6 <sup>b</sup>
at-risk sex partner (past yr.)	2.8	23.2	3.6	7.5 <sup>ab</sup>
illicit drug use (past yr.)	7.9	17.1	14.1	15.9 <sup>a</sup>
high during sex (past yr.)	40.7	48.8	37.6	45.7
genital warts/herpes/syphilis (ever)	5.4	20.7	1.2	9.9 <sup>ab</sup>
STI treatment (past yr.)	2.2	9.2	9.3	9.2 <sup>a</sup>
Ever had HIV test (%)	68.1	86.1	68.8	77.6 <sup>a</sup>
Tested in past yr. (%)	30.8	52.2	19.5	41.6 <sup>a</sup>
Months since last test (#)	46.2	32.3	44.6	33.3 <sup>a</sup>
Reasons for last HIV test (%) <sup>c</sup>				
“just to find out if infected”	36.7	75.8	36.1	46.7 <sup>b</sup>
hospitalization or surgery	6.7	3.2	3.5	1.3 <sup>a</sup>
insurance application	12.6	1.4	14.7	6.7
physician referral	3.2	4.6	11.4	3.9
marriage license application	7.8	0.7	0.0	4.6
other, not specified	39.2	28.1	34.3	40.2

Note: All comparisons are based upon *t*-tests employing Bonferroni's test of highly significant differences. <sup>a</sup> Statistically different than heterosexual-identified ( $p < .013$ ); <sup>b</sup> Statistically different than homosexual-identified ( $p < .013$ ); <sup>c</sup> Statistically different than other-identified ( $p < .013$ ); <sup>d</sup> Statistically different than those who refused to answer ( $p < .013$ ); <sup>e</sup> Proportions for testing reasons consider only men who ever tested for HIV (1,698 heterosexual-attracted, 66 homosexual-attracted, 16 other-attracted, and 160 bisexual-attracted).

Source: *National Survey of Family Growth, 2002*, National Center for Health Statistics

Table 3-4. Multinomial logistic regression analyses of ever being tested for HIV regressed on sexual orientation indicators, sociodemographic factors, and risk covariates<sup>a</sup>

	Bivariate Odds Ratios		Model 1		Model 2		Model 3	
	purpose-ful vs. never	non-purpose-ful vs. never						
Sexual behavior								
bisexual	0.21***	0.84	0.18**	1.13	0.17**	1.08	0.14***	1.22
heterosexual	0.15***	1.12	0.16***	1.41	0.18***	1.50	0.37***	1.51
homosexual (referent)								
Bisexual identity	2.46*	2.35*	1.47	3.70*	1.16	3.16†	1.36	3.13†
Bisexual behavior x identity			1.21	0.21†	1.24	0.21†	1.16	0.16*
Bisexual attraction	2.04**	1.44†			1.51	1.35	1.32	1.55†
Race/ethnicity								
Mexican	0.71*	0.48***					1.01	0.69**
non-Mexican Latino	1.23	0.73†					1.47	1.04
black	1.68***	0.96					1.95***	1.38*
other	0.66	0.91					0.67	0.92
white (referent)								
Age (yrs.)	1.05***	1.07***					1.06***	1.05***
Education level (yrs.)	1.14***	1.23***					1.11***	1.16***
Poverty-level income <sup>b</sup>	1.16***	1.22***					1.08	1.09*
Marital status								
currently cohabiting	2.06**	0.71†					2.53***	1.05
widowed/divorced/separated	1.84*	0.89					1.47	0.87
never married	1.22	0.37***					1.50*	0.58***
married (referent)								
Urbanicity of residence								
rural area/small town	0.66*	0.99					0.93	1.03
other metropolitan/suburban	0.74*	1.13					0.87	1.12
central city (referent)								
Usual place of health care	1.23	1.36*					1.17	1.08
Risk characteristics								
risky sex w/ males	9.37***	2.03					4.19*	3.32†
risky sex w/ females	1.50*	0.86					1.25	1.18
exchange sex (past yr.)	3.27**	0.98					1.33	1.19
at-risk sex partner (past yr.)	2.37**	0.64					1.32	0.62
illicit drug use (past yr.)	2.44***	1.00					2.13***	1.35
high during sex (past yr.)	1.52**	0.90					1.14	0.93
STI (ever)	2.42***	1.44					1.14	0.85
STI treatment (past yr.)	6.27***	1.29					5.20***	2.22*
N	3,864		3,864		3,864		3,843	
-2 log likelihood			8,287		8,281		7,591	
Degrees of freedom			8		10		52	
Wald chi-square			77.1***		76.7***		755.9***	
Log odds of intercept 1			1.286***		1.188***		-3.430***	
Log odds of intercept 2			0.113		0.044		-3.410***	

Note: <sup>a</sup> Purposeful testers did so “just to find out if infected.” Non-purposeful testers did so for any other reason(s). <sup>b</sup> To produce meaningful odds ratios for income, poverty-level income was measured with a six-category ordinal variable ranging from less than 100 percent to 500 percent or more. \*\*\*  $p < .001$  \*\*  $p < .01$  \*  $p < .05$  †  $p < .10$

Source: *National Survey of Family Growth, Cycle 6—2002*, National Center for Health Statistics

Table 3-5. Binary logistic regression analyses of past-year HIV testing regressed on sexual orientation indicators, sociodemographic factors, and risk covariates

	Bivariate Odds Ratios	Model 1	Model 2	Model 3	Model 4
Sexual behavior					
bisexual	3.01**	2.74*			1.31
homosexual	2.45**	2.34**			1.50
heterosexual (referent)					
Bisexual identity	1.68	0.95			1.28
Bisexual attraction	1.57*	1.23			0.93
Race/ethnicity					
Mexican	1.64*		1.37		1.23
non-Mexican Latino	1.37		1.20		1.16
black	2.02***		1.55*		1.57*
other	1.01		0.96		0.94
white (referent)					
Age (yrs.)	0.94***		0.96***		0.96***
Education level (yrs.)	0.93**		0.95†		0.96
Poverty-level income	0.95		1.01		1.00
Marital status					
currently cohabiting	1.36		1.12		1.10
widowed/divorced/separated	2.50***		2.73***		2.59***
never married	2.91***		2.06***		1.69**
married (referent)					
Urbanicity of residence					
rural area/small town	0.74		0.85		0.88
other metropolitan/suburban	0.84		0.97		1.00
central city (referent)					
Usual place of health care	1.44*		1.81***		1.77**
Risk characteristics					
risky sex w/ males	5.83***			5.24***	3.13*
risky sex w/ females	1.96***			1.84***	1.42*
exchange sex (past yr.)	1.61			1.07	0.82
at-risk sex partner (past yr.)	1.06			0.59	0.56
illicit drug use (past yr.)	1.78**			1.47†	1.40
high during sex (past yr.)	1.21			0.96	0.86
STI (ever)	0.84			0.63*	0.73
STI treatment (past yr.)	4.05***			4.07***	2.61**
N	1,939	1,939	1,938	1,925	1,924
-2 log likelihood		2,551	2,384	2,466	2,329
Degrees of freedom		4	13	8	25
Wald chi-square		20.2***	106.8***	66.0***	144.2***
Log odds of intercept		-0.816***	0.446	-0.908***	0.378

Note: To produce meaningful odds ratios for income, poverty-level income was measured with a six-category ordinal variable ranging from less than 100 percent to 500 percent or more. \*\*\*  $p < .001$  \*\*  $p < .01$  \*  $p < .05$  †  $p < .10$

Source: *National Survey of Family Growth, Cycle 6—2002*, National Center for Health Statistics

## CHAPTER 4 NUMBER OF RECENT SEX PARTNERS

### **Introduction**

Throughout the last several decades, the examination of male sexual behavior has acquired a more prominent position on the agendas of social and medical scientists alike. In the wake of the human immunodeficiency virus (HIV) pandemic and rather formidable epidemics of other sexually transmitted infections (STIs), interest in men has been attuned to the diversity of men's sexual experiences and the ways different sexual orientations yield more or less risk than others. Indeed, the scientific community has become keenly aware of the implications that sexuality, in all its complexity, has for the health of men.

This paper unites two topics of inquiry that, individually, have emerged as important factors in the distribution of HIV/STIs but, together, have received little attention: male bisexuality and the number of recent sex partners. Sexual health scholars have criticized studies that indiscriminately combine bisexual and gay/homosexual men (Rust, 2000b). They are sensitive to findings underscoring the social marginalization of bisexual men relative to others and the HIV/STI risks that ensue from it (Goodenow et al., 2002; Heckman et al., 1995). Such justifies empirical distinctions between bisexual, gay/homosexual, and heterosexual men (Paul, 2000; Weinberg et al., 1994). Researchers investigating men's number of sex partners do so in recognition of the HIV/STI risks that almost invariably increase with the number of partners (Laumann et al., 1994). They also acknowledge that multiple factors, including sexual orientation, influence men to have multiple partnerships. In light of this research, we might consider a relationship between male bisexuality and the number of sex partners an important piece in the epidemiological puzzle of HIV/STI transmission.

## **Number of Partners and HIV/STI Risk**

Independent of other factors, individuals incur greater risk for HIV/STIs as they have more sex partners (Dolcini et al., 1993; Eisenberg et al., 1987; Laumann et al., 1994; Laumann & Youm, 2001; Santelli et al., 1998; Smith, 1991). Risks tend to be accentuated if multiple partnerships occur during a short time span or simultaneously (Adimora et al., 2007; Rosenberg et al., 1999). Although the number of partners has been salient in HIV/STI transmission among women (Adimora et al., 2002; DiClemente et al., 2005; Karlsson et al., 1995), specific to non-heterosexual men have been studies demonstrating dramatic increases in the likelihood of HIV infection consequent to a high number of partnerships (Moss et al., 1987; Valleroy et al., 2000).

While all of the mechanisms by which multiple partnerships increase HIV/STI risks are not known, it is reasonable to assume that a relatively high number of partners increases exposure to individuals who are infected with HIV/STIs. We know, for example, that men who have multiple partners tend to have partners who also have multiple partners (Adimora et al., 2007; Liljeros et al., 2001; Rosenberg et al., 1999; see also Britton et al., 2007). Thus, being linked into a sexual network with relatively high background risk levels increases the risk of disease acquisition (Dolcini et al., 1993). HIV/STI risks also increase for men with multiple partners because they are more likely to have sex with individuals not well-known to them (Laumann et al., 1994). Notwithstanding potentially high rates of condom use among individuals with a high number of partners, condoms are not always properly used and offer only minimal protection against some STIs, like the human papilloma and herpes simplex viruses (CDC, 2009).

## **Bisexual Men and the Number of Sex Partners**

Bisexual men's sexual behaviors are extremely important to the distribution of HIV/STIs in the U.S. population. Their sexual activities and their dispositions to have sex with men and women clearly place them at risk for HIV/STIs when they have sex with either gender.

Simultaneously, their sexual behaviors potentially affect both female and male partners. It is for this reason that bisexual men historically were considered an HIV “bridge” between homosexually-active men and women (Chu et al., 1992).

Despite the importance of bisexual men, little is known about them and the ways in which they differ from gay/homosexual and heterosexual men on the number of sex partners. Two probability-based studies have identified behavioral bisexuality in relation to an increased number of partners in the past three months (Goodenow et al., 2002) and year (Jeffries & Dodge, 2007). These findings are limited by the use of dichotomous measures (e.g., three or more partners in the past year) and bivariate analyses alone. Findings by Stokes et al. (1997) would suggest that the relationship between male bisexuality and the number of partners is rather complex. They found that bisexually-active men had fewer steady male partners but more casual male partners than homosexually-active men in the past six months. Other recent studies have used multivariate models to show that behavioral bisexuality is predictive of a greater number of sex partners than behavioral homosexuality and heterosexuality. However, these studies provide limited insight regarding bisexual men because they were based on either HIV-infected men—with, presumably, greater background risk levels—in one state (Hightow et al., 2006) or men native to a foreign country (Greco et al., 2007). Hightow and colleagues (2006), moreover, did not indicate whether measures of the number of partners included male and female partners or only male partners.

Identity-based measures of bisexuality, though less often used, paint a slightly different portrait of bisexual men. Although no studies have examined whether sexual identity alone—apart from behaviors—independently predicts the number of sex partners, findings suggest that having a non-homosexual identity would be protective for men with male partners. Among men

who have sex with men, identifying as straight (Pathela et al., 2006), bisexual (Doll et al., 1992), and anything other than homosexual (Jeffries, in press a; see also McKirnan et al., 1995) has been found in association with fewer lifetime and past-year male partners. On the other hand, bisexual-identified men who have sex with men tend to have more lifetime female partners than their homosexual counterparts (Doll et al., 1992; Jeffries, in press a). The latter findings are consistent with a recent study of men who have sex with men on the “down low,” in which the vast majority of participants were bisexually-active and did not identify as gay (Wolitski et al., 2006).

### **The Current Project**

Queer theory calls our attention to the multiple dimensions that comprise sexuality, and these dimensions must be taken into account when making inferences regarding bisexual men’s number of sex partners. Researchers embracing queer tenets assert that the social and psychological complexity of sexualities is such that individuals cannot be reduced to identities or behaviors alone. Sexualities are enacted via “a range of possible ways to frame one’s self, body, desires, actions, and social relations” (Seidman, 1994, p. 173). Sexualities, therefore, manifest from complex intersections of behavior, attraction, and identity as well as social location factors like race, ethnicity, and socioeconomic status (Gamson & Moon, 2004; Valocchi, 2005). I draw from queer theory to consider sexual behavior, identity, and attraction as predictors of men’s number of sex partners. Sexual attraction, though rarely utilized in sexual health studies, may yield considerable insight into the etiology of multiple partnerships. We may reason, for example, that if bisexually-active men have more partners than their monosexual counterparts, then it is because their attractions to both men and women increase their perceived opportunities by providing more options (i.e., men and women) for multiple partnerships. This paper’s use of

multiple sexual orientation measures is one step toward recognizing that bisexuality, and sexual orientation in general, is multidimensional (Blumstein & Schwartz, 2000).

The analyses presented in this paper are sensitive to the social and risk factors that incline men to have multiple partners and, at times, be bisexual. Studies confirm that having multiple partners is associated with racial/ethnic minority membership, youth, low educational attainment, being unmarried, urban residence, having non-consensual sex, and using drugs and alcohol (Adimora et al., 2007; Dolcini et al., 1993; Laumann et al., 1994; Sandfort et al., 2007; Santelli et al., 1998; Smith, 1991). Of note is that bisexual men are also more likely to be racial/ethnic minorities, young, of low education, and of different marital statuses relative to gay/homosexual and heterosexual men (Agronick et al., 2004; Jeffries & Dodge, 2007; McKirnan et al., 1995; Stokes et al., 1997). Moreover, men who engage in bisexual behavior and/or identify as bisexual are significantly more likely than non-bisexual men to exchange sex for money or drugs (Agronick et al., 2004; Goldbaum et al., 1998; Hightow et al., 2006), use drugs (Goodenow et al., 2002), especially during sexual encounters (Jeffries & Dodge, 2007), and binge drink (Horowitz et al., 2001; Robin et al., 2002). Exchange sex readily increases the number of partners men have within a given time frame, and substance use generally decreases men's risk cognitions (Laumann et al., 1994). I reason that these risks confound the relationship between bisexuality and men's number of partners.

I use statistical models that take into account social and risk-related differences among bisexual and other men, as well as their relationships with having multiple partners. By doing so, I can more readily ascertain if measures of bisexuality are independently associated with the number of sex partners. I proceed with the following research questions:

- Does bisexuality predict men's number of recent sex partners?
- If so, then which measures of bisexuality—behavior, identity, or attraction—are independently associated with the number of partners?
- Is the relationship between behavioral bisexuality and the number of recent partners different for men with bisexual and non-bisexual identities?

## **Methods**

### **Sample**

I used the 2002 cycle of the National Survey of Family Growth (NSFG), a nationally-representative, stratified cluster sample of 4,928 household-abiding males between the ages of 15 and 44 in the United States (Groves et al., 2005; National Center for Health Statistics, 2005). The sampling frame consisted of 121 primary sampling units derived from the 2000 U.S. Census. This cycle of the NSFG is the first to include men, and it has an oversample of non-Hispanic blacks, Hispanics, and teenagers. Female interviewers used computer-assisted personal interviewing (CAPI) to collect most data, while the men utilized audio computer-assisted self-interviewing (ACASI) on the last section of the interview. This section included questions on sexual identity, opposite- and same-sex behavior, the number of sex partners, and HIV risk behaviors—primary interests for this study. With ACASI, participants used laptop computers, in order to hear, read, and answer questions on these sensitive issues. Interviews averaged 60 minutes in length and occurred between March 2002 and March 2003. Participants received \$40 in compensation. The response rate was 78 percent.

### **Measures**

#### **Dependent variables**

Analyses considered only past-year partnerships because the past year is the time frame for which risk covariates were measured. The NSFG ascertained the number of past-year female sex partners in both CAPI and ACASI sections of the interviews (National Center for Health

Statistics, 2005). However, I used only the number of female partners provided in the ACASI data file because opposite- and same-sex partnerships were comparably measured here. In the ACASI file, male and female partnership measures assessed oral and genital-penetrative sex, whereas CAPI-based measures only took into account vaginal sex. Same-sex behaviors were only measured with ACASI and accounted for anal and oral sex. The total number of female partners reported in ACASI was greater than that reported in CAPI, which is consistent with the belief that ACASI makes men more comfortable disclosing sensitive information (Turner et al., 1998). On the other hand, this could reflect oral sex with women being measured with ACASI (Adimora et al., 2007). The use of the number of partners as reported in the ACASI section produced slightly more bisexually-active and slightly fewer homosexually-active men than were reported by others using the 2002 NSFG (see Jeffries & Dodge, 2007).

The NSFG asked men who ever had sex with a woman: “Thinking about the last 12 months, how many female sex partners have you had?” Responses ranged from 0 to 20, with 20 representing men with 20 or more partners. Men who ever had oral or anal sex with a man were asked, “During the last 12 months, how many male sexual partners have you had?” Responses ranged from 0 to 6, with 6 representing men with 6 or more partners. Men who answered “refused” or “don’t know” were excluded from the final analytical sample.

The NSFG ordinarily, rather than continuously, measured the number of recent female and male partners. Therefore, I performed several transformations in order that the final measure was valid and standardized. First, among men who only had past-year sex with women, I assigned a cut-off of 6 or more partners so that their numbers would be comparable to those of men with male partners. The numbers for men who only had sex with men were based upon their responses to the question on the number of same-sex partners. I determined bisexually-

active men's number of partners based upon the sum of both male and female partners, and this sum was determined after adjusting for the greater range of responses among men who had any past-year sex with women. Second, after noticing that bisexually-active men's numbers inevitably would be higher than the other men's numbers—they necessarily had at least two partners in the past year, while other men could have only one partner—I subtracted one from the ordinal number of bisexual men's partners so that their values were standardized with the others. In this sense, bisexually-active men's minimum of two partners was considered on par with homosexually- and heterosexually-active men with a minimum of one partner. Third, after realizing that the sum resulting from the addition of bisexually-active men's male and female partners assigned several men to categories higher than six, I collapsed these bisexually-active men with those in the category of six. Thus, the final measure is a six-category, ordinal variable that adjusts for discrepant measurement of opposite- and same-sex partnerships, accounts for bisexually-active men's inevitable disposition for at least two partners, and considers bisexually-active men's same- and opposite-sex partnerships.

### **Independent variables**

I measured behavior-based sexual orientation by considering the gender(s) of past-year partners. Using dichotomous (1,0) variables, I deemed men with male and female, only male, and only female partners as bisexually-, homosexually-, and heterosexually-active, respectively.

Dichotomous (1,0) sexual identity measurements came from the following: "Do you think of yourself as heterosexual, homosexual, bisexual, or something else?" In order to maximize the number of men retained in the analytical sample, I considered men who "refused" to answer as a separate category. I collapsed men who answered "don't know" and "something else" in order to have a non-heterosexual "other" category. These categories are useful given that some men

distinguish themselves from heterosexual-identified men, yet shun more conventional non-heterosexual identity labels (see Stewart et al., 2000).

The NSFG also asked: “People are different in their sexual attraction to other people. Which best describes your feelings? Are you only attracted to females, mostly attracted to females, equally attracted to females and males, mostly attracted to males, only attracted to males, or not sure?” I created dichotomous (1,0) variables to distinguish men whose attractions were bisexual (that is having any degree of attraction to females and males), heterosexual (only attracted to females), and homosexual (only attracted to males). I also dichotomized “other” attraction by collapsing men who responded with “not sure,” “refused,” or “don’t know.” This strategy helped to maintain the size of the analytical sample and recognize men who did specify conventional bisexual, homosexual, and heterosexual attractions.

### **Sociodemographic control variables**

Race/ethnicity measurements came from questions that took into account participants’ races and Latino ethnicities. Based upon these questions, I created five dichotomous variables (1,0) to distinguish men with the following racial/ethnic backgrounds: Mexican, non-Mexican Latino, non-Latino black, non-Latino other, and non-Latino White. The NSFG measured age based upon participants’ birthdates. Education level was measured with participants’ total years of completed schooling, which ranged from nine years or less (9) to 7 or more years of college (19). The survey also asked, “What is your current marital status?” Possible choices were “married,” “cohabitating with an opposite sex partner,” “widowed,” “divorced,” “separated,” and “never been married.” I created dichotomous variables (1,0) to distinguish married, unmarried cohabiting, and unmarried non-cohabiting men. NSFG administrators created an urbanicity variable from participants’ zip codes. This variable denoted the level of urbanicity relative to metropolitan statistical area delineations (central city, suburban, or small town/rural). I created

three dichotomous variables (1,0) to distinguish men dwelling in central cities, suburban areas, and rural areas and small towns.

### **Risk control variables**

Survey administrators ascertained binge drinking by asking: “During the last 12 months, how often did you have 5 or more drinks within a couple of hours?” Responses included “never,” “once or twice during the year,” “several times during the year,” “about once a month,” “about once a week,” or “about once a day.” I collapsed men in the last two categories, which produced a five-category frequency measurement, with higher score reflecting more binge drinking. Men who answered “refused” or “don’t know” were excluded.

An intravenous drug use measurement came from the following: “During the last 12 months, how often have you taken non-prescription drugs using a needle, that is, you took them only for the experience or feeling it caused? This includes 'shooting up' and 'skin-popping’.” I dichotomized all responses to “any use” (1) and “never” (0) in the past 12 months. I excluded those who answered “refused” or “don’t know.”

I measured intoxication during sex with: “In the last 12 months, how often were you ‘high’ on alcohol or drugs when you had sex with a female?” A parallel question applied to sex with males. Responses for both questions were ordinally coded as “never,” “sometimes,” “about half the time,” “often,” or “always.” I dichotomized the responses to distinguish men who were high during sex “about half the time” or more (1) from those who were “never” or “sometimes” high (0). Heterosexually- and homosexually-active men’s coding came from the first question, whereas bisexually-active men were placed in the risk category if they were high at least half the time with either female or male partners. Men who answered “refused” or “don’t know” were excluded.

I measured exchange sex with the following: “In the past 12 months has a female given you money or drugs to have sex with her.” A parallel question applied to exchange sex with men. Participants answered “yes,” “no,” or “don’t know” for both questions. I considered heterosexually- and homosexually-active men who answered “yes” to the appropriate questions as having exchanged sex. I considered bisexually-active men as having engaged in exchange sex if they answered “yes” to either question. “Don’t know” and “refused” cases were excluded. Dichotomous variables distinguished men who exchanged sex (1) from others (0).

The NSFG asked men ages 18 and older: “At any time in your life, have you ever been forced by a female to have vaginal intercourse against your will?” and “At any time in your life, have you ever been forced by a male to have oral or anal sex against your will?” To prevent the exclusion of 15-17 year-olds, which disproportionately included bisexually-active men, I created three dichotomous (1,0) variables to distinguish men who responded “yes” or “no” or were not asked these questions. In multivariate analyses, those who were not forced to have sex constitute the referent. I excluded men who answered “refused” or “don’t know.” (Note: as a result of an apparent data collection error, 159 of the 632 15-17 year-olds were asked the question about forced sex with a female. I considered these teenagers’ responses as valid and coded the remaining 473 into the missing category. Despite only young men being asked this question, being in the missing category and age were not correlated enough to cause multicollinearity problems in multivariate analyses;  $r = -0.48$ ,  $p < .001$ ).

### **Statistical Analyses**

Analyses are based upon the sub-sample of men who engaged in sex with a man and/or woman in the past year ( $N = 3,875$ ). I began with *t*-tests and *chi*-square tests to compare bisexual and other men on race/ethnicity, age, education level, marital status, level of urbanicity, substance use, exchange sex, being forced to have sex, and the number of sex partners.

Comparisons are specific to behavioral, identity-based, and attraction-based dimensions of sexual orientation. I employed the analogy of Bonferroni's correction for tests of highly significant differences by using alpha levels of .017, .01, and .013, respectively. These corrections adjusted for type I errors (Agresti & Finlay, 1997). I report only findings that were statistically significant.

Multivariate analyses began with cumulative logit models to predict the number of past-year sex partners as a function of behavior-based sexual orientation, sexual identity, sexual attraction, and sociodemographic and risk confounders. However, the distribution of the dependent variable violated the proportional odds assumption and warranted the use of ordinary least squares regression. The relationship between all independent variables and the number of partners was the same for each modeling strategy.

I present unstandardized coefficients in a nested design in order that changes in the relationship between sexual orientation indicators and the number of sex partners can be observed relative to each other and the effects of sociodemographic and risk variables. Bisexual men comprise the referent for all analyses. I used the SAS® System for Windows Version 9.1.3 for all analyses and data management (SAS Institute, Inc., 2004). All analyses apply scaled sampling weights to adjust for oversampling, noncoverage, and nonresponse. Using the PROC SURVEYREG procedure, I applied weights that took into account the complex survey design by properly adjusting standard errors in regression analyses (Lepkowski et al., 2006).

## **Results**

### **Sample Characteristics**

Among sexually-active men in this sample (data not shown), the majority were non-Latino whites (67%). The sample's median age and completed education level were 31 and 12 years, respectively. Most men were currently cohabiting with women, either in married (49.0%) or

unmarried (10.7%) partnerships. The majority resided in a metropolitan statistical area, with about one-third abiding within a central city (33.9%) and one-half within a suburban metropolitan (47.6%) classification. The sample exhibited fairly low levels of past-year binge drinking, with most men doing it either never (38.8%), one to two times, (19%), or several times (13.0%). The vast majority never intravenously used drugs (99.5%) or engaged in sex while intoxicated during at least half of their sexual encounters (90.2%). Few men exchanged sex for money or drugs (1.6%) or had ever been forced by a woman or man to have sex (7.8%). Having one or two sex partners was characteristic of the sample, with 76.5% being in the lowest category (one partner if heterosexually- or homosexually-active, and two partners if bisexually-active) and 9.8% being in the second-lowest (two partners if heterosexually- or homosexually-active men, and three partners for bisexually-active men).

## **Bivariate Findings**

### **Behavior-based comparisons**

Table 1 contains results in which bisexually-active men were compared to heterosexually- and homosexually-active men on sociodemographic and risk factors. I observed significant racial/ethnic variation among the subsamples of men. Significantly more men of Mexican descent comprised the bisexually-active subsample relative to the homosexually-active subsample. Significantly more white men were in the heterosexually- and homosexually-active subsamples relative to the bisexually-active subsample. Bisexually-active men were younger and had fewer years of education than their homosexually-active counterparts. They were less likely than heterosexually-active but more likely than homosexually-active men to be married to or cohabiting with a woman. Differences in the likelihood of being urban-dwelling approached significance, with bisexually-active men being more likely than heterosexually-active ( $p = .04$ ) but less likely than homosexually-active men ( $p = .04$ ).

For past-year intravenous drug use, bisexually-active men had a significantly greater likelihood than heterosexually-men and a marginally greater likelihood than homosexually-active men ( $p = .04$ ). They had a higher likelihood than both heterosexually- and homosexually-active men to be intoxicated during at least half of past-year sexual encounters. Bisexually-active men were significantly more likely than heterosexually-active but marginally more likely than homosexually-active men ( $p = .03$ ) to engage in past-year exchange sex. Significantly more bisexually-active than heterosexually-active men had ever been forced to have sex. Moreover, bisexually-active men had more past-year sex partners than heterosexually- and homosexually-active men.

### **Identity-based comparisons**

In table 2, I present identity-based sociodemographic and risk factor comparisons among bisexual and other men. The bisexual subsample included fewer men of Mexican descent than did the other and refused subsamples; yet, it included more white men than were included in the other and refused subsamples. Bisexual-identified men were more educated than other and refused men. Proportionally more bisexual-identified than gay men were married, but fewer bisexual men were married in comparison to all others. Relative to heterosexual men, bisexual-identified men were more likely to live in both central cities and small towns/rural areas, but they were altogether less urban than gay men.

The only identity differences in risk behaviors occurred for a history of forced sex and the number of past-year partners. Relative to men who refused to answer the sexual identity question, bisexual-identified men had a marginally greater likelihood of ever being forced to have sex ( $p = .03$ ). Bisexual-identified men had more past-year partners than their heterosexual counterparts.

### **Attraction-based comparisons**

Table 3 contains results in which bisexual-attracted men are compared to other men on sociodemographic and risk factors. Bisexual men were more likely than heterosexual men to be of Mexican and other Latino descent. Of note, the bisexual-attracted subsample contained marginally more Mexican ( $p = .03$ ) and other Latino men ( $p = .04$ ) than did the homosexual subsample. Conversely, white men were less likely to comprise the bisexual-attracted subsample relative to the heterosexual and homosexual subsamples. Bisexual-attracted men were younger than their homosexual counterparts. They were less likely than heterosexual-attracted but more likely than homosexual-attracted men to be married. Yet, relative to their heterosexual and homosexual counterparts, men with bisexual attraction were more and less likely, respectively, to be urban-dwelling.

In comparison to men with heterosexual attraction, bisexual-attracted men had a greater likelihood of past-year intravenous drug use, intoxication during at least half of past-year sexual encounters, and being forced to have sex. Bisexual-attracted men had a lower likelihood of exchanging sex for money or drugs than homosexual-attracted men. Men with bisexual attraction had more past-year partners than heterosexual-attracted men, but fewer than homosexual-attracted men.

### **Multivariate Findings**

In Table 4, I present results of ordinary least squares regression analyses in which the number of past-year sex partners is regressed on sexual orientation measures, sociodemographic factors, and risk covariates. As depicted in the bivariate models, bisexually-active men had more past-year partners than their monosexual counterparts. Bisexual-identified men had more than heterosexual-identified men and marginally more than men who refused to answer the sexual

identity question ( $p = .06$ ). Bisexual-attracted men had more partners than heterosexual-attracted men, but less than the homosexual-attracted.

Model 4 adjusts for all sexual orientation measures. Most notably, bisexually-active men had a higher predicted number of partners than heterosexually- and homosexually-active men. Bisexual-identified men did not statistically differ from men with heterosexual, homosexual, other, and refused identities. Controlling for other factors, however, men with bisexual attraction had a lower predicted number of partners relative to men who were only attracted to men.

Model 5 adjusts for all sexual orientation measures, sociodemographic factors, and risk covariates. These adjustments did little to attenuate the relationship between bisexual behavior and the number of partners as bisexually-active men maintained a significantly higher number than heterosexually- and homosexually-active men. On the other hand, bisexual-attracted men still had fewer partners than men with same-sex attraction only. Men of Mexican, other Latino and non-Latino black descent were predicted to have more partners than white men. (This was also true in a bivariate analysis of the number of partners regressed on race/ethnicity; data not shown). Unmarried non-cohabiting men had significantly more partners than their married counterparts, although unmarried cohabiters did not differ from married men. Differences among men living in suburban areas and central cities approached significance ( $p = .06$ ), with suburban-dwellers having slightly fewer partners.

A higher frequency of binge drinking, being intoxicated during at least half of past-year sexual encounters, and exchange sex predicted more partners relative to men not engaging in these behaviors. Intravenous drug use was predictive of more partners in a bivariate model ( $b = 1.16, p = .01$ ; data not shown), but was not significant when all variables were controlled. Despite men who were ever forced to have sex not differing from men who were never forced,

men who were not asked the forced sex questions had a lower predicted number of partners than those who were never forced. The independent variables in this model explained one-quarter of the variance in the number of sex partners.

In three separate models, I tested whether or not the effect of bisexual behavior upon the number of sexual partners differed for men who identified as bisexual (versus any other identity), homosexual or bisexual (versus heterosexual, other, or refused), or non-heterosexual (versus heterosexual). None of the interaction terms was statistically significant, which suggests that the relationship between behavior-based sexual orientation and the number of partners does not vary by sexual identity.

### **Discussion**

Individual sexual health studies have largely ignored the unique ways in which sexual behavior, identity, and attraction are associated with men's number of sex partners. Although many studies have examined men's likelihoods for multiple partnerships, few have considered bisexuality as a predictor for this outcome. Those that have largely do so under the assumption of greater HIV/STI risk on the behalf of bisexual men (Stokes et al., 1997). Inferring risk from the number of partners clearly is warranted in light of higher HIV/STI prevalences among bisexual men (Brooks et al., 2003; Goodenow et al., 2002). Yet, knowing how bisexuality is associated with a greater number of partners is important in its own right, providing us additional insight into how this enigmatic sexuality differs from heterosexuality and homosexuality. The data analyzed for this paper suggest that the way bisexuality relates to men's number of partners, and relatively greater risk for HIV/STIs, depends upon how bisexuality is conceptualized and measured.

Bisexually-active men—those who had sex with at least one woman and one man in the past year—clearly had more partners than men with only male or female partners. This finding

resulted despite a fairly conservative measurement for bisexually-active men's number of partners: having two partners was considered equivalent to heterosexually- and homosexually-active men having only one. Bivariate regression, notwithstanding this adjustment, showed that bisexually-active men had nearly three more partners than heterosexually-active men and at least one more than homosexually-active men. Even in consideration of sociodemographic and risk factors known to increase men's number of partners, bisexually-active men were predicted to have two more past-year partners than heterosexually- and homosexually-active men. Differences observed in regression analyses would have been greater if men with six or more partners were not collapsed together and no two-or-more adjustment was needed for bisexually-active men. Notably, nearly half of bisexually-active men were in the category of six or more partners, which signified seven or more partners in reality.

On the other hand, when men were considered bisexual based upon their sexual identities and attractions, a different story emerged. Although bisexual-identified men, on average, had about one-half partner more than men who were heterosexual-identified or refused to answer the identity question, multivariate results suggest that these differences were largely due to differences in behavior patterns and, to some degree, attractions. Interestingly, bisexual-attracted men had about one partner less than their homosexual-attracted counterparts, and this difference largely persisted when adjusting for sexuality-related, sociodemographic, and risk confounders. The latter demonstrates that bisexual attraction is protective relative to same-sex attraction alone. While bisexual-attracted men had about one-half more partners than heterosexual-attracted men, multivariate analyses showed that this difference was due to variation in sexual behavior patterns as well.

That bisexual-identified and bisexual-attracted men did not have more partners than their non-bisexual counterparts in multivariate analyses is significant in its own right. Studies often presume that “bisexual” men are at greater HIV/STI risk than others, especially heterosexual men, simply because they have sex with or have inclinations toward sex with men (Malebranche, 2008). My findings would suggest that for the number of partners, such may only be the case when bisexuality is behaviorally defined. These findings lend support to the notion that the behaviors—not identities and attractions—that place men at HIV/STI risk should be the focus of interventions targeted to non-heterosexual men (Pathela et al., 2006).

Because bisexually-active men had more partners than heterosexually- and homosexually-active men, an examination of mechanisms underlying their higher numbers is warranted. First, higher numbers may partly result from the process of some bisexually-active men transitioning to behavioral homosexuality or heterosexuality. Prior research illustrates how some men maintain behavioral bisexuality throughout this transition (Stokes et al., 1998). In light of societal stigma toward same-sex behavior, transitioning bisexually-active men who have male partners may place high importance on having female partners. The latter may help to affirm men’s masculinities and buffer the degree to which they feel stigmatized by prolonged homosexuality (Stokes et al., 1998). During the transition, men often maintain multiple male and female partners out of uncertainty regarding their sexualities (Weinberg et al., 1994). A high number of sex partners resulting from the transition process may be augmented in light of the relative youth of bisexually-active men. They were, on average, three years younger than homosexually-active men, which points to a greater disposition toward sexual experimentation with multiple partners of both sexes (Berg-Kelly, 2002).

An alternative explanation might be that bisexually-active men consciously or unconsciously embrace a high number of partners in affirmation of their bisexual orientations. From a social constructionist standpoint, men with different sexualities adopt behaviors that give credence to their sexualities (Laumann et al., 1994; Paul, 2001; Vance, 1991). Bisexual men arguably have a greater need for behavior patterns that validate their bisexuality given that people's attitudes toward bisexuals are much worse than attitudes toward exclusively homosexual individuals (Herek, 2002). Thus, one might plausibly conceive of having more partners as an attempt to assert oneself as bisexual in a society that denigrates bisexuality while recognizing the legitimacy of heterosexuality and homosexuality. Inasmuch as bisexuality is defined by sexual activity with both sexes, relatively more sex with men and women (indicated by a high number of partners) would provide greater credibility that one is truly bisexual.

Third, bisexually-active men's high number of sex partners may not result from bisexuality but, rather, be an artifact of reverse causation. Men who have many partners probably acquire a greater likelihood of sex with men and women as they incur more partners. In other words, those inclined to have sex with many people, for whatever reasons, have more opportunities of encountering males and females. In a related sense, being more sexual may lead some men to take advantage of opportunities to have sex with men and women as they arise whereas others may embrace a more monosexual view of sexual partnering (Weinberg et al., 1994). It is also likely that men with more partners have relatively more liberal attitudes toward sexuality, which would more readily justify opposite- and same-sex partnering (see Laumann et al., 2001). Future studies, particularly those with longitudinal measures of sexual behaviors, should assess the extent to which behavioral bisexuality alone is causally linked to the number of partners.

This paper's findings must be interpreted in light of its limitations. Measures for the number of female and male partners were collapsed for men with 20 or more and six or more, respectively. Consequently, sexual orientation variation in the number of partners that may have occurred at higher numbers could not be detected. In addition, data on the type of sex (vaginal, oral, or anal) that men had with each partner were not available. Because oral sex is generally less risky, better risk inferences could have been made if sexual activities were matched to the men's partners. Third, the dates for past-year partnerships were only known for men in relationships with women. Because specific dates of same-sex partnerships were not known, no measures of concurrency could be generated for men not partnered with women (see Adimora et al., 2007). Future studies may benefit by measuring the times in which men's multiple partnerships take place as concurrent partnering yields more population-level HIV/STI risk than multiple partnerships that are sequentially monogamous (Rosenberg et al., 1999). Moreover, this study had data on neither the number of sexual acts with each partner nor the level of commitment with all partners. This information would have been useful as HIV/STI risks are highest in committed partnerships (Downs & De Vincenzi, 1996). The NSFG also included no measurement of same-sex relationships or marriages. Given the increasing number of non-heterosexual men in committed partnerships with men, it would have been useful to consider homosexual partnering as a covariate of the number of partners. Last, the cross-sectional nature of the NSFG limits the degree to which causality can be inferred.

Minimizing the number of sex partners is one of the most important strategies for HIV/STI prevention (Coates et al., 2008). Given bisexually-active men's high number of partners and perceivably high risk for HIV/STIs, interventions need to be effectively tailored for them. Prevention efforts should acknowledge that ethnic minority men, particularly those of Mexican

descent, disproportionately comprise the population of bisexually-active men. This begs for culturally appropriate interventions that take into account the ways in which race, ethnicity, culture, and sexuality influence bisexually-active men's dispositions for having multiple sex partners. Of utmost importance are preventive strategies that address the social-structural bases for greater risk levels among bisexually-active men (Malebranche, 2008). Promoting greater social awareness and acceptance of male bisexuality is an important strategy as it may result in some men not feeling the need to have multiple sex partners in order to assert their bisexuality. Holistic approaches that take into account bisexually-active men's high prevalence of other HIV/STI risk behaviors (e.g., drug use and exchange sex) would likely be beneficial as well.

This paper contributes to the scientific community's understanding of the distribution of multiple partnerships among U.S. men. Undoubtedly, bisexual activity is strongly associated with this phenomenon. Explanations for why behavioral bisexuality independently predicts more partners, however, is solely based on theoretical knowledge garnered from previous studies. Future research efforts at national and local levels should investigate if and how the uniqueness of bisexual activity inclines men to have many partners or if unobserved factors are to be implicated in this occurrence. With better data, as we continue research on bisexually-active men, the nuanced sexual risk and behavioral dispositions that characterize them will be more thoroughly understood.

Table 4-1. Sexual behavior-based distribution of sociodemographic factors, risk covariates, and the number of sex partners

	Heterosexually- active n = 3,674	Homosexually- active n = 124	Bisexually- active n = 77
Race/ethnicity (%)			
Mexican Latino	10.5	3.6	16.6 <sup>b</sup>
non-Mexican Latino	5.9	9.8	10.0
black	12.1	13.0	17.7
other	4.7	1.1	5.4
white	66.8	72.5	50.3 <sup>ab</sup>
Age (yrs.)	30.9	32.0	29.0 <sup>b</sup>
Education (yrs.)	13.1	13.6	12.6 <sup>b</sup>
Marital status (%)			
married	50.4	0.5	18.6
unmarried, cohabiting	11.0	0.5	7.1
unmarried, non-cohabiting	38.7	99.1	74.3 <sup>ab</sup>
Urbanicity of residence (%)			
central city	33.1	64.8	49.5
other metropolitan/suburban	48.2	30.6	33.6
rural area/small town	18.7	4.6	16.9
Binge drinking frequency (% , past yr.)			
never	39.0	31.9	35.3
1-2 times	19.0	20.4	17.9
several times	13.0	14.0	14.2
about once per month	12.9	14.4	16.2
once per week or more	16.1	19.4	16.5
Intravenous drug use (% , past yr.)	0.4	1.3	6.7 <sup>a</sup>
High during sex at least ½ time (% , past yr.)	9.4	16.1	32.3 <sup>ab</sup>
Exchange sex (% , past yr.)	1.2	8.3	18.5 <sup>a</sup>
Forced sexual experience (% , ever)	7.0	28.2	36.0 <sup>a</sup>
Number of sex partners (% , past yr.)			
1	77.9	42.5	18.1
2	9.7	17.5	5.4
3	4.9	11.0	10.9
4	2.0	7.7	14.1
5	1.5	4.3	7.2
6 or more	4.0	17.0	44.3 <sup>ab</sup>

Note: *T*-tests compare men on race/ethnicity, age, education, intravenous drug use, intoxication during sex, exchange sex, and history of forced sexual experiences. *Chi*-square tests compare men on marital status, level of urbanicity, binge drinking, and the number of partners. For bisexually-active men, a “1” for the number of sex partners corresponds to 2 past-year partners, a “2” corresponds to 3 past-year partners, etc. <sup>a</sup> Statistically different than heterosexually-active ( $p < .017$ ); <sup>b</sup> Statistically different than homosexually-active ( $p < .017$ )

Source: *National Survey of Family Growth, 2002*, National Center for Health Statistics

Table 4-2. Sexual identity-based distribution of sociodemographic factors, risk covariates, and the number of sex partners

	Hetero- sexual n = 3,471	Homo- sexual n = 110	Other n = 175	Refused n = 29	Bisexual n = 90
Race/ethnicity (%)					
Mexican Latino	9.7	8.8	23.9	38.4	7.2 <sup>cd</sup>
non-Mexican Latino	5.8	4.6	9.5	17.8	8.5
black	11.8	9.3	21.0	14.7	12.8
other	4.7	1.5	4.2	6.9	4.9
white	67.9	75.8	41.5	22.2	66.6 <sup>cd</sup>
Age (yrs.)	30.9	30.7	30.0	29.4	31.9
Education (yrs.)	13.2	13.5	11.0	11.1	13.2 <sup>cd</sup>
Marital status (%)					
married	50.8	6.3	38.9	42.5	35.3
unmarried, cohabiting	10.1	13.2	23.6	21.1	2.3
unmarried, non-cohabiting	39.1	80.6	37.5	36.4	62.4 <sup>abcd</sup>
Urbanicity of residence (%)					
central city	33.0	54.9	36.4	47.4	47.4
other metropolitan/suburban	49.0	37.1	36.3	37.0	21.1
rural area/small town	18.0	8.0	27.3	15.7	31.5 <sup>ab</sup>
Binge drinking frequency (% , past yr.)					
never	39.1	27.1	38.1	42.5	36.0
1-2 times	19.4	18.4	14.4	6.0	15.9
several times	12.8	14.7	17.1	2.0	18.0
about once per month	12.6	21.0	15.0	18.9	15.4
once per week or more	16.2	18.8	15.4	30.7	14.7
Intravenous drug use (% , past yr.)	0.5	0.9	0.6	0.0	0.4
High during sex at least ½ time (% , past yr.)	9.5	15.8	12.6	0.0	14.0
Exchange sex (% , past yr.)	1.2	6.8	5.4	4.4	3.8
Forced sexual experience (% , ever)	6.7	30.7	14.2	1.4	20.3
Number of sex partners (% , past yr.)					
1	77.7	44.1	72.3	68.9	64.5
2	9.7	13.6	9.5	14.1	10.1
3	4.9	11.7	4.5	11.5	8.9
4	2.1	9.2	1.7	5.5	1.8
5	1.5	3.1	2.8	0.0	3.2
6 or more	4.1	18.3	9.2	0.0	11.5 <sup>a</sup>

Note: *T*-tests compare men on race/ethnicity, age, education, intravenous drug use, intoxication during sex, exchange sex, and history of forced sexual experiences. *Chi*-square tests compare men on marital status, level of urbanicity, binge drinking, and the number of partners. Irrespective of sexual identity, for bisexually-active men a “1” for the number of sex partners corresponds to 2 past-year partners, a “2” corresponds to 3 past-year partners, etc.  
<sup>a</sup> Statistically different than heterosexual-identified ( $p < .01$ ); <sup>b</sup> Statistically different than homosexual-identified ( $p < .01$ ); <sup>c</sup> Statistically different than other-identified ( $p < .01$ ); <sup>d</sup> Statistically different than those who refused to answer ( $p < .01$ )

Source: *National Survey of Family Growth, 2002*, National Center for Health Statistics

Table 4-3. Sexual attraction-based distribution of sociodemographic factors, risk covariates, and the number of sex partners

	Heterosexual n = 3,505	Homosexual n = 81	Other n = 25	Bisexual n = 264
Race/ethnicity (%)				
Mexican Latino	10.2	6.1	5.0	15.9 <sup>a</sup>
non-Mexican Latino	5.8	2.6	15.2	9.9 <sup>a</sup>
black	12.0	9.7	24.8	14.4
other	4.7	1.4	11.4	4.3
white	67.3	80.3	43.6	55.5 <sup>ab</sup>
Age (yrs.)	30.9	32.4	31.0	29.9 <sup>b</sup>
Education (yrs.)	13.1	13.6	12.7	13.2
Marital status (%)				
married	51.1	6.7	20.3	27.2
unmarried, cohabiting	10.7	3.3	0.0	14.1
unmarried, non-cohabiting	38.3	90.0	79.7	58.7 <sup>ab</sup>
Urbanicity of residence (%)				
central city	32.9	63.0	35.8	43.8
other metropolitan/suburban	48.3	35.3	35.6	40.4
rural area/small town	18.8	1.7	28.6	15.8 <sup>ab</sup>
Binge drinking frequency (% , past yr.)				
never	39.1	31.4	30.9	34.8
1-2 times	19.1	14.2	28.8	17.9
several times	12.9	18.5	1.5	14.8
about once per month	12.9	13.6	15.4	14.3
once per week or more	16.0	22.2	23.5	18.2
Intravenous drug use (% , past yr.)	0.4	1.3	0.0	2.6 <sup>a</sup>
High during sex at least ½ time (% , past yr.)	9.3	20.4	16.3	15.0 <sup>a</sup>
Exchange sex (% , past yr.)	1.3	15.2	0.6	2.6 <sup>b</sup>
Forced sexual experience (% , ever)	6.8	27.9	13.7	19.8 <sup>a</sup>
Number of sex partners (% , past yr.)				
1	78.2	35.4	58.2	60.8
2	9.5	13.0	24.4	12.2
3	4.7	12.7	10.4	10.6
4	1.9	9.6	0.0	6.3
5	1.6	4.2	0.0	2.0
6 or more	4.2	25.1	6.9	8.2 <sup>ab</sup>

Note: *T*-tests compare men on race/ethnicity, age, education, intravenous drug use, intoxication during sex, exchange sex, and history of forced sexual experiences. *Chi*-square tests compare men on marital status, level of urbanicity, binge drinking, and the number of partners. Irrespective of sexual attraction, for bisexually-active men a “1” for the number of sex partners corresponds to 2 past-year partners, a “2” corresponds to 3 past-year partners, etc.; <sup>a</sup> Statistically different than heterosexual-attracted ( $p < .017$ ); <sup>b</sup> Statistically different than homosexual-attracted ( $p < .017$ ); <sup>c</sup> Statistically different than other-attracted ( $p < .017$ )

Source: *National Survey of Family Growth, 2002*, National Center for Health Statistics

Table 4-4. Linear regression analyses of the number of past-year sex partners regressed on sexual behavior, identity, attraction, sociodemographic factors, and risk covariates

	Model 1	Model 2	Model 3	Model 4	Model 5
Sexual behavior					
heterosexually-active	-2.69***			-2.56***	-1.98***
homosexually-active	-1.55***			-2.06***	-1.98***
bisexually-active (referent)					
Sexual identity					
heterosexual		-0.51*		0.18	0.12
homosexual		0.65		0.28	0.30
other		-0.23		0.34	0.20
refused		-0.50		0.16	0.06
bisexual (referent)					
Sexual attraction					
heterosexual			-0.49***	-0.12	0.03
homosexual			1.08**	0.76*	0.69*
other			-0.21	0.04	-0.22
bisexual (referent)					
Race/ethnicity					
Mexican Latino					0.19**
non-Mexican Latino					0.38***
black					0.43***
other					0.01
white (referent)					
Age (yrs.)					-0.00
Education level (yrs.)					-0.00
Marital status					
unmarried, cohabiting					0.04
unmarried, non-cohabiting					0.74***
married (referent)					
Urbanicity of residence					
other metropolitan/suburban					-0.09
rural area/small town					-0.06
central city (referent)					
Binge drinking frequency (past yr.)					0.10***
Intravenous drug use (past yr.)					0.41
High during sex at least ½ time (past yr.)					0.45***
Exchange sex (past yr.)					0.94***
Forced sexual experience					
ever					0.14
missing					-0.30*
never (referent)					
Intercept	4.20***	2.03***	2.01***	4.00***	2.83***
Model F statistic	63.73***	7.08***	16.36***	15.94***	44.42***
Adjusted R <sup>2</sup>	0.07	0.02	0.03	0.07	0.25
N	3,851	3,851	3,851	3,851	3,839

Note: \*\*\*  $p < .001$  \*\*  $p < .01$  \*  $p < .05$

Source: *National Survey of Family Growth, Cycle 6—2002*, National Center for Health Statistics

## CHAPTER 5 CONCLUSIONS

### **Introduction**

In this dissertation, I have attempted to tackle very complex issues related to men's health and sexuality. Devoting specific attention to bisexual men, this project underscores the importance of viewing sexuality, and sexual orientation in particular, as a critical determinant of men's health and well-being. I began by arguing that multidimensional approaches to sexual orientation and health are most warranted in light of the potential for sexual behavior, identity, and attraction to affect men's health behaviors. Such an approach seems justified in light of the differential ways these indicators were associated with bisexual, homosexual, and heterosexual men's sexual health behaviors. I devoted specific attention to condom use, HIV testing, and the number of recent partners as these behaviors are among the most relevant to HIV/STI prevention scientists.

The research findings in this piece are significant contributions to our understanding of men's sexualities, health, and the relationship between sexuality and health. Most notable are their relevance to understanding bisexuality, about which the scientific community knows very little in comparison to heterosexuality and homosexuality. For this reason, I conscientiously prioritized an examination of bisexual men's sexual health behaviors. As is typically done by health disparities researchers, I did so by way of comparison. This strategy allowed me to observe the distribution of social, sexual, and risk covariates among bisexual men (using proportions, odds ratios, and linear regression coefficients) and note how bisexual men were similar to or different than their homosexual and heterosexual counterparts. Given my initial goal of showing how bisexual men were different than other men and worthy of distinction in

research focused on men's health, this strategy proved useful in light of many differences observed between bisexual and other men.

In this concluding chapter, I begin by summarizing some of the most noteworthy findings that resulted from analyses presented in the three empirical chapters. I do so with attention to some of the broader sociocultural issues, many raised in Chapter 1, relevant to the study of bisexual men and HIV/STI prevention. Also, I comment on the strengths and limitations of data used for this research while highlighting data needs for research on men's health. Where appropriate, I provide personal reflections regarding the nature of my work and how it is situated within the fields of sociology and public health. After discussing the need for structural interventions to improve bisexual and other men's sexual health, I conclude by discussing how my research agenda will broaden to include other areas of research on gender and sexual orientation.

### **Synopsis of Sociodemographic Findings**

Gender-based sexual behavior resulted in the most stark sociodemographic differences between bisexual and other men, but I observed noteworthy differences along attraction and identity measures. No matter how bisexuality was measured, the bisexual sub-samples contained a disproportionate number of Latino men. Bisexually-active men were younger, less educated, and poorer than homosexually-active men, but I found no bisexual-homosexual-heterosexual differences in these variables when using identity and attraction measures. Bisexual men according to all measures were more likely to be married to or cohabiting with women than homosexual men, but less likely in comparison to heterosexual men. Additionally, bisexual men were generally less urban-dwelling than homosexual men, but slightly more urban-dwelling than heterosexual men. These sociodemographic differences, particularly along sexual orientation's behavioral dimension, confirmed many of the assumptions that I possessed prior to beginning

data analyses. They also prompted me to critically think about the meanings of social differences between bisexual and other men.

For example, age's association with sexual orientation was limited to behavior and attraction, so age appeared to most notably influence with whom men had sex and how they expressed their relative preferences for men and women. The finding that bisexual-identified men were not younger than their homosexual counterparts was contrary to what I initially expected given that over the last two decades bisexual identification has increasingly become an acceptable way of naming oneself (Klein, 1993). One might expect younger non-heterosexual men to be more inclined to accept the bisexual identity label than non-heterosexual men who came of age a few decades ago (Seidman, 2002). It would have been interesting to observe the distribution of age by sexual identity in a sample inclusive of older men. Such a sample could have more readily allowed me to test the hypothesis that younger men are more inclined to bisexual identification than others.

Research on sexuality development over the life course discusses young non-heterosexual men's high likelihoods of sex with men and women rather than one sex, which is more typical of older non-heterosexual men (Coleman, 1982). Issues pertaining to gender identity and coming out as bisexual or homosexual are most salient among younger men as well (Carrion & Lock, 1997). These factors likely result in young men being more inclined than their older counterparts to be bisexual in terms of sexual behavior and attraction. Indeed, many non-heterosexual men transition to exclusively homosexual orientations as they age through adolescence and early adulthood (Troiden, 1988a, 1988b). In this respect, it is not surprising that bisexually-active men were younger than their homosexual counterparts. I suspect that these developmental issues resulting in bisexuality are complicated by younger men being more sexually-active than their

older counterparts. Young men tend to have a greater number of sex partners and more often engage in sex for experimental purposes (Berg-Kelly, 2002; Santelli et al., 1998). These behaviors are conducive to bisexual behavior because multiple partnerships and experimental encounters are more readily attained with a partner pool that is inclusive of men and women rather than only men or women. Some of these men likely profess bisexual attraction as the mechanism underlying their sex with men and women.

It certainly was no surprise that Latino men disproportionately comprised the bisexual subsamples. Throughout the last several decades, many social scientists have discussed non-heterosexual men of Latin American descent's proclivities for bisexual (versus exclusively homosexual) behaviors and attractions (Carrier, 1985; Girman, 2004; Lancaster, 1988; Parker, 1991). Relative to the United States, Latin America has historically had more institutionalized mechanisms allowing for men to have sex with and express attraction to men (Jeffries, in press b). Notwithstanding the transformation of Latin American men's sexual practices consequent to migration, the preservation of these sexuality components accompanies the formation of Latino sub-cultures within the United States (Carrier, 1995; Parker, 1999). In this regard, the stigma that non-Latino men acquire from same-sex behaviors is substantially greater than that which Latino men would acquire in Latin American countries or their U.S. communities. This is primarily true if they maintain sexual relationships with women and take the dominant/insertive role during their sexual encounters with other men. Nonetheless, even those men being sexually penetrated by other men or adopting versatile roles over the life course would appear to be relatively less stigmatized than their U.S. counterparts (Almaguer, 1991).

As I have argued elsewhere (Jeffries, in press b), the transmission of sociocultural norms and practices legitimizing same-sex behaviors gives rise to many U.S. Latino men configuring

their sexual behaviors in ways that mimic those of their (or their predecessors') countries of origin. Their greater inclination to identify as bisexual seems warranted. Bisexual identification certainly offers men more masculine capital than homosexual identification given that it typically conveys some degree of attraction to or romantic involvement with women (Blumstein & Schwartz, 1976). In this regard, it does not wholly counteract gendered expectations based upon the construction of machismo. Moreover, in some situations bisexual identification may convey masculine privilege more so than heterosexual identification, especially if bisexual-identified men are dominant in their sexual encounters with men (Almaguer, 1991). While the process of labeling oneself as "heterosexual," "bisexual," or "gay" is largely a Western phenomenon only adopted by Latin American men over the past three decades, I propose that some Latino men's use of the bisexual label provides them social security. It likely shields them from stigma associated with homosexual identification, while serving as a genuine reflection of their sexual preferences.

Upon beginning analyses of race/ethnicity and sexual orientation, I expected non-Latino black men to exhibit similar inclinations toward bisexuality, but this did not occur. A great deal of work has discussed black bisexual men's roles in transmitting HIV to black women (see Dodge et al., 2008; McKirnan et al., 1995; Millett et al., 2005; Stokes et al., 1996b). Underlying much of this research is the assumption that black men are more likely than white men to practice bisexuality relative to exclusive homosexuality. This sample provided evidence only of a trend in support of this assumption (data not shown). Among all men who had sex with a man, black men were slightly more likely than whites to be bisexually-active (47 versus 33%,  $p = .10$ ). And among all sexually-active men, this pattern persisted as well (1.9 versus 0.90%,  $p = .10$ ). However, in another article using the NSFG, I did find that black men who had any same-sex

contact during the past year were far more likely than white men to identify as something other than homosexual (Jeffries, in press a). This finding is consistent with what we should expect given the relatively high degree of stigma black men incur by being “gay” (Stokes & Peterson, 1998). Black men appeared to have more variation in their sexual behaviors, identities, and attractions than Latino men, and they were not as inclined to bisexual categorizations, per se, as Latino men. Nonetheless, I strongly suspect that black men’s lack of bisexuality was due in part to the potentially greater stigma black men acquire if claiming bisexuality rather than heterosexuality. My reading of the literature and personal experience leads me to suspect that black communities harbor more negative sentiment toward bisexuality than Latino or white communities. Studies of black men certainly show them to be less likely than others to disclose their bisexual and homosexual preferences (McKirnan et al., 1995; Stokes & Peterson, 1998). In spite of the use of ACASI technology, this could have resulted in underreporting of bisexual and homosexual identities, behaviors, and attractions.

Based upon previous research, I initially expected bisexually-active and bisexual-attracted men to possess relatively low levels of education and income relative to homosexual men. These findings underscore the importance of socioeconomic status as a determinant of how men express their sexualities. For men with limited access to conventional ways of defining their masculinities (e.g., high income), sex with women remains crucial to how they construct their identities as men (Walker, 2006). For this reason, we should expect poorer and less educated men who have sex with men and/or are attracted to men to maintain some degree of sex with or attractions to women. Men with greater socioeconomic resources possess privileges, such as access to affirming communities (gay and straight), that allow them to be homosexually-active without acquiring the stigma and rejection that poor men incur if they have sex only with men. I

strongly suspect that much of socioeconomic status' association with sexual orientation is due to its link with race/ethnicity. Black and Latino men were poorer and less educated than white men (data not shown). The institutionalized factors that keep ethnic minority men socioeconomically disenfranchised also give rise to poorer men being relatively less inclined to exclusive homosexuality.

Similar to race/ethnicity and socioeconomic status, urbanicity emerged as a significant covariate of sexual orientation. However, it should come as no surprise that bisexual men, regardless of sexual orientation measure, were far less urban-dwelling than homosexual men and slightly more urban-dwelling than heterosexuals. Sexual prejudice is more prevalent in non-urban than urban areas (Snively et al., 2004). Therefore, non-heterosexual men dwelling in non-urban locales do not have access to the same supportive communities and networks that non-heterosexual, urban men have to affirm their sexualities. This likely gives rise to non-heterosexual men living in small towns and rural areas defining themselves in ways that emphasize their opposite-sex likings. As men with homosexual behavior, identity, and attraction were more likely than all others to be urban-dwelling, it seems reasonable that non-urban areas prevent men who would normally be exclusively homosexual on any dimension from being homosexual. Bisexuality appears to operate as a safe alternative to homosexuality among men who live in environments where heterosexuality is most privileged.

Migration should also be considered as a factor underlying bisexual-homosexual differences in geographic placement. However, in light of the preceding argument, it is difficult to ascertain the relative contributions of both the adoption of homosexual orientations among urban men and the choice of some men to move to urban environments. The elevated levels of homophobia that exist in rural areas and small towns certainly lead many non-urban gay men to

migrate to urban areas (Weston, 1995). They do so with the realization that cities will give them access to communities and sub-cultures that are respectful of their sexualities. I suspect that some of these men recognize that their access to sexual partners will likely increase after migration. Nonetheless, I would assume that men who migrate tend to be those with relatively high socioeconomic resources, which would enable them to leave their non-urban communities and become established in cities.

Along all sexual orientation indicators, bisexual, homosexual, and heterosexual men were rather distinct in terms of their sexual and relationship partnering with women. It certainly was not surprising to find that heterosexual men were most inclined to be married to or cohabiting with women than bisexual men who, in turn, were more likely to be heterosexually married or cohabiting than homosexual men. Nonetheless, it is difficult to know the direction of the relationship between marital status and sexual orientation. Inasmuch as sexual orientation has innate components, it is reasonable to conceive of it as a precursor to heterosexual marital status. In this sense, men who are heterosexual or bisexual (most notably in terms of their sexual behaviors and attractions) will be more inclined to marry women than men who are exclusively homosexual because the former have likings for women. Yet, marital status could lead men to adopt particular sexual identities, attractions, and behaviors. Given that marriage, at least in the United States, is constructed as a monogamous arrangement, men who marry women may be more inclined than non-married men to only have sex with their female partners. Given that they are heterosexually-active, most of these men would likely adopt heterosexual identities to outwardly convey their sexualities. This means that marriage promotes heterosexual behavior and identification among a large proportion of the male population. This is not wholly unreasonable in light of most men being monogamous throughout the course of their marriages

(Laumann et al., 1994). Conversely, it is possible that sexual orientation and marital status continually exert influences on each other, making the relationship between the two bidirectional.

Substantial majorities of men within all sexual orientation groupings had engaged in sex with women during their lifetimes. The likelihood of doing so, unsurprisingly, was much higher among men who were heterosexual or bisexual rather than homosexual along any sexual orientation dimension. This finding highlights opposite-sex encounters as being normative in the sexual histories of most men. We should expect this given that having sex with women remains key to how Western masculinities are defined (Connell, 1995). Men, even those with homosexual preferences, encounter pressure from members of their social networks to have female partners. Indeed, men can be severely ridiculed if they do not at least convey minimal sexual interest in women (Theodore & Basow, 2000). I suspect, however, that heterosexual encounters among homosexually-active men most often occurred during adolescence. It is typically during this period of life course development that homosexual men most often have opposite-sex encounters, which typically occur as homosexual men seek to discover their sexual preferences (Troiden, 1988b).

### **Synopsis of Risk Findings**

Bisexually-active men had far more condom use than heterosexually-active men, no matter how condom use was measured. I observed a similar pattern when bisexually-active men were compared to their homosexual counterparts, with condom use being measured with the bisexual men's last female partner. For HIV testing, behavioral differences were less dramatic. The majority of bisexually-, homosexually-, and heterosexually-active men had ever been tested for HIV, but bisexually- and heterosexually-active men were not different in this behavior. This was surprising in light of the greater prevalence of HIV/STI risk behaviors among bisexually-active

men. (With much greater risks, we would expect bisexual men to be more inclined than heterosexuals to know if they have contracted HIV.) And, even in multivariate analyses, bisexually-active men were predicted to be less likely to test for HIV than homosexually-active men. Among ever-tested men, both bisexually- and homosexually-active men were more likely to be tested than heterosexual men, but these differences did not persist when sociodemographic and risk factors were controlled. I observed the most stark differences on analyses of the number of past-year sex partners. Even after adjusting for multiple study confounders and accounting for bisexually-active men's inevitably higher starting point (they had to have at least two partners to be bisexually-active), these men had a far greater number of sex partners than other men. It was also clear that bisexually-active men had far more drug use and exchange sex than homosexually-active men, and they had greater likelihoods of engaging in nearly all risk behaviors than heterosexually-active men.

Sexual identity and attraction measures resulted in less stark differences being observed between bisexual and other men. Bisexual-identified men had greater likelihoods of condom use and HIV testing than heterosexual men. I observed a similar pattern when bisexual and heterosexual men were compared according to sexual attraction. Interestingly, among men who reported female partners during the past year, bisexual-attracted men had higher condom use frequencies than homosexual-attracted men. Although bisexual-identified and bisexual-attracted men had more sex partners than their heterosexual counterparts, bisexual-attracted men had fewer than homosexual-attracted men. Relative to heterosexuality, bisexual identification and attraction generally were associated with higher levels of drug use, past STIs, forced sexual experiences, and sex partners. But, homosexual-attracted men were more likely to exchange sex for money or drugs.

These findings quite simply point to bisexual men, along any given measure of bisexuality, engaging in more HIV/STI-related risk behaviors than heterosexual men. Bisexually-active men generally had more risks than homosexually-active men, but homosexual identification and attraction were often associated with more risks than bisexual identification and attraction. In light of the risk behaviors in which bisexual men engage, effective prevention efforts need to be targeted to bisexual men. (I make some suggestions in this regard at the end of this chapter.)

I take caution in interpreting how these behavioral findings yield more HIV/STI exposures for the men and their partners, however. In Chapter 2, I explored men's likelihoods of having only oral sex with their partners. Minimal differences were observed when men who ever had sex with women were compared on having only oral sex with females. However, it was clear that along all sexual orientation indicators, heterosexual men were far more likely than bisexuals, who were far more likely than homosexuals, to have only oral sex during their sexual encounters with other men. As a result, I reasoned that differences in the prevalence of risk behaviors could be offset due to this behavior. The prevalence of HIV and most STIs is substantially higher in the male population (CDC, 2008b), and HIV is much more readily transmitted during anal sex than oral sex (Page-Shafer et al., 2002; Vittinghoff et al., 1999). Therefore, heterosexual and bisexual men's high likelihoods of practicing only oral sex during sex with men likely decrease their chances of being exposed to HIV during same-sex activity. Yet, they would appear to maintain reasonably high likelihoods of acquiring other STIs during oral sex if these behaviors are unprotected. Indeed, oral sex encounters are more likely to be unprotected than other types of penetrative encounters (Belcher et al., 2005). I believe that knowing bisexual and other men's relative inclinations for oral sex alone yields much needed understanding of these men's risk tendencies. Although further analyses with better data are needed, the relatively high

proportions of bisexual and heterosexual men who have only oral sex with other men suggests that these men's HIV risks from other men is substantially lower than risks that homosexual men incur from other men.

### **Importance of Multiple Sexual Orientation Measures**

When I commenced writing the empirical chapters of this dissertation, I did not anticipate the high degree of association I found among indicators of heterosexuality and homosexuality. For the most part, men who engaged in heterosexual behavior tended to be those who identified as heterosexual and possessed heterosexual attraction. Homosexuality indicators were correlated as well, but not to the same degree. The strong associations among the independent variables presented some collinearity problems in multivariate analyses using all indicators of sexual orientation if each indicator distinguished bisexual, homosexual, and heterosexual men. This necessitated different modeling strategies for each empirical chapter. In keeping with my initial objectives of distinguishing men based upon their sexual behaviors, identities, and attractions, I used dichotomized (bisexual versus non-bisexual) sexual orientation measures for some outcomes.

For example, in Chapter 3, diagnostic tests showed that I could not use all sexual orientation categories in multivariate analyses due to high covariation among indicators of heterosexuality (primarily) and homosexuality. Doing so would prohibit predictor variables from being associated with HIV testing behaviors. For this reason, I used dichotomous measures to distinguish men according to identity and attraction. For analyses of the number of sex partners in Chapter 4, however, differences between bisexually-active men and their monosexual counterparts and differences between homosexual-attracted and non-homosexual-attracted men were great. Therefore, examining all indicators with bisexual, homosexual, and heterosexual men being distinguished still allowed for the detection of significant differences. As collinearity

is affected by independent variables' relationships with each other, I suspect that the lower number of variables used as risk covariates for analyses of the number of partners also contributed to me observing less collinearity in Chapter 4.

The high degree of overlap among indicators of homosexuality and heterosexuality, though in some respects problematic for the proposed analytic strategies for each chapter, still allowed me to accomplish my overall goals. In Chapter 1, I contended that bisexual men should be distinguished along sexual behavior, identity, and attraction in single studies of sexual orientation and health. In each empirical chapter, I proceeded with the understanding that each sexual orientation dimension had the potential to impact men's sexual health behaviors in different ways. In retrospect, this approach seems justified as behavior, identity, and attraction differentially affected the men's behaviors. Nonetheless, I did not anticipate that men who possessed heterosexual attraction, identity, or behavior would almost always be considered heterosexual based upon other sexual orientation dimensions. As I continue research on sexuality and health, I will be reminded of the potential problems caused by heterosexuality indicators by and large measuring the same phenomenon.

Despite the occurrence of collinearity among some indicators, the use of multiple sexual orientation measures helped me to uncover a high degree of fluidity among men classified as bisexual according to any indicator. As I suspected at the outset, bisexuality indicators exhibited relatively little overlap with each other. For example, less than one-fifth of the bisexual-identified and bisexual-attracted sub-samples actually had sex with a man and woman during the previous year. On the contrary, most of these men were heterosexually-active. A fair proportion of the bisexually-active sub-sample possessed heterosexual identification (44%) or attraction (34%). Because of the lack of covariation among bisexuality indicators, I deemed it reasonable

to proceed with multiple bisexuality measures in each empirical chapter in spite of the problems observed among heterosexuality and homosexuality measures. The overlap of bisexuality indicators with indicators of heterosexuality and homosexuality ultimately supports queer theorists' (Gammon & Isgro, 2006; Valocchi, 2005) and other social scientists' (Diamond, 2000; Parker et al., 2007; Rust, 2000a; Weinberg et al., 1994) arguments that sexual orientation, and bisexuality in particular, is fluid. In this regard, men who possess bisexual behavior, identity, or attraction may have sexualities that manifest in various ways along other dimensions of sexual orientation. It seems worthwhile for future studies of bisexual men to include multiple indicators of sexual orientation. Studies focused on heterosexual men—or, to a lesser extent, homosexual men—or that compare these men to bisexual men may do well considering only one or two indicators.

Aside from detecting fluidity among sexual orientation dimensions, using multiple indicators helped me to measure non-additivity among indicators of bisexuality. In Chapter 1, I contended that the statistical effects of one measure of bisexuality could be different for men who vary along another measure. Testing statistical interaction in each empirical chapter allowed me to note if and how non-additivity among bisexuality measures manifested itself in relation to condom use, HIV testing, and the number of past-year sex partners. I was most interested in potential interactions between sexual identity and behavior because, given that many published studies have discussed the potential for the effects identity and behavior to be multiplicative, testing non-additivity between these two indicators seemed most fitting. However, on analyses of all three sexual health behaviors, my curiosity led me to test bisexual behavior-attraction and bisexual identity-attraction interactions. These interactions were not significant, which suggested that bisexual attraction was not a meaningful mediator of bisexual

identity's or bisexual behavior's relationship with the condom use, HIV testing, or the number of partners.

The findings I derived by testing behavior-identity interactions were insightful, but in ways that I did not anticipate when I began analyses. As I analyzed HIV testing for reasons other than to know one's HIV status, having a bisexual identity (versus any other) predicted a higher odds of being tested. But this was only true for men who engaged in heterosexual or homosexual behavior during the past year. On the other hand, being bisexual-identified (versus anything else) predicted a very low odds of testing among bisexually-active men. I would not have expected bisexual identification to produce such divergent outcomes in men who had different behavior-based sexualities. For analyses of condom use, having bisexual identification and behavior resulted in a higher odds of condom use in comparison to being bisexual on only one of these dimensions. Allowing identity and behavior to mediate each other's effects resulted in bisexually-active men not identifying as bisexual to be statistically undifferentiated from their heterosexually-active counterparts. Similarly, bisexual-identified men not practicing bisexual behavior were not statistically different than their heterosexual counterparts.

All in all, I was surprised to find that behavior-identity concordance among bisexual men produced a negative result in regard to HIV testing but a positive one for condom use. I expected to find bisexuality concordance to be positively associated with each outcome. I reason that the complexity of sexual identities and behaviors, as well as the ways in which each is individually associated with HIV testing and condom use, resulted in the observed findings. Identity-behavior interactions (or main effects for that matter) need not show the same pattern of association with health behaviors. I suppose that condom use and HIV testing, being quite distinct, utilize different cognitive processes as men weigh the costs and benefits of engaging in

these behaviors. Perhaps men who are bisexual according to behavior and identity more readily process the benefits of condom use due to its more proximate role in decreasing men's exposures to HIV/STIs. This simply may not be the case for HIV testing, as it generally requires more effort and likely is not perceived as a preventive strategy to the extent that condom use is.

On the other hand, bisexual behavior-identity concordance may differentially relate to condom use and HIV testing because of the way these behaviors are linked to sexual orientation. Condom use is the primary mode of pregnancy prevention for many men (Cooper et al., 1999). Thus, in the minds of bisexual men who have female partners and identify as bisexual, it may be tied to sex with women and, consequently, be perceived with relatively high importance. Whereas HIV is still constructed as a "gay disease," with gay men presumably being in the greatest need for HIV testing, men with bisexual behaviors and identities may readily perceive HIV testing as an important behavior for gay/homosexual men. In this regard, behavior-identity concordant bisexual men's likelihoods for condom use and HIV testing may emerge from different thought processes that connect these behaviors to men's perceptions of their own sexual orientations. Whatever the case may be, these findings have alerted me that one interaction term can produce variant outcomes across different sexual health behaviors.

### **Benefits and Costs of Using the National Survey of Family Growth**

As I approached the completion of my doctoral studies, I was conscientious in choosing a dataset that would best equip me to answer the research questions that I pondered for the dissertation. I wanted the research to make a significant contribution to the scientific community's understanding of male bisexuality in relation to sexual health behaviors. Using high quality data was a necessary criterion for the work to be respected by other social and behavioral scientists and useful in establishing me as a credible researcher. Given my experience

using multiple datasets containing sexuality-related data and knowing other researchers who used such data, I had no doubt that the 2002 cycle of the NSFG would best suit my interests.

Of all the surveys that I consulted, the NSFG had very robust sampling criteria: it was nationally-representative and probability-based. Researchers interested in the health of non-heterosexual men are aware that the overwhelming majority of studies use data that over-represent high-risk men living in urban areas. Surveys with sampling frames limited to these types of men often severely overestimate the risks purported to exist within populations of which these men are members (Mills et al., 2001; Jeffries, in press a). It was my goal to avoid falling prey to a trend that I felt was all too commonplace among public health scientists. (Of course, I was fully aware that data limitations and the urgency of HIV/STI prevention among non-heterosexual men justified the use of any data sources available to researchers.) I liked the fact that the NSFG sampled men from 121 primary sampling units derived from the 2000 U.S. Census and that men from all 50 states were included. Knowing that each participant had a known chance of being selected for inclusion in the survey provided me comfort as I proceeded through the three sets of analyses. As a sociologist with interests in the health of U.S. men, I was glad that the NSFG's sampling techniques allowed me to make sound inferences regarding this population. I was also pleased by the high response rate of 78%, which is among the highest in large, nationally-representative surveys.

The NSFG staff used very good data collection techniques, most notably in the form of audio computer-assisted self-interviewing (ACASI). This technology allowed the men to report sexuality-related information, risk behaviors, and other sensitive data via laptop computers rather than directly to interviewers. Prior research has demonstrated ACASI increases reporting of sensitive information, especially that which is sexuality-related (Adimora et al., 2007; Turner et

al., 1998). Indeed, my own analyses of the NSFG showed that more men reported being sexually-active in the ACASI versus the non-ACASI portion of the interview. I strongly suspect that ACASI helped to increase men's comfort in answering these questions and, thus, provided more realistic numbers of men who had same-sex behaviors and non-heterosexual attractions and identities. The numbers of men who had missing data on these questions and those related to substance use were minimal, and they were substantially lower than numbers I have seen in surveys not using ACASI. Minimizing the number of non-usable responses and non-response was helpful to this project because the number of men with past-year bisexual behavior ( $n = 77$ ) or bisexual identification ( $n = 108$ ) was low from the beginning. Upon finding that missing data were minimal, I was glad to know that missing data on study covariates would not result in substantial reductions in the sizes of the bisexual sub-samples when I undertook multivariate analyses.

I was also fortunate that the NSFG measured sexual orientation in three ways. Because it included measures of the number of male and female partners the men had during the previous year, I could determine if men were bisexually-, homosexually-, or heterosexually-active. Determining men's sexual identities and attractions was even easier, as the NSFG directly measured these dimensions of sexual orientation. I was also glad to see that the NSFG staff provided categories for men who did not neatly fit into the conventional categories of bisexual, heterosexual, and homosexual. The options of "something else" and "don't know" were provided for sexual identity, and men could indicate if they were "not sure" of their sexual attractions. Given my broad interests in non-heterosexuality (not just bisexuality and homosexuality), this enabled me to use these categories to include men who did not embrace traditional sexual orientation labels. This was useful given that my conceptual framework

utilized queer theory, which emphasizes the importance of studying sexualities that deviate from normative representations of heterosexuality and homosexuality.

The NSFG was not perfect, however. I was most perturbed by measures specific to same-sex behaviors not being equivalent to measures specific to opposite-sex phenomena. For example, no variable was created to measure homosexual partnership status. When survey administrators completed data collection in 2004, the vast majority of U.S. cities and states had no formal recognition for same-sex partnerships. However, given the literature on sexual minority men, I would reasonably assume that a fair number of these men were partnered with men. Data from the 2000 U.S. Census shows that many of them were cohabiting and creating families with their male partners (Gates & Ost, 2004). Without being able to control for some measure specific to same-sex relationship partnering, I was unable to fully assess the relationship between sexual orientation and health behaviors because men who are in steady same-sex partnerships generally have fewer HIV/STI risks. In the absence of a marital/relationship status variable, I would have been grateful for measures of whether the men had romantic partners or boyfriends and the amount of time they had been partnered with them. Of course, no such measures were included in the NSFG.

Second, measures for condom use were not fully comparable for the men's male and female partners. Measures for condom use frequency—the percentage of times the men used condoms with a given partner set—were only included for recent female partners that the men mentioned in the non-ACASI portion of the interview. As aforementioned, this strategy likely biased condom use results among men with female partners because men reported more partners with ACASI technology. Although it was helpful to have measures of condom use frequency for bisexually- and heterosexually-active men, the NSFG did not include condom use frequency

measures for sex with male partners. It only had a one-time measure ascertaining condom use the last time the men had sex with men. This was problematic in light of homosexually- and bisexually-active men being at far greater risk for HIV/STIs than heterosexually-active men. A frequency measure would have been helpful simply because it provides more precise measurement of condom use. Ideally, I would have wanted measures of condom use frequency specific to all partners and sexual acts with them during the previous month. (Recall bias would have made it difficult to ascertain condom use frequency beyond this period). Beyond a one-month window, I would have been satisfied with a measure of condom use during their last sexual encounters.

Third, the number of female and male past-year partners were disparately measured. Response categories for the number of female sex partners ranged from 0 to 20 or more, but responses for male partners only ranged from 0 to 6 or more. In light of bisexually- and homosexually-active generally having far more partners than their heterosexual counterparts, one might have expected the measure for male partners to have a far greater range than seven categories. A higher range would have also made sense given non-heterosexual men's high HIV/STI risks, which are well known to be associated with a high number of partners. Because of dissimilar measures for the number of male and female partners, I was forced to collapse men with 6 or more female partners so that comparisons of bisexually-, homosexually-, and heterosexually-active men would be analogous. I would have preferred measures that were equivalent for male and female partners, but had discrete categories for men having as many as 30 partners. A cut-off of 30 or more would have been sufficient given issues with accurate recall and few men having more than 30 past-year partners.

Besides non-equivalent measures for behaviors with men and women, I was frustrated with the sexual identity options available in the NSFG. Upon beginning my dissertation project, I knew that men identifying as “straight” could not choose this option on the survey. However, I did not know that men identifying as “gay” were not able to accordingly label themselves. The sexual identity question specifically asked men if they thought of themselves as “heterosexual, homosexual, bisexual, or something else.” Of course, they could refuse to answer the question or state that they did not know how they sexually thought of themselves. Initially, I thought that “homosexual/gay” was a response category, but this was not the case. It was only after the dissertation was underway that I realized that the use of “homosexual/gay” in the published literature led me to mistakenly believe that this option appeared among the NSFG’s responses.

My scientific and personal knowledge of gay men and the communities to which they belong leads me to believe that most men who self-identify as gay would, in the absence of a “gay” label, recognize “homosexual” as most closely describing their sexual identity. Researchers, including some gay men, commonly discuss men who see themselves as homosexual as being “gay” men, and they often use “homosexual” and “gay” identity labels interchangeably (see Campbell, 1995; Engler et al., 2005; Ford et al., 2007; Sears, 1992; Sell, 2007; Troiden, 1988b). This practice has influenced the design of other nationally-representative surveys such that “homosexual” is the only option to men who might otherwise identify as gay (Jorm et al., 2003; Laumann et al., 1994). In retrospect, however, I wish that the NSFG had more choices so that men’s sexual identities could be more accurately depicted.

Notwithstanding the use of “homosexual” in the published literature, I suspect that some gay men would choose “something else” because “homosexual” would not reflect their “gay” identity. My survey of the literature would suggest that the scientific community has

increasingly preferred “gay” over “homosexual” throughout the last two decades. Within the social sciences, “gay” is most commonly used in discussions pertinent to the communities, ideologies, and sexualities of men who typically identify as gay or homosexual. Some have even have critiqued the use of “homosexual” within sexual identity nomenclature because the word originally evolved in pathologization of non-heterosexual sexualities (Aspinall & Mitton, 2008). For these reasons, in the empirical chapters I sometimes referred to homosexual-identified men as being gay. Of course, my preference would have been to specifically refer to them as “gay-identified.”

The NSFSG’s flawed measurement of sexual identity also could have affected responses of heterosexual men. It is possible that some men bypassed the “heterosexual” option and chose “something else” to indicate that they saw themselves as “straight.” It was interesting, however, that men stating that their sexual identity was “something else” were disproportionately black, Latino, undereducated, and poor. It remains unclear as to whether, given more options, they would have chosen another heterosexual (e.g., “straight”) or non-heterosexual label. On one hand, I assume that a small proportion of heterosexual men of low socioeconomic status, but particularly those who are Latino or black, would not recognize “heterosexual” as a substitute for “straight.” At the very least, I believe that they would most often use “straight” when talking about their sexualities. (I speak based upon my experience as a black man from a working class background). On the other hand, I am more strongly inclined to believe that the greatest proportion of men identifying as “something else” would do so to express some type of non-heterosexual identity. The marginalization of low SES and racial/ethnic minority men as well as the increased homosexual stigma within their communities leads those who are non-heterosexual to embrace non-conventional sexual identity labels (Mays et al., 2004; Stokes & Peterson, 1998).

Moreover, racism within white gay communities may be particularly salient in ethnic minority men's choices not to embrace conventional labels, like "gay" or "bisexual," that they associate with Eurocentric representations of sexuality (Han, 2007; Teunis, 2007). Many non-heterosexual black men are apt to adopt other terms to describe themselves, such as "same-gender-loving," "down low," and "in the life" (Boykin, 1996; Parks, 2001; Renn & Bilodeau, 2005; Wolitski et al., 2006). Latinos may embrace similar terms, although many of them emphasize the importance of being *un hombre* [a man] and may sexually identify as such (Carballo-Diéguez et al., 2004; Muñoz-Laboy, 2004). Ultimately, it remains unknown how "something else" men might have identified if they had more categories from which to choose.

I recently acquired some insight regarding the nebulous nature of the "something else" category. Throughout the last several years, representatives of the National Center for Health Statistics have been continuously interviewing men in cognitive labs in order to validate the wording of questions that appear in the survey (A. Chandra, personal communication, October 16, 2008). Their findings strongly suggest that many men who chose "something else" did not understand what the question was trying to ascertain. Some of these men legitimately would have chosen "don't know" or refused to answer the question with greater clarity in the question's wording. Their analyses also have led them to include more identity options in future waves. Members of the gay community and others criticized the staff for not including "gay," "lesbian," (for the female questionnaire), and "straight" as choices. For these reasons, future waves of the NSFG will incorporate these options and not include the "something else" category. Given the tremendous effort the staff members have devoted to accurately measuring sexual identity, I respect their choice to dispose of "something else." However, I wonder what the deletion of it will mean for men who ordinarily refrain from embracing conventional sexual identity labels. I

certainly look forward to using the upcoming (2009) wave of the NSFG in order to examine the distribution of sexual identity among U.S. men and see how this distribution compares to that in the 2002 wave.

NSFG sampling also missed important populations of men. Although men between the ages of 15 and 44 are most relevant for family planning-related issues, most men older than 44 are sexually-active and possess some risk for HIV/STIs. Therefore, it is important to know how their sexualities are associated with their health behaviors. Such is especially true for bisexual and homosexual men, among whom HIV/STI risks readily accumulate over the life course due to more risky sexual histories. This sample also was limited to household-abiding men. I would assume that a disproportionate number of bisexual men were not included in the sample for this reason. Characteristics that covary with homelessness, such as interpersonal violence and substance use, tend to be most prevalent among bisexual men (see Goodenow et al., 2002; Robin et al., 2002). Thus, not including subpopulations of homeless men likely prevented me from understanding these men's social and sexual characteristics.

Ideally, I would have wanted the NSFG to include biomarker data. When conducting health-related studies, researchers may encounter difficulty assessing the relationships between group membership, behaviors, and actual risks for adverse conditions if they do not have biologic and virologic indicators. Studies that include measures drawn from blood specimens show considerable promise in helping us to understand how behaviors translate into measurable health outcomes (Ewbank, 2008). The NSFG only included self-reports regarding men's STI histories, and I suspect that these measures severely underestimated the actual prevalence of these conditions because many men do not know that they are infected with STIs. Similarly, the survey did not measure HIV serostatus, which only permitted me to make conjectures regarding

the relationship between men's behaviors and HIV risk. Although this practice is common among HIV prevention scientists, behaviors alone provide limited understanding of men's risks for HIV. For example, among the population of MSM, black men have fewer male sex partners, less illicit substance use, and at least equal condom use relative to white men, but they have far greater HIV/STI rates (Millett et al., 2007). This irony can persist given race-related structural conditions (i.e., high rates of poverty, incarceration, and inadequate medical care) that make the partner pool available to black MSM more infectious. With biomarkers, I might have had better understanding of how risk behaviors are associated with actual risks for HIV/STIs.

Although the 2002 wave of the NSFG has nearly 5000 men, which by all comparisons is extremely large for a nationally-representative sample of men, a larger sample would have benefited me. Some of the estimates for bisexual men's social and sexual characteristics were unstable due to the relatively small sub-samples of bisexual-identified and bisexually-active men. I was generally safe when making bisexual-heterosexual comparisons because the large sub-samples of heterosexual men allowed statistical significance to be more readily attained. However, bisexual-homosexual differences had to be much larger in order to be statistically significant given the relatively small sub-samples of homosexual men. Sample size issues appeared to amplify in multivariate analyses, particularly those using interaction terms, due to the high number of variables employed in statistical models. In an ideal setting, I would have liked the NSFG to include about 10,000 men, which theoretically would have doubled the bisexual sub-samples and significantly decreased the instability of some population-level estimates.

Despite the limitations of the NSFG, other available data would not have brought me as close to producing scientifically credible work. Because of my steadfastness to use nationally-

representative, probabilistic data, I had to rule out surveys limited to large HIV epicenters, such as the National HIV Behavioral Surveillance System (CDC, 2005a) or the Young Men's Survey (Valleroy et al., 2000). I did not take this decision lightly as these datasets have large subsamples of bisexual men, excellent measures of sexual health behaviors, and many biomarker indicators. Other large, representative data sets had limitations that I deemed to be greater than those of the NSFG. For example, after combining data from all of the usable waves of the National Health and Nutrition Examination Survey, the pooled sample contained only half the homosexual-identified men ( $n = 75$ ) and bisexual-identified men ( $n = 56$ ) that the NSFG has (National Center for Health Statistics, 2009a). It had even fewer men classified as bisexual or homosexual according to sexual behavior, so use of these data would have prevented me from conducting the level of multivariate analyses that I did using the NSFG. Small sample sizes of non-heterosexual men also characterized the National Health and Social Life Survey (Laumann et al., 1994) and the National Social Life, Health, and Aging Project (Lindau et al., 2007), with the latter being limited only to older Americans. The Behavioral Risk Factor Surveillance System (National Center for Chronic Disease Prevention and Health Promotion, 2008) and National Health Interview Surveys (National Center for Health Statistics, 2009b), despite their extremely large sample sizes, had no measures of sexual identity or attraction. The use of these would have been problematic given my conceptualization of sexual orientation along sexual identity, attraction, and behavior.

I also examined surveys specific to adolescents, including the National Survey of Adolescent Males (Urban Institute, 2008) and the National Longitudinal Study of Adolescent Health (Carolina Population Center, 2008). Because these were limited only to young men, they would have prevented me from making inferences regarding the population of adult U.S. men, in

whom my interests were great. There were also some technical issues, like fees associated with data acquisition and limited sensitive data access to junior researchers, that discouraged me from pursuing these data. I considered pooling the NSFG with one or more of these other surveys, but disparate weighting techniques would have prevented the resultant dataset from being fully representative of men in the United States. I also would have encountered problems due to each survey having slightly different measures of risk covariates that I felt needed to be carefully controlled in my statistical models. For these reasons, I am assured that the 2002 wave of the NSFG was best suited for executing my dissertation project.

### **Intervention Efforts for Bisexual Men**

In public health, we pride ourselves in our desires to protect vulnerable populations from the onset and debilitation of adverse health conditions. As an interdisciplinary enterprise, our ultimate goal is to use research findings and theoretical knowledge garnered from numerous academic fields in order to devise solutions to the health problems that people face. Throughout the last several years, my research-specific training as a public health sociologist has equipped me with the investigatory skills necessary to identify the health problems present in at-risk populations. Most notably, I have been able to highlight many of the sexual health issues pertinent to bisexual men in the United States. But, understanding the behaviors that make bisexual men susceptible to HIV/STIs is merely one component to prevention science. It is equally important to do something to alter the negative health behaviors in which bisexual men engage. For this reason, I would be remiss not to comment on the design of effective sexual health interventions for U.S. bisexual men.

Leading health disparities experts overwhelmingly agree that the causes of health disparities are structural in nature (Braveman, 2006; Hayward et al., 2000; Forbes & Wainwright, 2001; House & Williams, 2000; Krieger, 2000; Lynch & Kaplan, 2000; Marmot,

2000; Williams & Collins, 2002). This means that the reasons vulnerable groups engage in harmful health behaviors, experience adverse rates of disease onset, and/or endure rapid declines in health over the life course are not limited to characteristics of the individuals comprising these groups. Rather, the factors that place some people at greater risk for ill health than others are beyond at-risk individuals' control. At the root lie conditions within the structure of societies that confer privileges to certain groups while marginalizing others. It comes as no surprise, therefore, that the people most susceptible to high morbidity and mortality in the United States are those who have historically been most oppressed: the poor, people of indigenous and African descent, sexual minorities, and, despite their low mortality rates, women.

Although discussions of race- and class-based health disparities have taken place for well over a century (DuBois, 1899; Engels, 1887), only recently have scholars critically and systematically considered the structural causes of disparities in health among non-heterosexual individuals (see Battle & Crum, 2007; Herek & Capitanio, 1999; Huebner et al., 2002; Malebranche, 2008; Meyer, 2001; Padilla et al., 2007; Stokes & Peterson, 1998; Williamson, 2000). Yet, similar to arguments for the causes of racial disparities in health, the overwhelming sentiment is that factors outside of individual bisexuals, other non-heterosexuals, lesbians, and gay men result in them having much worse health outcomes than their heterosexual counterparts (Dean et al., 2000). For non-heterosexual men, in particular, discussions have most often pointed to institutional, interpersonal, and internalized homophobia. That is, the institutions (e.g., government and religion) serving as pillars of American society promote prejudice against people who deviate from heterosexual norms. (We can consider most state and local governments not providing equal partnership benefits to same-sex couples as being evidence of this.) In turn, non-heterosexuals experience sexuality-based discrimination from their families of

origin, religious communities, and potential employers. Both institutional and interpersonal homophobia may then give rise to non-heterosexual men accepting negative views of themselves, which may engender suicidal ideation and low self-efficacy to protect themselves from HIV and other diseases.

In light of the social-ecological context in which ill health emerges, efforts to improve the sexual health of bisexual men must address the underlying factors that place them at risk for HIV/STIs. In this dissertation, I drew upon voluminous accounts highlighting bisexual stigma, or biphobia, as prevalent in heterosexual and homosexual communities (see Balsam & Mohr, 2007; Israel & Mohr, 2004; McLean, 2007; Rust, 1996; Weinberg et al., 1994). Biphobia seems to be a critical determinant of health in bisexual men as it may prevent bisexual men from participating in gay communities. Consequently, bisexual men are less inclined than homosexual men to receive some HIV prevention messages, and this may explain why they have relatively low rates of HIV testing. On the other hand, biphobia can be internalized (Dworkin, 2001; Hutchins, 1996). I believe this is a primary reason that bisexual men, particularly those who have sex with men and women, have high numbers of sex partners. If heterosexual and homosexual people perceive bisexuality to be an illegitimate sexuality, then we should expect bisexual men to have many partners as such would validate their sexualities. For these reasons, we need to eradicate biphobia.

Sexual diversity awareness is an important step in reducing bisexual men's exposure to biphobia (see Kormanik, 2009). A nationally-concerted effort to promote recognition and acceptance of bisexuality could help to reduce the stigma that bisexual men incur due to their behaviors, identities, and/or attractions. I believe that governmental entities, such as the CDC and the National Institutes of Health can partner with media outlets, religious organizations, and

educational institutions to promote affirming dialog on bisexuality. Such initiatives can serve as forums for the dissemination of accurate information regarding bisexuality, particularly findings highlighting that many of the problems bisexual men face stem from negative attitudes people possess about them. Additionally, the government can lead discussions on how bisexuality, in all its forms, is as normal as other sexualities and has been a natural part of the human experience throughout history.

One immediate way governmental agencies can help to decrease biphobia, particularly that which is present in the scientific community, is by funding research on bisexuality. This dissertation proceeded from a research assistantship that I completed with Brian Dodge (Indiana University). The HIV Center for Clinical and Behavioral Studies (New York State Psychiatric Institute/Columbia University) provided him a grant to qualitatively investigate bisexually-active black men in New York City. As I helped him to analyze the interviews and write research papers, my interests in male bisexuality heightened. As a result, I have constructed a research agenda on male bisexuality that is attentive to anti-bisexual sentiment. In my writings, I am able to discuss why bisexual stigma adversely affects the health of bisexual men. Thus, inasmuch as my work is cited by others, it informs behavioral scientists on the importance of prioritizing research on this vulnerable group, and they will likely discuss bisexuality more in their own publications. As media outlets become aware of our work (this has happened for the research I conducted with Brian), everyday citizens will become informed of the facts surrounding male bisexuality and may develop more affirming stances toward bisexuals. It is encouraging to see that the National Institutes of Health and the CDC have begun to create funding mechanisms for researchers interested in male bisexuality. Several of the authors cited in this dissertation have received money from these agencies to conduct research on bisexual men's health.

Whatever efforts are taken to decrease bisexual stigma, they may work well with structural interventions designed to decrease homophobia. Homophobia and biphobia are similarly rooted in the institutions that privilege heterosexuality to the exclusion of other sexualities (Mulick & Wright, 2001; Ochs, 1996). In this regard, all non-heterosexuals—whether they are bisexual, gay/homosexual, or something else—are denigrated by political discourses, laws, and exclusionary rhetoric that regards gay/lesbian/homosexual people as subordinate. For this reason, interventions should increase our awareness of the diverse sexualities humans embody. Colleges and universities, for example, can incorporate discussions of the multiple manifestations of queer sexualities in diversity awareness classes for undergraduates. Teaching sexual diversity in these classes may be a natural extension of the cultural diversity training that many institutions already require. With assistance and support from the federal government, secondary schools could provide instruction on the dangers of homophobia and biphobia via sexuality education courses for students and in-services that teachers routinely attend. With efforts such as these, we can change the social settings that engender stigmatization of non-heterosexual people.

Once efforts to alter the structural foundations supporting bisexual and homosexual stigma are underway, then community- and group-level interventions can be developed. At these levels, such efforts may seek to provide HIV prevention services to non-heterosexual men. For example, free HIV testing can be provided to men attending gay community centers, nightclubs, and social events. Similarly, support groups can affirm bisexual men's sexualities such that they do not feel compelled to have many sex partners. Outreach efforts can specifically target bisexual men using a variety of media, such as posters, newspaper ads, and the Internet. Given the success of structural interventions, if bisexual men are not stigmatized by gay/homosexual

communities and welcomed to participate in them, then interventions at the community and group levels will show considerable promise. By feeling a part of gay/homosexual communities, bisexual men will view routine HIV testing and minimizing the number of sex partners as important health behaviors. If outreach is done in a spirit of acceptance and affirmation, then bisexual men may continually participate in these communities. This will enhance the sustainability of outreach efforts targeted to them.

Individual bisexual men have sexual health needs that differentiate them from other bisexual men. Therefore, societal-, community-, and group-level interventions alone will not be sufficient to safeguard their health (Waldo & Coates, 2000). Individual-level interventions are also necessary. It is important for bisexual men to receive one-on-one preventive services that are tailored to their needs. Such efforts can be effective in increasing their likelihood of being tested for HIV and consistently using condoms (Herbst et al., 2007). Medical care providers, community health workers, and other health liaisons could be instrumental in providing non-judgmental HIV counseling and testing services to bisexual men. This will make them aware of their HIV serostatuses, which will place them in a position to cease unhealthy behaviors, acquire life-saving treatment (if necessary), and encourage their partners to be tested. Given bisexual men's high number of partners, they may also benefit from counseling to minimize their numbers of sex partners. This may take place in a variety of settings, such as schools, physicians' offices, and LGBT community centers. Ultimately, successful intervention strategies will consider the multiple levels at which bisexual men's health is impacted.

### **Epilogue**

Writing this dissertation has been a surprisingly enjoyable experience for me, despite the hard work involved. I feel very fortunate to have produced research findings that have critical implications for how the scientific community understands sexual orientation-related health

disparities and, specifically, bisexual men's health. If I had to use one statement to sum what I want readers to take from this project, it is this: we should be attentive to bisexuality as a determinant of health behaviors among men. Attention to bisexuality should, of course, recognize that bisexual behaviors, identities, and attractions are not the same, as they differentially affect the behaviors in which men engage.

This dissertation is a small contribution to a comparably small body of literature on bisexual men. Much remains to be known regarding bisexual men's health as data in this area are severely limited. It behooves us to continually collect detailed data on sexual orientation in studies of men's and women's health, as non-heterosexual individuals are not all alike. We certainly need better health measures, especially bisexual-specific prevalence data for HIV/STIs. Yet, given the findings of this dissertation, I would not be surprised to find that bisexual men have relatively high rates of other infectious and chronic diseases. Our abilities to understand bisexual men's health heavily rests in our willingness to employ conceptual models that account for the marginalized status of U.S. bisexual men. I am in the process of structuring my career in a way that will allow me to take the lead in these areas.

In December 2008, I accepted a position in the 2009 class of CDC's Epidemic Intelligence Service (EIS). This program will equip me with training in applied epidemiology, which will be relevant for many health-related issues, including HIV/STIs. My work with EIS will be a two-year commitment lasting from July 2009 until June 2011. In April 2009, I will find out where I will be appointed within CDC during these two years. My first choice is to work with the Division of HIV/AIDS within the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. If I am unable to do so, I also have interests in working with the National Center for Chronic Disease Prevention and Health Promotion's Division of Reproductive Health and the

National Center for Health Statistics' Division of Vital Statistics. The latter is where NSFG staff are based. An appointment in any of these three Centers would provide me access to sexual and reproductive health data. Thus, I likely will be able to continue research on sexual orientation-related health disparities, although this research will likely not be limited to HIV.

Working with CDC will provide me many advantages over those accompanying an academic position. I will have immediate access to many large, nationally-representative data sets, some which academicians are not permitted to use. I will also be appointed within a branch composed of researchers from all of public health's sub-fields. This will facilitate the completion of diverse research projects because people with a variety of skills and methodological backgrounds will be at my disposal. I will, of course, lose some autonomy because my research agenda will be prioritized vis-à-vis CDC's overarching needs. But, based upon what behavioral scientists from multiple Centers have told me, I will have some leeway when choosing the specific research papers that I write using CDC data. It is also encouraging to know that the work that I have done throughout my graduate training, including this dissertation project, is consistent with the type of work that CDC values and encourages.

Although I would like to continue research on bisexuality and health while at CDC, I want to expand my research agenda to incorporate other areas of men's health and sexual orientation. I have always had an interest in the relationship between masculinity and health. I am particularly interested in how hegemonic and subordinate masculinities influence non-heterosexual men to engage in risky sexual practices, like intentional unprotected sex with other men. However, I would also like to do some work on sexual health issues among non-heterosexual women. Time constraints and the desire to produce an indepth analysis of bisexual men's issues prevented me from examining women's health behaviors in this dissertation. The

literature on bisexual women would suggest that they are at elevated risk for many health problems, including chronic diseases, HIV, and other STIs. Yet, researchers have conducted far fewer health-related studies on bisexual women relative to those on bisexual men. I believe that my willingness to investigate other important gender- and sexuality-related issues will make it easy for me to work on the research teams to which my CDC superiors appoint me.

Upon completing the EIS fellowship, I plan to be a behavioral scientist with one of the Centers throughout the duration of my career. In addition to the opportunity to do research in areas for which I have considerable passion, CDC will allow me to have a hand in shaping policies and laws that affect sexual minorities in the United States. I look forward to working with people from diverse backgrounds who seek to improve the health of the United States' most vulnerable populations.

## REFERENCES

- Adimora, A. A., Schoenbach, V. J., Bonas, D. M., Martinson, F. E. A., Donaldson, K. H., & Stancil, T. R. (2002). Concurrent sexual partnerships among women in the United States. *Epidemiology, 13*, 320-327.
- Adimora, A. A., & Fullilove, R. E. (2006). Men who have sex with men and women: Pieces of the U.S. HIV epidemic puzzle. *Sexually Transmitted Diseases, 33*, 596-598.
- Adimora, A. A., Schoenbach, V. J., & Doherty, I. A. (2007). Concurrent sexual partnerships among men in the United States. *American Journal of Public Health, 97*, 2230-2237.
- Aggleton, P. (Ed.). (1996). *Bisexualities and AIDS: International perspectives*. Briston, PA: Taylor & Francis.
- Aggleton, P. (Ed.). (1999). *Men who sell sex: International perspectives on male prostitution and HIV/AIDS*. Philadelphia: Temple University Press.
- Agresti, A., & Finlay, B. (1997). *Statistical methods for the social sciences (2<sup>nd</sup> edition)*. Upper Saddle River, NJ: Prentice Hall.
- Agronick, G., O'Donnell, L., Stueve, A., San Doval, A., Duran, R., & Vargo, S. (2004). Sexual behaviors and risks among bisexually- and gay-identified young Latino men. *AIDS and Behavior, 8*, 185-197.
- Almaguer, T. (1991). Chicano men: A cartography of homosexual identity and behavior. *Differences, 3*, 75-100.
- Anderson, J. E., Wilson, R., Doll, L., Jones, T. S., & Barker, P. (1998). Condom use and HIV risk behaviors among U.S. adults: Data from a national survey. *Family Planning Perspectives, 31*, 24-28.
- Anderson, J. E., Chandra, A., & Mosher, W. D. (2005). HIV testing in the United States, 2002. *Advance Data, 363*, 1-32.
- Angelides, S. (2006). Historicizing (bi)sexuality: A rejoinder for gay/lesbian studies, feminism, and queer theory. *Journal of Homosexuality, 52*(1/2), 125-158.
- Aspinall, P. J., & Mitton, L. (2008). Operationalising 'sexual orientation' in routine data collection and equality monitoring in the UK. *Culture, Health & Sexuality, 10*, 57-72.
- Ballard, S. (2001, July 23). Why AIDS is rising in Black women. *Jet, 22-28*.
- Balsam, K. F., & Mohr, J. J. (2007). Adaptation to sexual orientation stigma: A comparison of bisexual and lesbian/gay adults. *Journal of Counseling Psychology, 54*, 306-319.

- Battle, J., & Crum, M. (2007). Black LGB health and well-being. In I. H. Meyer & M. E. Northridge (Eds.), *The health of sexual minorities: Public health perspectives on lesbian, gay, bisexual, and transgender populations* (pp. 320-353). New York: Springer.
- Belcher, L., Sternberg, M. R., Wolitski, R. J., Halkitis, P. N., Hoff, C., & Seropositive Urban Men's Study Team. (2005). Condom use and perceived risk of HIV transmission among sexually active HIV-positive men who have sex with men. *AIDS Education and Prevention, 17*, 79-89.
- Berg-Kelly, K. (2002). Adolescent homosexuality: We need to learn more about causes and consequences. *Acta Paediatrica, 92*, 141-144.
- Bergler, E. (1956). *Homosexuality: Disease or way of life?* New York: Hill and Wang.
- Bieber, I., Bieber, T. B., Dain, H. J., Dince, P. R., Drellich, M. G., Grand, H. G., et al. (1962). *Homosexuality: A psychoanalytic study*. New York: Basic Books.
- Bingham, T. A., Harawa, N. T., Johnson, D. F., Secura, G. M., MacKellar, D. A., & Valleroy, L. A. (2003). The effect of partner characteristics on HIV infection among African American men who have sex with men in the Young Men's Survey, Los Angeles, 1999–2000. *AIDS Education and Prevention, 15*, 39-52.
- Binson, D., Woods, W. J., Pollack, L. M., Paul, J. P., Stall, R., & Catania, J. A. (2001). Differential HIV risk in bathhouses and public cruising areas. *American Journal of Public Health, 91*, 1482-1486.
- Blumstein, P. W., & Schwartz, P. (1976). Bisexuality in men. *Journal of Contemporary Ethnography, 5*, 339-358.
- Blumstein, P. W., & Schwartz, P. (2000). Bisexuality: Some social psychological issues. In P. A. R. Rust, *Bisexuality in the United States: A social science reader* (pp. 339-351). New York: Columbia University Press.
- Boykin, K. (1996). *One more river to cross: Black and gay in America*. New York: Doubleday.
- Boykin, K. (2005). *Beyond the down low: Sex, lies, and denial in black America*. New York: Carroll & Graf.
- Braveman, P. (2006). Health disparities and health equity: Concepts and measurement. *Annual Review of Public Health, 27*, 167-194.
- Britton, T., Nordvik, M. K., & Liljeros, F. (2007). Modelling sexually transmitted infections: The effect of partnership activity and number of partners on  $R_0$ . *Theoretical Population Biology, 72*, 389-399.

- Brooks, R., Rotheram-Borus, M. J., Bing, E. G., Ayala, G., & Henry, C. L. (2003). HIV and AIDS among men of color who have sex with men and men of color who have sex with men and women: An epidemiological profile. *AIDS Education and Prevention, 15*(Suppl. A), 1-6.
- Brooks, R., Lee, S. J., Newman, P. A., & Leibowitz, A. A. (2008). Sexual risk behavior has decreased among men who have sex with men in Los Angeles but remains greater than that among heterosexual men and women. *AIDS Education and Prevention, 20*, 312-324.
- Campbell, C. A. (1995). Male gender roles and sexuality: Implications for women's AIDS risk and prevention. *Social Science & Medicine, 41*, 197-210.
- Carballo-Diéguez, A., Dolezal, C., Nieves-Rosa, L., Díaz, F., Decena, C., & Balan, I. (2004). Looking for a tall, dark, macho man...Sexual-role behaviour variations in Latino gay and bisexual men. *Culture, Health & Sexuality, 6*, 159-71.
- Carolina Population Center. (2008). Add health data. Retrieved January 15, 2009, from <http://www.cpc.unc.edu/projects/addhealth/data>
- Carrier, J. M. (1985). Mexican male bisexuality. *Journal of Homosexuality, 11*(1/2), 75-85.
- Carrier, J. M. (1995). *De los otros: Intimacy and homosexuality among Mexican men*. New York: Columbia University Press.
- Carrion, V. G., & Lock, J. (1997). The coming out process: Developmental stages for sexual minority youth. *Clinical Child Psychology and Psychiatry, 2*, 369-377.
- Cass, V. C. (1979). Homosexual identity formation: A theoretical model. *Journal of Homosexuality, 4*, 219-235.
- Catania, J. A., Coates, T. J., Stall, R., Turner, H., Peterson, J., Hearst, N., et al. (1992). Prevalence of AIDS-related risk factors and condom use in the United States. *Science, 258*, 1101-1106.
- Catania, J. A., Osmond, D., Stall, R. D., Pollack, L. M., Paul, J., P., Blower, S., et al. (2001). The continuing HIV epidemic among men who have sex with men. *American Journal of Public Health, 91*, 907-914.
- Centers for Disease Control and Prevention. (2000). Adoption of protective behaviors among persons with recent HIV infection and diagnosis—Alabama, New Jersey, and Tennessee, 1997-1998. *Morbidity and Mortality Weekly Report, 49*(23), 512-515.
- Centers for Disease Control and Prevention. (2001). HIV testing among racial/ethnic minorities—United States, 1999. *Morbidity and Mortality Weekly Reports, 50*(47), 1054-1058.

- Centers for Disease Control and Prevention. (2003). Advancing HIV prevention: New strategies for a changing epidemic—United States, 2003. *Morbidity and Mortality Weekly Report*, 52(15), 329-332.
- Centers for Disease Control and Prevention. (2005a). HIV prevalence, unrecognized infection, and HIV testing among men who have sex with men—five U.S. cities, June 2004-April 2005. *Morbidity and Mortality Weekly Reports*, 54(24), 597-601.
- Centers for Disease Control and Prevention. (2005b). STD communications database interviews with non-gay identified men who have sex with men (NGI MSM): Final report. Retrieved June 30, 2008, from <http://www.cdc.gov/std/HealthComm/NGI-MSMCompleteReport.pdf>
- Centers for Disease Control and Prevention. (2006a). Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health care settings. *Morbidity and Mortality Weekly Reports*, 55(RR-14), 1-16.
- Centers for Disease Control and Prevention. (2006b). Youth Risk Behavior Surveillance—United States, 2005. *Morbidity and Mortality Weekly Report*, 55(SS-5):1-112.
- Centers for Disease Control and Prevention. (2008a). HIV/AIDS surveillance report: Cases of HIV infection and AIDS in the United States and dependent areas, 2006. Retrieved on September 1, 2008 from <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/2006report/pdf/2006SurveillanceReport.pdf>.
- Centers for Disease Control and Prevention. (2008b). 2006 Disease Profile, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Retrieved on January 21, 2009 from [http://www.cdc.gov/nchhstp/Publications/docs/2006\\_Disease\\_Profile\\_508\\_FINAL.pdf](http://www.cdc.gov/nchhstp/Publications/docs/2006_Disease_Profile_508_FINAL.pdf)
- Centers for Disease Control and Prevention. (2009). Male latex condoms and sexually transmitted diseases. Retrieved on February 01, 2009 from <http://www.cdc.gov/condomeffectiveness/latex.htm>
- Chesney, M. A., & Smith, A. W. (1999). Critical delays in HIV testing and care. *American Behavioral Scientist*, 42, 1162-1174.
- Chu, S. Y., Peterman, T. A., Doll, L. S., Buehler, J. W., & Curran, J. W. (1992). AIDS in bisexual men in the United States: Epidemiology and transmission to women. *American Journal of Public Health*, 82, 220-224.
- Coates, T. J., Richter, L., & Cáceres, C. F. (2008). Behavioral strategies to reduce HIV transmission: How to make them work better. *The Lancet*, 372, 669-684.
- Coleman, E. (1982). Developmental stages of the coming out process. *American Behavioral Scientist*, 25, 469-482.

- Colfax, G. N., Buchbinder, S. P., Cornelisse, P. G. A., Vittinghoff, E., Mayer, K., & Celum, C. (2002). Sexual risk behaviors and implications for secondary HIV transmission during and after HIV seroconversion. *AIDS, 16*, 1529-1535.
- Collins, P. H. (1998). Intersections of race, class, gender, and nation: Some implications for black family studies. *Journal of Comparative Family Studies, 29*, 27-36.
- Collins, P. H. (2005). *Black sexual politics: African Americans, gender, and the new racism*. New York: Routledge.
- Connell, R. W. (1995). *Masculinities*. Berkeley, CA: University of California Press.
- Cooper, M. L., Agocha, V. B., & Powers, A. M. (1999). Motivations for condom use: Do pregnancy prevention goals undermine disease prevention among heterosexual young adults? *Health Psychology, 18*, 464-474.
- Dean, L., Meyer, I. H., Robinson, K., Sell, R. L., Sember, R., Silenzio, V. M. B., et al. (2000). Lesbian, gay, bisexual, and transgender health: Findings and concerns. *Journal of the Gay and Lesbian Medical Association, 4*, 102-151.
- Denizet-Lewis, B. (2003, August 3). Double lives on the down low. *New York Times*. Retrieved August 21, 2008, from <http://query.nytimes.com/gst/fullpage.html?res=9F0CE0D61E3FF930A3575BC0A9659C8B63&sec=health&spon=&pagewanted=1>
- Diamond, L. M. (2000). Sexual identity, attractions, and behavior among young sexual-minority women over a 2-year period. *Developmental Psychology, 36*, 241-250.
- Díaz, R. M., Ayala, G., Bein, E., Henne, J., & Marin, B. V. (2001). The impact of homophobia, poverty, and racism on the mental health of gay and bisexual Latino men: Findings from 3 US cities. *American Journal of Public Health, 91*, 927-932.
- DiClemente, R. J., Crosby, R. A., Wingood, G. M., Lang, D. L., Salazar, L. F., & Broadwell, S. D. (2005). *International Journal of STD & AIDS, 16*, 816-818.
- Do, T. D., Hudes, E. S., Proctor, K., Han, C. S., & Choi, K. H. (2006). HIV testing trends and correlates among young Asian and Pacific Islander men who have sex with men in two U.S. cities. *AIDS Education and Prevention, 18*, 44-55.
- Dodge, B., Jeffries, W. L. IV, & Sandfort, T. G. M. (2008). Beyond the down low: Sexual risk, protection, and disclosure among at-risk black men who have sex with both men and women (MSMW). *Archives of Sexual Behavior, 37*, 683-696.
- Dolcini, M. M., Catania, J. A., Coates, T. J., Stall, R., Hudes, E. S., Gagnon, J. H., et al. (1993). Demographic characteristics of heterosexuals with multiple partners: The National AIDS Behavioral Surveys. *Family Planning Perspectives, 25*, 208-214.

- Doll, L. S., Petersen, L. R., White, C. R., Johnson, E. S., Ward, J. W., & the Blood Donor Study Group. (1992). Homosexually and nonhomosexually identified men who have sex with men: A behavioral comparison. *Journal of Sex Research*, 29, 1-14.
- Doll, L. S., & Beeker, C. (1996). Male bisexual behavior and HIV risk in the United States: Synthesis of research with implications for behavioral interventions. *AIDS Education and Prevention*, 8, 205-225.
- Doll, L. S., Myers, T., Kennedy, M., & Allman, D. (1997). Bisexuality and HIV risk: Experiences in Canada and the United States. *Annual Review of Sex Research*, 8, 102-147.
- Downs, A. M., & De Vincenzi, I. (1996). Probability of heterosexual transmission of HIV: Relationship to the number of unprotected sexual contacts. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*, 11, 388-395.
- Dowsett, G. W. (1990). Reaching men who have sex with men in Australia: An overview of AIDS education, community intervention and community attachment strategies. *Australian Journal of Social Issues*, 25, 186-198.
- Dworkin, S. H. (2001). Treating the bisexual client. *Journal of Clinical Psychology*, 57, 671-680.
- DuBois, W. E. B. (1899). *The Philadelphia negro: A social study*. Philadelphia: University of Pennsylvania Press.
- Eadie, J. (1999). Extracts from activating sexuality: Towards a bi/sexual politics. In M. Storr (Ed.), *Bisexuality: A critical reader* (pp. 119-137). New York: Routledge.
- Edwards, S., & Carne, C. (1998). Oral sex and transmission of non-viral STIs. *Sexually Transmitted Infections*, 74, 95-100.
- Eisenberg, B. (1989). The number of partners and the probability of HIV infection. *Statistics in Medicine*, 8, 83-92.
- Ekstrand, M. L., Coates, T. J., Guydish, J. R., Hauck, W. W., Collette, L., & Hulley, S. B. (1994). Are bisexually identified men in San Francisco a common vector for spreading HIV infection to women? *American Journal of Public Health*, 84, 6915-6919.
- Eliason, M. J. (1997). The prevalence and nature of biphobia in heterosexual undergraduate students. *Archives of Sexual Behavior*, 26, 317-326.
- Engels, F. (1887). *The condition of the working class in England in 1844*. New York: J. W. Lovell Company.
- Epstein, S. (2007). *Inclusion: The politics of difference in medical research*. Chicago: University of Chicago Press.

- Evans, B. A., Bond, R. A., & MacRae, K. D. (1998). Heterosexual behaviour, risk factors and sexually transmitted infections among selfclassified homosexual and bisexual men. *International Journal of STD & AIDS*, 9, 129-133.
- Ewbank, D. C. (2008). Biomarkers in social science research on health and aging: A review of theory and practice. In M. Weinstein, J. W. Vaupel, & K. W. Wachter, (Eds.), *Biosocial surveys* (pp. 156-172). Washington, DC: National Academies.
- Feinleib, J. A., & Michael, R. T. (2001). Reported change in sexual behavior in response to AIDS in the United States. In E. O. Laumann & R. T. Michael (Eds.), *Sex, love, and health in America: Private choices and public policies* (pp. 302-326). Chicago: University of Chicago Press.
- Forbes, A., & Wainwright, S. P. (2001). On the methodological, theoretical and philosophical context of health inequalities research: A critique. *Social Science & Medicine*, 53, 801-816.
- Ford, C. L. (2006). Usage of “MSM” and “WSW” and the broader context of public health research. *American Journal of Public Health*, 96, 9.
- Foucault, Michel. (1980). *The History of Sexuality, Volume One: An Introduction*. Translated by Robert Hurley. New York: Vintage Books.
- Fox, R. C. (1995). Bisexual identities. In A. R. D'Augelli and C. J. Patterson (Eds.), *Lesbian, gay, and bisexual identities over the lifespan: Psychological perspectives* (pp. 48-86). New York: Oxford University Press.
- Gammon, M. A., & Isgro, K. L. (2006). Troubling the cannon: Bisexuality and queer theory. *Journal of Homosexuality*, 52(1/2), 159-184.
- Gamson, J. (1995). Must identity movements self-destruct? A queer dilemma. *Social Problems*, 42, 390-407.
- Gamson, J., & Moon, D. (2004). The sociology of sexualities: Queer and beyond. *Annual Review of Sociology*, 30, 47-64.
- Gates, G. J., & Ost, J. (2004). *The gay and lesbian atlas*. Washington, DC: Urban Institute Press.
- Gibson, J. L., & Tedin, K. L. (1988). The etiology of intolerance of homosexual politics. *Social Science Quarterly*, 69, 587-604.
- Girman, C. (2004). *Mucho macho: Seduction, desire, and the homoerotic lives of Latin men*. Binghamton, NY: Haworth Press.
- Goldbaum, G., Perdue, T., Wolitski, R. J., Rietmeijer, C., Hedrich, A., Wood, R., et al. (1998). Differences in risk behavior and sources of AIDS information among gay, bisexual, and straight-identified men who have sex with men. *AIDS and Behavior*, 2, 13-21.

- Goodenow, C., Netherland, J., & Szalacha, L. (2002). AIDS-related risk among adolescent males who have sex with males, females, or both: Evidence from a state-wide survey. *American Journal of Public Health, 92*, 203-210.
- Greco, M., Silva, A. P., Merchán-Hamann, E., Jeronymo, M. L., Andrade, J. C., & Greco, D. B. (2007). Differences in HIV-risk behavior of bisexual men in their relationships with men and women. *Revista de Saúde Pública, 41*(Suppl. 2), 1-8.
- Green, A. I. (2007). Queer theory and sociology: Locating the subject and the self in sexuality studies. *Sociological Theory, 25*, 26-45.
- Greene, K., & Banerjee, S. C. (2006). Disease-related stigma: Comparing predictors of AIDS and cancer stigma. *Journal of Homosexuality, 50*(4), 185-209.
- Groves, R. M., Benson, G., Mosher, W. D., Rosenbaum, J., Granda, P., Axinn, W., et al. (2005). Plan and operation of Cycle 6 of the National Survey of Family Growth. *Vital and Health Statistics, 1*(42):1-67.
- Gullette, D. L., & Turner, J. G. (2003). Pros and cons of condom use among gay and bisexual men as explored via the Internet. *Journal of Community Health Nursing, 20*, 161-177.
- Gullette, D. L., & Turner, J. G. (2004). Stages of change and condom use among an Internet sample of gay and bisexual men. *Journal of the Association of Nurses in AIDS Care, 15*(2), 27-37.
- Hall, D. E., & Pramaggiore, M. (Eds.). (1996). *RePresenting bisexualities: Subjects and cultures of fluid desire*. New York: New York University Press.
- Hall, H. I., Song, R., Rhodes, P., Prejean, J., An, Q., Lee, L. M., et al. (2008). Estimation of HIV incidence in the United States. *Journal of the American Medical Association, 300*, 520-529.
- Han, C. (2007). They don't want to cruise your type: Gay men of color and the racial politics of exclusion. *Social Identities, 13*, 51-67.
- Harawa, N. T., Greenland, S., Bingham, T. A., Johnson, D. F., Cochran, S. D., Cunningham, W. E., et al. (2004). Associations of race/ethnicity with HIV prevalence and HIV-related behaviors among young men who have sex with men in 7 urban centers in the United States. *Journal of Acquired Immune Deficiency Syndromes, 35*, 526-536.
- Hart, G. J., Williamson, L. M., Flowers, P., Frankis, J. S., & Der, G. J. (2002). Gay men's HIV testing behaviour in Scotland. *AIDS Care, 14*, 665-674.
- Hayward, M. D., Miles, T. P., Crimmins, E. M., & Yang, Y. (2000). The significance of socioeconomic status in explaining the racial gap in chronic health conditions. *American Sociological Review, 65*, 910-930.

- Heckman, T. G., Kelly, J. A., Sikkema, K. J., Roffman, R. R., Solomon, L. J., Winett, R. A., et al. (1995). Differences in HIV risk characteristics between bisexual and exclusively gay men. *AIDS Education and Prevention*, 7, 504-512.
- Herbst, J. H., Beeker, C., Mathew, A., McNally, T., Passin, W. F., Kay, L. S., et al. (2007). The effectiveness of individual-, group-, and community-level HIV behavioral risk-reduction interventions for adult men who have sex with men: A systematic review. *American Journal of Preventive Medicine*, 32(Suppl. 4), 38-67.
- Herd, G. (2001). Social change, sexual diversity, and tolerance for bisexuality in the United States. In A. R. D'Augelli & C. J. Patterson, *Lesbian, gay, and bisexual identities and youth: Psychological perspectives* (pp. 267-283). New York: Oxford University Press.
- Herek, G. M., Cogan, J. C., Gillis, J. R., & Glunt, E. K. (1998). Correlates of internalized homophobia in a community sample of lesbians and gay men. *Journal of the Gay and Lesbian Medical Association*, 2, 17-25.
- Herek, G. M., & Capitano, J. P. (1999). AIDS stigma and sexual prejudice. *American Behavioral Scientist*, 42, 1130-1147.
- Herek, G. M. (2002). Heterosexuals' attitudes toward bisexual men and women in the United States. *Journal of Sex Research*, 39, 264-274.
- Hightow, L. B., Leone, P. A., MacDonald, P. D. M., McCoy, S. I., Sampson, L. A., & Kaplan, A. H. (2006). Men who have sex with men and women: A unique risk group for HIV transmission on North Carolina college campuses. *Sexually Transmitted Diseases*, 33, 585-593.
- Horowitz, S. M., Laflin, M. T., & Weis, D. L. (2001). Differences between sexual orientation behavior groups and social background, quality of life, and health behaviors. *Journal of Sex Research*, 38, 205-218.
- House, J. S., & Williams, D. R. (2000). Understanding and reducing socioeconomic and racial/ethnic disparities in health. In B. D. Smedley & S. L. Syme (Eds.), *Promoting health: Intervention strategies from social and behavioral research* (pp. 37-80). Washington, DC: National Academy.
- Huebner, D. M., Davis, M. C., Nemeroff, C. J., & Aiken, L. S. (2002). The impact of internalized homophobia on HIV preventive interventions. *American Journal of Community Psychology*, 30, 327-348.
- Hutchins, L. (1996). Bisexuality: Politics and community. In B. A. Firestein (Ed.), *Bisexuality: Psychology and politics of an invisible minority* (pp. 240-259). Thousand Oaks, CA: Sage.
- Israel, T., & Mohr, J. J. (2004). Attitudes toward bisexual women and men: Current research, future directions. *Journal of Bisexuality*, 4(1/2), 119-134.

- Jeffries, W. L. IV, & Dodge, B. (2007). Male bisexuality and condom use at last sexual encounter: results from a national survey. *Journal of Sex Research, 44*, 278-289.
- Jeffries, W. L. IV. (in press a). Sociodemographic, sexual, and HIV and other sexually transmitted disease risk profiles of non-gay-identified men who have sex with men. *American Journal of Public Health*.
- Jeffries, W. L. IV. (in press b). A comparative analysis of homosexual behaviors, sex role preferences, and anal sex proclivities in Latino and non-Latino men. *Archives of Sexual Behavior*.
- Jin, F. Y., Prestage, G., Law, M. G., Kippax, S., Van de Ven, P., & Rawsthorne, P. (2002). Predictors of recent HIV testing in homosexual men in Australia. *HIV Medicine, 3*, 271-276.
- Jones, K. T., Johnson, W. D., Wheeler, D. P., Gray, P., Foust, E., Gaiter, J., et al. (2008). Nonsupportive peer norms and incarceration as HIV risk correlates for young black men who have sex with men. *AIDS and Behavior, 12*, 41-50.
- Jorm, A. F., Dear, K. B. G., Rodgers, B., & Christensen, H. (2003). Cohort differences in sexual orientation: Results from a large age-stratified population sample. *Gerontology, 49*, 392-395.
- Kahn, J. G., Gurvey, J., Pollack, L. M., Binson, D., & Catania, J. A. (1997). How many HIV infections cross the bisexual bridge? An estimate from the United States. *AIDS, 11*, 1031-1037.
- Kalichman, S. C., Roffman, R. A., Picciano, J. F., & Bolan, M. (1998). Risk for HIV infection among bisexual men seeking HIV-prevention services and risks posed to their female partners. *Health Psychology, 17*, 320-327.
- Karlsson, R., Jonsson, M., Edlund, K., Evander, M., Gustavsson, A., Bodén, E., et al. (1995). Lifetime number of partners as the only independent risk factor for human papillomavirus infection: A population-based study. *Sexually Transmitted Diseases, 22*, 119-127.
- Kellerman, S. E., Lehman, J. S., Lansky, A., Stevens, M. R., Hecht, F., Bindman, A. B., et al. (2002). HIV testing within at-risk populations in the United States and the reasons for seeking or avoiding HIV testing. *Journal of Acquired Immune Deficiency Syndromes, 31*, 202-210.
- Kennedy, M., & Doll, L. S. (2001). Male bisexuality and HIV risk. *Journal of Bisexuality, 1*(2), 111-135.
- King, J. L. (2004). *On the down low: A journey into the lives of "straight" Black men who sleep with men*. New York: Broadway Books.
- King, J. L., & Carreras, C. (2005). *Coming up from the down low: The journey to acceptance, healing, and honest love*. New York: Crown.

- Kinsey, A. C., Pomeroy, W. B., & Martin, C. E. (1948). *Sexual behavior in the human male*. Philadelphia: W. B. Saunders Company.
- Klein, F. (1993). *The bisexual option (2nd edition)*. Binghamton, NY: Haworth.
- Kormanik, M. B. (2009). Sexuality as a diversity factor: An examination of awareness. *Advances in Developing Human Resources, 11*, 24-36.
- Kral, A. H., Lorvick, J., Ciccarone, D., Wenger, L., Gee, L., Martinez, A., et al. (2005). HIV prevalence and risk behaviors among men who have sex with men and inject drugs in San Francisco. *Journal of Urban Health, 82*(Suppl. 1), i43-i50.
- Krieger, N. (2000). Discrimination and health. In L. F. Berkman & I. Kawachi (Eds.), *Social epidemiology* (pp. 36-75). New York: Oxford University Press.
- Lancaster, R. N. (1988). Subject honor and object shame: The construction of male homosexuality and stigma in Nicaragua. *Ethnology, 27*, 111-125.
- Lancaster, R. N. (1992). *Life is hard: Machismo, danger, and the intimacy of power in Nicaragua*. Los Angeles: University of California Press.
- Laumann, E. O., Gagnon, J. H., Michael, R. T., & Michaels, S. (1994). *The social organization of sexuality: Sexual practices in the United States*. Chicago: University of Chicago Press.
- Laumann, E. O., & Youm, Y. (2001). Racial/ethnic group differences in the prevalence of sexually transmitted diseases in the United States: A network explanation. In E. O. Laumann & R. T. Michael (Eds.), *Sex, love, and health in America: Private choices and public policies* (pp. 327-351). Chicago: University of Chicago Press.
- Leaity, S., Sherr, L., Wells, H., Evans, A., Miller, R., Johnson, M., et al. (2000). Repeat HIV testing: High-risk behaviour or risk reduction strategy? *AIDS, 14*, 547-552.
- Lepkowski, J. M., Mosher, W. D., Davis, K. E., Groves, R. M., van Hoewyk, J., & Willem, J. (2006). National Survey of Family Growth, Cycle 6: Sample design, weighting, imputation, and variance estimation. *Vital and Health Statistics, 142*, 1-82.
- Lever, J., Kanouse, D. E., Rogers, W. H., Carson, S., & Hertz, R. (1992). Behavior patterns and sexual identity of bisexual males. *Journal of Sex Research, 29*, 141-167.
- Lewis, G. B. (2003). Black-white differences in attitudes toward homosexuality and gay rights. *Public Opinion Quarterly, 67*, 59-78.
- Liljeros, F., Edling, C. R., Amaral, L. A., Stanley, H. E., & Aberg, Y. (2001). The web of human sexual contacts. *Nature, 411*, 907-908.
- Lindau, S. T., Schumm, L. P., Laumann, E. O., Levinson, W., O'Muircheartaigh, C. A., & Waite, L. J. (2007). A study of sexuality and health among older adults in the United States. *New England Journal of Medicine, 357*, 762-74.

- Lumsden, I. (1996). *Machos, maricones, and gays: Cuba and homosexuality*. Philadelphia: Temple University Press.
- Lynch, J., & Kaplan, G. (2000). Socioeconomic position. In L. F. Berkman & I. Kawachi (Eds.), *Social epidemiology* (pp. 13-35). New York: Oxford University Press.
- MacKellar, D. A., Valleroy, L. A., Secura, G. M., Behel, S., Bingham, T., Celentano, D. D., et al. (2006). Unrecognized HIV infection, risk behaviors, and perceptions of risk among young men who have sex with men: Opportunities for advancing HIV prevention in the third decade of HIV/AIDS. *Journal of Acquired Immune Deficiency Syndromes*, 38, 603-614.
- MacKellar, D. A., Valleroy, L. A., Secura, G. M., Behel, S., Bingham, T., Celentano, D. D., et al. (2006). Recent HIV testing among young men who have sex with men: Correlates, contexts, and HIV seroconversion. *Sexually Transmitted Diseases*, 33, 183-192.
- Maguen, S., Armistead, L. P., & Kalichman, S. (2000). Predictors of HIV antibody testing among gay, lesbian, and bisexual youth. *Journal of Adolescent Health*, 26, 252-257.
- Main, D. S., Iverson, D. C., & McGloin, J. (1994). Comparison of HIV-risk behaviors and demographics of adolescents tested or not tested for HIV infection. *Public Health Reports*, 109, 699-702.
- Malebranche, D. J. (2008). Bisexually active black men in the United States and HIV: Acknowledging more than the “down low.” *Archives of Sexual Behavior*, 37, 810-816.
- Marks, G., Crepaz, N., Senterfitt, J. W., & Janssen, R. S. (2005). Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: Implications for HIV prevention programs. *Journal of Acquired Immune Deficiency Syndromes*, 39, 446-453.
- Marmot, M. (2000). Multilevel approaches to understanding social determinants. In L. F. Berkman & I. Kawachi (Eds.), *Social epidemiology* (pp. 349-367). New York: Oxford University Press.
- Mays, V. M., Cochran, S. D., & Zamudio, A. (2004). HIV prevention research: Are we meeting the needs of African American men who have sex with men? *Journal of Black Psychology*, 30(1), 78-105.
- McKirnan, D. J., Stokes, J. P., Doll, L. S., & Burzette, R. G. (1995). Bisexually active men: Social characteristics and sexual behavior. *Journal of Sex Research*, 32, 65-76.
- McLean, K. (2007). Hiding in the closet? Bisexuals, coming out and the disclosure imperative. *Journal of Sociology*, 43, 151-166.
- Meyer, I. H. (2001). Why lesbian, gay, bisexual, and transgender public health? *American Journal of Public Health*, 91, 856-859.

- Millett, G. A., Malebranche, D. J., Mason, B., & Spikes, P. (2005). Focusing “down low”: Bisexual black men, HIV risk and heterosexual transmission. *Journal of the National Medical Association, 97*, 52S-59S.
- Millett, G. A., Peterson, J. L., Wolitski, R. J., & Stall, R. (2006). Greater risk for HIV infection of black men who have sex with men: A critical literature review. *American Journal of Public Health, 96*, 1007-1019.
- Millett, G. A., Flores, S. A., Peterson, J. L., & Bakeman, R. (2007). Explaining disparities in HIV infection among black and white men who have sex with men: A meta-analysis of HIV risk behaviors. *AIDS, 21*, 2083-2091.
- Mills, T. C., Stall, R., Pollack, L., Paul, J. P., Binson, D., Canchola, J., & Catania, J. A. (2001). Health-related characteristics of men who have sex with men: A comparison of those living in “gay ghettos” with those living elsewhere. *American Journal of Public Health, 91*, 980-983.
- Montgomery, J. P., Mokotoff, E. D., Gentry, A. C., & Blair, J. M. (2003). The extent of bisexual behaviour in HIV-infected men and implications for transmission to their female partners. *AIDS Care, 15*, 829-837.
- Moss, A. R., Osmond, D., Bacchetti, P., Chermann, J., Barre-Sinoussi, F., & Carlson, J. (1987). Risk factors for AIDS and HIV seropositivity in homosexual men. *American Journal of Epidemiology, 125*, 1035-1047.
- Mulick, P. S., & Wright, L. W. Jr. (2001). Examining the existence of biphobia in the heterosexual and homosexual populations. *Journal of Bisexuality, 2*(4), 45-64.
- Muñoz-Laboy, M. A. (2004). Beyond ‘MSM’: Sexual desire among bisexually-active Latino men in New York City. *Sexualities, 7*, 55-80.
- Muñoz-Laboy, M. A., & Dodge, B. (2005). Bisexual practices: Patterns, meanings, and implications for HIV/STI prevention among bisexually-active Latino men and their partners. *Journal of Bisexuality, 5*(1), 79-101.
- Muñoz-Laboy, M. A., & Dodge, B. (2007). Bisexual Latino men and HIV and sexually transmitted infections risk: An exploratory analysis. *American Journal of Public Health, 97*, 1102-1106.
- Muñoz-Laboy, M. A. (2008). Familism and sexual regulation among bisexual Latino men. *Archives of Sexual Behavior, 37*, 773-782.
- Myers, T., Orr, K. W., Locker, D., & Jackson, E. A. (1993). Factors affecting gay and bisexual men’s decisions and intentions to seek HIV testing. *American Journal of Public Health, 83*, 701-704.
- Myers, T., Godin, G., Lambert, J., Calzavara, L., & Locker, D. (1996). Sexual risk and HIV-testing behaviour by gay and bisexual men in Canada. *AIDS Care, 8*, 297-310.

- National Center for Chronic Disease Prevention and Health Promotion. (2008). BRFSS annual survey data. Retrieved January 15, 2009, from [http://www.cdc.gov/BRFSS/technical\\_infodata/surveydata.htm](http://www.cdc.gov/BRFSS/technical_infodata/surveydata.htm)
- National Center for Health Statistics. (2005). National Survey of Family Growth, Cycle 6: 2002: ACASI file user's guide and documentation. Hyattsville, MD: United States Department of Health and Human Services.
- National Center for Health Statistics. (2009a). National Health and Nutrition Examination Survey: Data sets and related documentation. Retrieved January 15, 2009, from <http://www.cdc.gov/nchs/about/major/nhanes/datalink.htm>
- National Center for Health Statistics. (2009b). Questionnaires, datasets, and related documentation 1997-2008: 2008 NHIS. Retrieved January 15, 2009, from [ftp://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Survey\\_Questionnaires/NHIS/2008/english/](ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Survey_Questionnaires/NHIS/2008/english/)
- Neumann, M. S., Johnson, W. D., Semaan, S., Flores, S. A., Peersman, G., Hedges, L. V., et al. (2002). Review and meta-analysis of HIV prevention intervention research for heterosexual adult populations in the United States. *Journal of Acquired Immune Deficiency Syndromes*, *30*, S106-S117.
- Ochs, R. (1996). Biphobia: It goes more than two ways. In B. A. Firestein (Ed.), *Bisexuality: The psychology and politics of an invisible minority* (pp. 217-239). Thousand Oaks, CA: Sage.
- Office of the Surgeon General. (2001). The surgeon general's call to action to promote sexual health and responsible sexual behavior, 2001. Rockville, MD: Office of the Surgeon General.
- O'Leary, A., & Jones, K. T. (2006). Bisexual men and heterosexual women: How big is the bridge? How can we know? *Sexually Transmitted Diseases*, *33*, 594-595.
- Operario, D., Burton, J., Underhill, K., & Sevelius, J. (2008). Men who have sex with transgender women: Challenges to category-based HIV prevention. *AIDS and Behavior*, *12*, 18-26.
- Padilla, M. B., del Aguila, E. V., & Parker, R. G. (2007). Globalization, structural violence, and LGBT health: A cross-cultural perspective. In I. H. Meyer & M. E. Northridge (Eds.), *The health of sexual minorities: Public health perspectives on lesbian, gay, bisexual, and transgender populations* (pp. 209-241). New York: Springer.
- Page-Shafer, K., Veugelers, P. J., Moss, A. R., Strathdee, S., Kaldor, J. M., van Griensven, G. J. P. (1997). Sexual risk behavior and risk factors for HIV-1 seroconversion in homosexual men participating in the tricontinental seroconverter study, 1982-1994. *American Journal of Epidemiology*, *146*, 531-542.
- Page-Shafer, K., Shiboski, C. H., Osmond, D. H., Dilley, J., McFarland, W., Shiboski, S. C., et al. (2002). Risk of HIV infection attributable to oral sex among men who have sex with men and in the population of men who have sex with men. *AIDS*, *16*, 2350-2352.

- Parker, B. A., Adams, H. L., & Phillips, L. D. (2007). Decentering gender: Bisexual identity as an expression of a non-dichotomous worldview. *Identity: An International Journal of Theory and Research*, 7, 205-224.
- Parker, R. G. (1991). *Bodies, pleasures, and passions: Sexual culture in contemporary Brazil*. Boston: Beacon Press.
- Parker, R. G. (1999). *Beneath the equator: Cultures of desire, male homosexuality, and emerging gay communities in Brazil*. New York: Routledge.
- Parks, C. W. (2001). African-American same-gender-loving youths and families in urban schools. *Journal of Gay & Lesbian Social Services*, 13(3), 41-56.
- Pathela, P., Hajat, A., Schillinger, J., Blank, S., Sell, R., & Mostashari, F. (2006). Discordance between sexual behavior and self-reported sexual identity: A population-based survey of New York City men. *Archives of Internal Medicine*, 145, 416-425.
- Paul, J. P. (2000). Bisexuality: Reassessing our paradigms of sexuality. In P. C. R. Rust (Ed.), *Bisexuality in the United States: A social science reader* (pp. 11-23). New York: Columbia University Press.
- Prabhu, R., Owen, C. L., Folger, K., & McFarland, W. (2004). The bisexual bridge revisited: Sexual risk behavior among men who have sex with men and women, San Francisco, 1998-2003. *AIDS*, 18, 1604-1606.
- Preston, D. B., Forti, E. M., Kassab, C., & Koch, P. B. (2000). Personal and social determinants of rural nurses' willingness to care for persons with AIDS. *Research in Nursing and Health*, 23, 67-78.
- Preston, D. B., D'Augelli, A. R., Kassab, C. D., & Starks, M. T. (2007). The relationship of stigma to the sexual risk behavior of rural men who have sex with men. *AIDS Education and Prevention*, 19, 218-230.
- Relf, M. V., Huang, B., Campbell, J., & Catania, J. (2004). Gay identity, interpersonal violence, and HIV risk behaviors: An empirical test of theoretical relationships among a probability-based sample of urban men who have sex with men. *Journal of the Association of Nurses in AIDS Care*, 15(2), 14-26.
- Renn, K. A., & Bilodeau, B. (2005). Queer student leaders: An exploratory case study of identity development and LGBT student involvement at a Midwestern research university. *Journal of Gay and Lesbian Issues in Education*, 2(4), 49-71.
- Rieger, G., Chivers, M. L., & Bailey, J. M. (2005). Sexual arousal patterns of bisexual men. *Psychological Science*, 16, 579-584.

- Rietmeijer, C. A., Wolitski, R. J., Fishbein, M., Corby, N., Cohn, D. (1998). Sex hustling, injection drug use, and non-gay identification by men who have sex with men: Associations with high-risk sexual behaviors and condom use. *Sexually Transmitted Diseases*, 25, 353-360.
- Robin, L., Brener, N. D., Donahue, S. F., Hack, T., Hale, K., & Goodenow, C. (2002). Associations between health risk behaviors and opposite-, same-, and both-sex sexual partners in representative samples of Vermont and Massachusetts high school students. *Archives of Pediatrics and Adolescent Medicine*, 156, 349-355.
- Rosenberg, M. D., Gurvey, J. E., Adler, N., Dunlop, M., & Ellen, J. M. (1999). Concurrent sex partners and risk for sexually transmitted diseases among adolescents. *Sexually Transmitted Diseases*, 26, 208-212.
- Rotheram-Borus, M. J., Gillis, J. R., Reid, H. M., Fernandez, I. F., & Gwadz, M. A. (1997). HIV testing, behaviors, and knowledge among adolescents at high-risk. *Journal of Adolescent Health*, 20, 216-225.
- Ruitenbeek, H. M. (Ed.). (1973). *Homosexuality: A changing picture*. London: Souvenir.
- Rust, P. C. R. (1992). The politics of sexual identity: Sexual attraction and behavior among lesbian and bisexual women. *Social Problems*, 39, 366-386.
- Rust, P. C. R. (1993). Neutralizing the political threat of the marginal woman: Lesbians' beliefs about bisexual women. *Journal of Sex Research*, 30, 214-228.
- Rust, P. C. R. (1996). Sexual identity and bisexual identities: The struggle for self-description in a changing sexual landscape. In B. Beemyn & M. Eliason (Eds.), *Queer Studies: A lesbian, gay, bisexual & transgender anthology* (pp. 64-86). New York: New York University Press.
- Rust, P. C. R. (2000a). Alternatives to binary sexuality: Modeling bisexuality. In P. C. R. Rust (Ed.), *Bisexuality in the United States: A social science reader* (pp. 33-54). New York: Columbia University Press.
- Rust, P. C. R. (2000b). Bisexuality in HIV Research. In P. C. R. Rust (Ed.), *Bisexuality in the United States: A social science reader* (pp. 355-399). New York: Columbia University Press.
- Sandfort, T. G. M., Orr, M., Hirsch, J. S., & Santelli, J. (2008). Long-term health correlates of timing of sexual debut: Results from a national US study. *American Journal of Public Health*, 98, 155-161.
- Santelli, J. S., Brener, N. D., Lowry, R., Bhatt, A., & Zabin, L. S. (1998). Multiple sex partners among U.S. adolescents and young adults. *Family Planning Perspectives*, 30, 271-275.
- SAS Institute, Inc. (2004). *SAS/STAT® 9.1 user's guide*. Cary, NC: SAS Institute, Inc.

- Schwarcz, S., Scheer, S., McFarland, W., Katz, M., Valleroy, L. A., Chen, S., et al. (2007). Prevalence of HIV infection and predictors of high-transmission sexual risk behaviors among men who have sex with men. *American Journal of Public Health, 97*, 1067-1075.
- Sears, J. T. (1992). Educators, homosexuality, and homosexual students: Are personal feelings related to professional beliefs? *Journal of Homosexuality, 22*(3-4), 29-79.
- Seidman, S. (1994). Queer-ing sociology, sociologizing queer theory: An introduction. *Sociological Theory, 12*, 166-177.
- Seidman, S. (2002). *Beyond the closet: The transformation of gay and lesbian life*. New York: Routledge.
- Sell, R. L. (2007). Defining and measuring sexual orientation for research. In I. H. Meyer & M. E. Northridge (Eds.), *The health of sexual minorities: Public health perspectives on lesbian, gay, bisexual, and transgender populations* (pp. 355-374). New York: Springer.
- Sherhoff, M. (2006). *Without condoms: Unprotected sex, gay men, & barebacking*. New York: Taylor & Francis.
- Shilts, R. (1987). *And the band played on: Politics, people, and the AIDS epidemic*. New York: St. Martin's Press.
- Smith, T. W. (1991). Adult sexual behavior in 1989: Number of partners, frequency of intercourse and risk of AIDS. *Family Planning Perspectives, 23*, 102-107.
- Snively, C. A., Kreuger, L., Stretch, J. J., Wyatt, J. W., & Chadha, J. (2004). Understanding homophobia: Preparing for practice realities in urban and rural settings. *Journal of Gay and Lesbian Social Services, 17*, 59-81.
- Stewart, F. J., Mischewski, A., & Smith, A. M. A. (2000). 'I want to do what I want to do': Young adults resisting sexual identities. *Critical Public Health, 10*, 409-422.
- Stokes, J. P., McKirnan, D. J., & Burzette, R. G. (1993). Sexual behavior, condom use, disclosure of sexuality, and stability of sexual orientation in bisexual men. *Journal of Sex Research, 30*, 203-213.
- Stokes, J. P., Vanable, P. A., & McKirnan, D. J. (1996a). Ethnic differences in sexual behavior, condom use, and psychosocial variables among black and white men who have sex with men. *Journal of Sex Research, 33*, 373-381.
- Stokes, J. P., McKirnan, D. J., Doll, L. S., & Burzette, R. G. (1996b). Female partners of bisexual men: What they don't know might hurt them. *Psychology of Women Quarterly, 20*, 267-284.
- Stokes, J. P., Vanable, P., & McKirnan, D. J. (1997). Comparing gay and bisexual men on sexual behavior, condom use, and psychosocial variables related to HIV/AIDS. *Archives of Sexual Behavior, 26*, 383-397.

- Stokes, J. P., Miller, R. L., & Mundhenk, R. (1998). Toward an understanding of behaviourally bisexual men: The influence of context and culture. *Canadian Journal of Human Sexuality*, 7, 101-113.
- Stokes, J. P., & Peterson, J. L. (1998). Homophobia, self-esteem, and risk for HIV among African American men who have sex with men. *AIDS Education and Prevention*, 10, 278-292.
- Strathdee, S. A., Hogg, R. S., Martindale, S. L., Cornelisse, P. G., Craib, K. J., Montaner, J. S., et al. (1998). Determinants of sexual risk-taking among young HIV-negative gay and bisexual men. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*, 19, 61-66.
- Teunis, N. (2007). Sexual objectification and the construction of whiteness in the gay male community. *Culture, Health & Sexuality*, 9, 263-275.
- Theodore, P. S., & Basow, S. A. (2000). Heterosexual masculinity and homophobia: A reaction to the self? *Journal of Homosexuality*, 40, 31-48.
- Troiden, R. R. (1988a). *Gay and lesbian identity: A sociological analysis*. Dix Hills, NY: General Hall.
- Troiden, R. R. (1988b). Homosexual identity development. *Journal of Adolescent Health Care*, 9, 105-113.
- Turner, C. F., Ku, L., Rogers, S. M., Lindberg, L. D., Pleck, J. H., & Sonenstein, F. L. (1998). Adolescent sexual behavior, drug use, and violence: Increased reporting with computer survey technology. *Science*, 280, 867-873.
- Urban Institute (2008). 1995 National Survey of Adolescent Males (NSAM). Retrieved May 16, 2008, from <http://www.urban.org/publications/900460.html>
- Valdiserri, R. O., Holtgrave, D. R., & West, G. R. (1999). Promoting early HIV diagnosis and entry into care. *AIDS*, 13, 2317-2330.
- Valleroy, L. A., MacKellar, D. A., Karon, J. M., Rosen, D. H., McFarland, W., Shehan, D. A., et al. (2000). HIV prevalence and associated risks in young men who have sex with men. *Journal of the American Medical Association*, 284, 198-204.
- Valocchi, S. (2005). Not yet queer enough: The lessons of queer theory for the sociology of gender and sexuality. *Gender & Society*, 19, 750-770.
- Vance, C. S. (1991). Anthropology rediscovers sexuality: A theoretical comment. *Social Science and Medicine*, 33, 875-884.
- Van de Ven, P., Prestage, G., Knox, S., & Kippax, S. (2000). Gay men in Australia who do not have HIV test results. *International Journal of STD & AIDS*, 11, 456-460.

- Vargas, J. A. (2003, August 4). HIV-positive, without a clue: Black men's hidden sex lives imperiling female partners. *Washington Post*. Retrieved March 12, 2009, from [www.washingtonpost.com/wp-dyn/content/article/2006/11/27/AR2006112700669.html](http://www.washingtonpost.com/wp-dyn/content/article/2006/11/27/AR2006112700669.html)
- Vittinghoff, E., Douglas, J., Judson, F., McKirnan, D. J., MacQueen, K., & Buchbinder, S. P. (1999). Per-contact risk of human immunodeficiency virus transmission between male sexual partners. *American Journal of Epidemiology*, *150*, 306-311.
- Waite, L. J., & Gallagher, M. (2000). *The case for marriage: Why married people are happier, healthier, and better off financially*. New York: Doubleday.
- Waldo, C. R., & Coates, T. J. (2000). Multiple levels of analysis and intervention in HIV prevention science: Exemplars and directions for new research. *AIDS*, *14*(Suppl. 2), S18-S26.
- Walker, G. W. (2006). Disciplining protest masculinity. *Men and Masculinities*, *9*, 5-22.
- Wang, J., Rodés, A., Blanch, C., & Casabona, J. (1997). HIV testing history among gay/bisexual men recruited in barcelona: Evidence of high levels of risk behavior among self-reported HIV+ men. *Social Science and Medicine*, *44*, 469-477.
- Weatherburn, P., Hickson, F., Reid, D. S., Davies, P. M., & Crosier, A. (1998). Sexual HIV risk behaviour among men who have sex with men and women. *AIDS Care*, *10*, 463-471.
- Weinberg, M. S., Williams, C. J., & Pryor, D. W. (1994). *Dual attraction: Understanding bisexuality*. New York: Oxford University Press.
- Weinhardt, L. S., Carey, M. P., Johnson, B. T., & Bickham, N. L. (1999). Effects of HIV counseling and testing on sexual risk behavior: A meta-analytic review of published research, 1985-1997. *American Journal of Public Health*, *89*, 1397-1405.
- Weinstock, H., Berman, S., & Cates, W. Jr. (2000). Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspectives on Sexual and Reproductive Health*, *36*, 6-10.
- Weston, K. (1995). Get thee to a big city: Sexual imaginary and the great gay migration. *GLQ*, *2*, 253-277.
- Whitehead, T. (1997). Urban low-income African American men, HIV/AIDS, and gender identity. *Medical Anthropology Quarterly*, *11*, 411-447.
- Williams, D. R., & Collins, C. (2002). U.S. socioeconomic and racial differences in health: Patterns and explanations. In T. A. LaVeist (Ed.), *Race, ethnicity, and health: A public health reader* (pp. 391-431). San Francisco: Jossey-Bass.
- Williamson, I. R. (2000). Internalized homophobia and health issues affecting lesbians and gay men. *Health Education Research*, *15*, 97-107.

- Wohl, A. R., Johnson, D. F., Lu, S., Jordan, W., Beall, G., Currier, J., et al. (2002). HIV risk behaviors among African American men in Los Angeles County who self-identify as heterosexual. *Journal of Acquired Immune Deficiency Syndromes*, *31*, 354-360.
- Wold, C., Seage, G. R. III, Lenderking, W. R., Mayer, K. H., Cai, B., & Heeren, T. (1998). Unsafe sex in men who have sex with both men and women. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*, *17*, 361-367.
- Wolitski, R. J., Rietmeijer, C. A. M., Goldbaum, G. M., & Wilson, R. M. (1998). HIV serostatus disclosure among gay and bisexual men in four American cities: General patterns and relation to sexual practices. *AIDS Care*, *10*, 599-610.
- Wolitski, R. J., Valdiserri, R. O., Denning, P. H., & Levine, W. C. (2001). Are we headed for a resurgence of the HIV epidemic among men who have sex with men? *American Journal of Public Health*, *91*, 883-888.
- Wolitski, R. J., Jones, K. T., Wasserman, J. L., & Smith, J. C. (2006). Self-identification as “down low” among men who have sex with men (MSM) from 12 US cities. *AIDS and Behavior*, *10*, 519-529.
- Woods, W. J., Binson, D., Blair, J., Han, L., Spielberg, F., & Pollack, L. M. (2007). Probability sample estimates of bathhouse sexual risk behavior. *Journal of Acquired Immune Deficiency Syndromes*, *45*, 231-238.
- Xia, Q., Tholandi, M., Osmond, D. H., Pollack, L. M., Zhou, W., Ruiz, J. D., et al. (2006). The effect of venue sampling on estimates of HIV prevalence and sexual risk behaviors in men who have sex with men. *Sexually Transmitted Diseases*, *33*, 545-550.
- Young, A. Jr. (2004). *The minds of marginalized black men: Making sense of mobility, opportunity, and future life chances*. Princeton, NJ: Princeton University Press.
- Young, R. M., & Meyer, I. H. (2005). The trouble with “MSM” and “WSW”: Erasure of the sexual-minority person in public health discourse. *American Journal of Public Health*, *95*, 1144-1149.
- Zellner, J. A., Martínez-Donate, A. P., Sañudo, F., Fernández-Cerdeño, A., Sipan, C. L., Hovell, M. F. (2009). The interaction of sexual identity with sexual behavior and its influence on HIV risk among Latino men: Results of a community survey in northern San Diego County, California. *American Journal of Public Health*, *99*, 125-132.
- Zinik, G. (2000). Identity conflict or adaptive flexibility? Bisexuality reconsidered. In P. C. R. Rust (Ed.), *Bisexuality in the United States: A social science reader* (pp. 55-60). New York: Columbia University Press.

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