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POSITIVE, NEGATIVE, UNKNOWN:

ASSUMPTIONS OF HIV STATUS AMONG HIV-POSITIVE MEN WHO HAVE SEX WITH MEN

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Abstract

Serosorting (i.e., engaging in unprotected sex with partners known to be of the same serostatus) can be a difficult process for men who have sex with men (MSM) who frequently make assumptions about their partners' serostatus. This process can be further complicated by a partner's dishonesty as well as other individual and contextual factors. The present study specifically examined how assumptions of serostatus made about unknown serostatus partners impact on the sexual behavior of 110 alcohol-abusing HIV-positive MSM. Although previous research has shown that HIV-positive MSM are more likely to serosort with other known HIV-positive men than with known HIV-negative men, our data suggest that unprotected sex behavior may not be specifically driven by whether or not they made assumptions of seroconcordance or serodiscordance. The types of assumptions these HIV-positive MSM made about their unknown status sexual partners and the basis for such assumptions were also examined. Owing to the ambiguities involved in assumptions of a partner's serostatus in sexual encounters, the "unknown status" partner category is analytically distinct from "known status" categories, and needs to be more fully explored because of its impact on perceived serosorting, rather than actual serosorting, among HIV-positive men.

Although much of the HIV prevention research on sexual risk practices among men who have sex with men (MSM) focuses on the development of self-protective strategies for HIV-negative MSM, some research has also focused on the perceived responsibility of HIV-positive MSM to protect their partners from transmission risk (Nimmons & Folkman, 1999; Parsons, 2005; Parsons, Halkitis, Wolitski, & Gomez, 2003; Sheon & Crosby, 2004; Wolitski, Bailey, O'Leary, Gomez, & Parsons, 2003). These efforts have revealed a complex set of negotiations that HIV-positive MSM go through in making decisions regarding sexual risk taking. As more and more people begin to understand the specific ways in which HIV is transmitted, the complexity of these negotiations makes the notion of "safer sex" an elusive category. This complexity has led researchers to look at more nuanced ways in which people define and negotiate sexual risk based on the interaction between condom use, HIV treatment-related perceptions, sexual role preference, serostatus, and the specific sexual acts that take place during the sexual encounter (Cox, Beauchemin, & Allard, 2004; Kippax, 2002; Parsons, 2005; Parsons, Halkitis, Wolitski, & Gomez, 2003; Parsons, Schrimshaw, Wolitski, Halkitis, Purcell, Hoff, et al. 2005; Sacco & Rickman, 1996; Suarez & Miller, 2001).

One of the primary ways in which men negotiate unprotected sex in casual partner situations is by choosing seroconcordant partners. Studies have found higher rates of unprotected sex behavior among HIV-positive MSM with other HIV-positive partners versus HIV-negative partners (Golden, Brewer, Kurth, Holmes, & Hansfield, 2004; Halkitis & Parsons, 2003; Mansergh, et al., 2002; Parsons et al., 2003). This harm reduction approach of minimizing risk of HIV transmission or infection by choosing to have unprotected sex with only partners of concordant HIV status has been recently described as “serosorting” (Parsons, 2005; Parsons, Schrimshaw et al., 2005; Suarez et al., 2001; Suarez & Miller, 2001; Wolitski, Parsons, & Gomez, 2004).

Serosorting is a process by which men rely on the discussion of HIV status with potential partners and only engage in risky sex with those they believe are of a similar serostatus (Suarez & Miller, 2001). This process is based on discussion and truthful disclosure of serostatus, relevant beliefs, and eventual unprotected sex based on all these factors. To complicate matters, dishonesty or inaccurate reporting of serostatus may occur in the discussion before any negotiation of sexual activity occurs (Cochran & Mays, 1990). When this uncertainty of serostatus arises, individuals may make assumptions, albeit incorrect ones, about their partner’s serostatus. The questions remain: What happens when the partner’s status is unknown? What assumptions do men make about their partners’ serostatus? To what degree do MSM justify unprotected sex by assuming that they are, in fact, engaged in serosorting with partners of unknown status?

A number of studies of HIV-positive MSM have found that rates of unsafe sex with unknown status partners are comparable to those with known HIV-positive partners (Halkitis & Parsons, 2003; Parsons et al., 2003; Parsons, Schrimshaw, et al., 2005; Semple, Patterson, & Grant, 2000). One possible explanation for the high rates of unsafe sex with unknown status partners is that many HIV-positive MSM may assume that their unknown status partners are, in fact, also HIV-positive.

Assumptions of a partner’s HIV status are likely to occur in situations of nondisclosure. In a recent study, 42% of HIV-positive gay and bisexual men reported any sex (either protected or unprotected) without disclosing their status (Ciccarone et al., 2003). Although a partner’s status is technically “unknown” in such scenarios, often the assumption is made that the partner is seroconcordant (Gold & Skinner, 1993; Kaplan & Shane, 1993; Suarez & Miller, 2001). MSM often make assumptions regarding HIV status based on stereotypes about HIV-positive people (Gold & Skinner, 1996; Gold, Skinner, & Hinchey, 1999). It has also been suggested that HIV-positive MSM may make assumptions of seroconcordance when having sex with unknown status partners in order to justify unprotected sex behavior (Gold & Rosenthal, 1998; O’Leary, 2005). These assumptions, however, may often be inaccurate. Niccolai and her colleagues (2002) collected data on HIV-positive persons’ perceptions of the HIV status of their sexual partners and then linked this data to actual HIV test results for these sexual partners. Overall, consistency between perceived and actual HIV status of sexual partners only occurred 46% of the time, a rate less than random chance alone. More specifically, 64% of sexual partners that were perceived to be HIV-positive were actually HIV-negative, and 42% of sexual partners that were thought to be HIV-negative were actually HIV-positive. This demonstrates a potential danger to the process of serosorting, as well as a broader problem with making assumptions about the serostatus of sexual partners.

Such assumptions of seroconcordance may be responsible for the high levels of sexual risk behaviors with unknown status partners identified in samples of HIV-positive MSM (Golden et al., 2004; Parsons et al., 2003; Van de Ven et al., 2002; Wolitski et al., 2004). Although these studies are powerful first steps in highlighting the importance of serostatus awareness in unprotected sexual behavior, much of this research quantifies “unknown” as a coherent

serostatus category, often not accounting for the assumptions made in specific sexual encounters that HIV-positive MSM have with their unknown status sexual partners.

Another complicating factor to serosorting is being under the influence of mood-altering substances. Alcohol is just one of many substances MSM use in order to facilitate sexual behavior, including risky sex (Parsons, Vicioso, Kutnick et al., 2004; Parsons, Vicioso, Punzalan et al., 2004b). In addition, research has shown that alcohol affects one's decision-making ability to negotiate safer sex practices with partners regardless of serostatus (Parsons, Kutnick et al., 2005). Thus, alcohol use can influence the context in which MSM make assumptions about their partner's serostatus (Parsons, Vicioso, Kutnick et al., 2004) and consequentially can affect serosorting.

Problem-level drinking and alcohol-related disorders are more common among HIV-positive persons (Cook et al., 2001; Galvan et al., 2002; Lefevre et al., 1995; Samet, Phillips, Horton, Traphagen, & Freedberg, 2004). A national probability survey of HIV-positive adults who were receiving medical care in the United States (Galvan et al., 2002) found that 53% reported drinking in the past month, and 8% (or 15% of those individuals who reported any alcohol use) were classified as heavy drinkers (defined as five or more drinks on 4 or more days during the previous month). This rate of heavy drinking is approximately twice the rate estimated among the general population (Greenfield, Midanik, & Rogers, 2000) and suggests that HIV-positive MSM who abuse alcohol represent a particularly important population with which to explore a potential connection between assumptions of HIV status and their impact on perceived serosorting.

To pursue this, the assumptions that alcohol-abusing HIV-positive MSM made about their unknown status sexual partners were examined. Specifically, we sought to identify what kinds of assumptions these men are making about unknown status partners, determine whether or not these MSM assume seroconcordance and, if seroconcordance is assumed, determine if perceived serosorting (engagement in increased sexual risk practices with those assumed to be HIV-positive and decreased sexual risk practices with those assumed to be HIV-negative) occurred among men in this sample.

METHODS

PARTICIPANTS

For the larger study (as described in Parsons, Kutnick et al., 2005), a total of 513 participants called the project line for initial screening. Of these, 157 were excluded because they failed to meet eligibility criteria at the time of phone screening (i.e., biological male, self-identified as HIV-positive, anal or oral sex with another man in the past 3 months, problematic use of alcohol in the past 30 days, and age of 18 or older). A total of 8 men were not interested in the study, and an additional 69 eligible participants failed to show up for their scheduled baseline interview. At the baseline interview, 17 men were excluded owing to comorbidity with Axis I disorders and 9 were excluded for failing to meet final eligibility requirements, resulting in 253 men in the final baseline sample.

The Alcohol Use Disorders Identification Test (AUDIT), a 10-item self-report questionnaire that measures alcohol consumption, dependence symptoms, and personal and social harm reflective of drinking, was also used to determine eligibility for the study. The AUDIT has excellent psychometric properties and has been found to be superior to other self-report screening measures (Reinert & Allen, 2002). Participants were eligible for the study if their AUDIT score was 8 or greater. In addition, participants with AUDIT scores of 6 or 7 were deemed eligible if they also reported that they drank alcohol before sexual activity "often" or "always." The average AUDIT score in the larger sample was determined to be 21.93. As a

result, this sample was composed of severe problem drinkers. (As previously noted, the role of alcohol will not be addressed in this paper due to limitations of the current study.)

The analyses for the current study began with the responses of a subsample of 146 men who reported a sexual encounter with unknown status casual male partners in the last 3 months and had responded to a series of questions included in the study protocol designed to assess instances in which they had made assumptions regarding the HIV status of these partners. Thirty-six of these men did not report making any type of assumption about the serostatus of their unknown partners. As a result, 110 men reported usable data, constituting the sample used for the current study.

Among the 110 men in the current study's sample, the mean age was 38.10 ($SD = 6.43$; range = 24-58). The sample was ethnically diverse, with 46.4% ($n = 51$) identifying as African American, 21.8 % ($n = 24$) as White or Caucasian, 21.8 % ($n = 24$) as Latino or Hispanic, and 10% ($n = 11$) as "mixed race/ethnicity" or "other." All participants had tested HIV-positive prior to the baseline assessment and the mean for their most recent CD4 count was 439.97 ($SD = 279.42$). There were no statistically significant differences between the current study's sample and the larger sample in terms of age, race/ethnicity, sexual orientation, employment, educational level, CD4 count, AIDS diagnosis, alcohol or other drug use, or sexual risk behaviors. As previously mentioned, the sample consists of a homogenous group of severe problem drinkers as determined by the AUDIT.

PROCEDURE

For the larger study, participants were recruited using two different recruitment strategies: active recruitment, in which recruiters went into various venues, described the study, encouraged participation, and provided phone numbers to enroll, and passive recruitment, in which written materials about the study were left in stores, AIDS service agencies, and other venues. The recruitment efforts were based on a targeted sampling strategy, designed to obtain systematic information because true random sampling was not feasible (Watters & Biernacki, 1989). Although targeted sampling cannot ensure representation within the sample, it can be used to enhance the degree to which the sample includes participants who come from a variety of backgrounds, reside within different social circles, and participate in gay, bisexual, and/or HIV/AIDS communities to varying degrees.

Participants were actively recruited from two types of venues: AIDS service organizations and mainstream venues (e.g., bars, cafes, and streets in predominately gay neighborhoods). Participants were also passively recruited using "tear-off flyers," study cards, advertisements in gay and mainstream publications, and through referrals from friends. Substantial efforts were made to ensure that an ethnically diverse sample was obtained. These efforts included specific targeting of venues serving the needs of HIV-positive MSM of color.

Men were screened by telephone to determine eligibility. Individuals who were interested and eligible were then scheduled for a baseline interview. At the baseline interview, participants provided informed consent and then completed the self-administered baseline measures. Participants were paid \$30 for participating in the baseline assessment.

MATERIALS

The data reported here were based on the baseline quantitative surveys completed by all the participants. The assessment was administered by trained project staff and took approximately 90-120 minutes to complete; it addressed a variety of factors, including health status, prevalence and frequency of sexual behaviors by partner type (primary versus casual) and partner serostatus (known HIV-positive, known HIV-negative, or HIV serostatus unknown)

over the last 3 months, prevalence and frequency of alcohol and drug use, and demographic characteristics. The following sections of the survey were used for analyses presented in this article.

Sexual Behaviors—Sex behaviors were evaluated by asking participants to indicate the frequency of eight sexual behaviors in the 3 months prior to completion of the survey. The sexual behaviors assessed included the following as practiced *without condoms and no ejaculation* as well as *without condoms and with ejaculation*: unprotected insertive anal intercourse, unprotected receptive anal intercourse, unprotected insertive oral intercourse, and unprotected receptive oral intercourse. HIV researchers have advocated for the use of open-ended frequency measures of sexual risk behaviors as they help to communicate expectations that such behaviors occur and are not abnormal (Catania, Gibson, Chitwood, & Coates, 1990; Weinhardt et al., 1998). Our measures were comparable to others used with gay men that have shown that past 3 month assessment periods for sexual risk behaviors are reliable (Kauth, St. Lawrence, & Kelly, 1991) and utilized easy to understand terminology that was developed in conjunction with a community advisory board of HIV-positive MSM.

Assumptions—For HIV status unknown partners, participants were asked to indicate the number they assumed were HIV-positive and the number they assumed were HIV-negative. Participants then provided reasons why they assumed that their casual partners were HIV-positive and/or HIV-negative using an open-ended format. Their verbatim responses were entered and later coded as belonging to one of five assumption categories: physical, behavioral, normative, circumstantial/associational, and discussion based. The categories were created in such a way that they could be applied to both HIV-positive and HIV-negative assumptions. Three raters coded the responses independently and convened to establish interrater reliability, determined as 90% agreement. Any discrepancies were resolved by a majority decision.

RESULTS

A high proportion of the sample ($n = 84$; 76%) reported multiple unknown serostatus partners. The mean number of unknown status partners was 9.54 ($SD = 20.22$).

Participants made several assumptions about their various partners. Three types of serostatus assumptions were identified: (a) all unknown partners were assumed to be HIV-positive ($n = 60$; 55%), (b) all unknown partners were assumed to be HIV-negative ($n = 23$; 21%), or (c) some unknown status partners were assumed to be HIV-positive and others were assumed to be HIV-negative ($n = 27$; 24%). Significantly more men reported making assumptions that their all of their serostatus unknown partners were HIV-positive than those who reported making assumptions that all of their serostatus unknown partners were negative or those who reported making both types of assumptions, $\chi^2(2) = 22.49, p < .01$. Assumptions of unknown partners being HIV-positive, HIV-negative, or both did not vary by race/ethnicity, educational level, sexual orientation, or whether the participant identified themselves sexually as a “top” (insertive partner for anal sex) or a “bottom” (receptive partner).

Five categories of assumptions were generated as previously mentioned: physical, behavioral, normative, circumstantial/associational, and discussion based. In addition, one additional category was added for combinations of assumptions. Although these categories were generated directly from the data, they are similar to categories generated in O’Leary’s (2005) qualitative study on assumptions of HIV serostatus among HIV-positive MSM.

Participants’ assumptions of their partners’ serostatus that were based on appearance or other physical aspects of the partner (e.g., “He looked healthy,” “He was much younger,” and “He was emaciated”) were categorized as physical assumptions, 8% ($n = 7$). Assumptions based

on whether or not their partners engaged in certain behaviors, either safe or unsafe (e.g., “He abused drugs,” “He used condoms,” and “He took pills”), were coded as behavioral assumptions, 27% ($n = 22$). The category of normative assumptions included statements that were broadly applied based on stereotypical suppositions of groups of individuals or people in general (e.g., “All gay men are HIV-positive” and “Most people are negative”), 18% ($n = 15$). Assumptions based on partners’ associations with certain people, groups, organizations, and/or scenes (e.g., “He lives in special housing,” “He has a negative main partner,” “Never seen him at the clinic,” and “He is married to a woman”) were coded as circumstantial/associational assumptions, 24% ($n = 20$). Assumptions based on knowledge acquired or inferred through discourse (or lack of discourse) (e.g., “He knew a lot about HIV,” “He didn’t respond after he found out,” and “HIV wasn’t discussed”) were considered to be discussion-based assumptions, 10% ($n = 8$). Finally, responses that were based on more than one type of assumption were coded as combination, 10% ($n = 8$). Three responses did not fall into any type of assumption category (e.g., “I just wished that he was”) and were excluded from analysis.

Data from men who made assumptions about the serostatus of their unknown partners were analyzed regarding sexual risk behavior with these unknown partners. A greater percentage of men reported any unprotected anal sex with unknown status partners compared to known HIV-positive or known HIV-negative partners, Cochran $Q(2) = 50.53, p < .0001$ (Table 1). Overall, across partner types, 35% ($n = 40$) reported unprotected receptive anal sex whereas 48% ($n = 53$) reported unprotected anal insertive sex. The remaining participants reported only oral sex behaviors, which were not addressed in this study.

Perceived serosorting was examined by calculating frequencies and comparing means of unprotected anal insertive and unprotected anal receptive sexual behaviors between those who made HIV-positive and those who made HIV-negative assumptions about their unknown status sexual partners. Behavior frequencies did not vary based on types of assumptions made. There was no significant difference in the mean number of unprotected anal insertive acts among men who assumed their unknown status partners were all HIV-positive ($M = 1.27, SD = 3.95$) and men who assumed their unknown status partners were all HIV-negative ($M = 0.45, SD = .912$), $t(80) = .990, p = .325$. In addition, there was no difference in the mean number of unprotected anal receptive acts between men who assumed seroconcordance among their partners ($M = 1.48, SD = 4.31$) and men who assumed serodiscordance ($M = 2.59, SD = 8.71$), $t(80) = -.76, p = .446$.

There were some differences in the characteristics on which the HIV-positive men in our sample based their assumptions. Men who reported making HIV-negative assumptions regarding their unknown status partners were significantly more likely to base those assumptions on the physical appearance of their partner and on discussions with their partner than men who reported making HIV-positive assumptions. Alternately, men who made HIV-positive assumptions about the serostatus of their HIV unknown partners were more likely to base those assumptions on circumstantial/associational, behavioral, and normative information, $\chi^2(5) = 34.254, p < .001$; Table 2. Differences in sexual risk behavior based on assumption categories could not be assessed, as the cell sizes were too small to yield analyzable data.

DISCUSSION

Consistent with previous research findings showing that MSM tend to assume HIV seroconcordance (Gold & Skinner, 1993; Kaplan & Shane, 1993; Niccolai et al., 2002; O’Leary, 2005; Suarez & Miller, 2001), more participants in our HIV-positive alcohol-abusing sample assumed their unknown status partners were HIV-positive than HIV-negative. In addition, more men in our sample reported unprotected anal sex with unknown status partners than with

known HIV-positive or known HIV-negative partners. The majority of men in our sample could be described as engaged in perceived serosorting, yet the serosorting was based on their assumptions, not on the known serostatus of their sexual partners.

Although their partner's status was clearly "unknown," more men in this sample were often behaving on the assumption that their partner was also HIV-positive, which is analytically distinct from those who made no assumption about their partner's status. Based on this information, we propose that serosorting may be double-faceted. Serosorting, as defined by Suarez and Miller (2001), may need to be redefined as *actual* serosorting since this behavior seems to occur with partners of known serostatus. *Perceived* serosorting is based on assumptions of seroconcordance (i.e., assuming their partners are also HIV-positive) and seems to be occurring in this sample since the majority of men are having unprotected sex with assumed seroconcordant partners.

Regarding the category of "unknown status," often HIV researchers, for the purposes of analysis, group sexual behavior with HIV-negative and unknown sex partners together in contrast to sexual behavior with HIV-positive partners. As the results of the current study suggest, it may be more appropriate to examine sexual risk behaviors with unknown status partners as an analytically distinct group because serostatus assumptions can highly impact sexual behavior decisions, like serosorting and partner choices.

Research on seroconcordant sexual behavior shows that HIV-positive MSM engage in significantly more sexual risk practices with other HIV-positive men than with HIV-negative men in terms of serosorting (Halkitis & Parsons, 2003; Mansergh et al., 2002; Parsons et al., 2003; Parsons, Schrimshaw, et al., 2005; Wolitski et al., 2004). In the present study the authors examined the number of sex risk behaviors of men who made only HIV-positive assumptions compared to the number of sexual risk behaviors of men who made only HIV-negative assumptions and found no difference between these groups. This suggests that unprotected sex behavior may not be specifically driven by whether or not they made assumptions of seroconcordance or serodiscordance. It is important to note however that this may have more to do with the men themselves who made only one type of assumption toward their unknown status partners rather than the assumed partner type.

There is something distinct about the sexual encounters with unknown status partners. In the present study, risk behavior with assumed HIV-negative partners (in contrast to known HIV-negative partners) is similar to risk behavior with assumed HIV-positive partners. It appears that serosorting based on assumptions of partner seroconcordance or serodiscordance does not occur in the same way that it does when the partner's HIV status is actually known. In addition, the categories of assumptions were different according to perceived serostatus. Seroconcordant assumptions were mostly based on circumstantial/associational, behavioral, and normative perceptions while serodiscordant assumptions were based on physical appearance and discussion-based factors.

Results of this study suggest that, in not discussing HIV status in sexual encounters with unknown status partners and basing their assumptions on what they may believe are "valid" indicators of a particular serostatus, HIV-positive MSM, especially those who abuse alcohol like the men in the study sample, may alleviate themselves from feelings of responsibility for protecting their sexual partners. Therefore, even if they assume their partner is HIV-negative, they may not feel the same sense of responsibility as if a partner specifically disclosed that he was HIV-negative.

One limitation of this study is the use of an alcohol-using sample. Even though alcohol use was a prerequisite for participation in the study, we could not assess how alcohol might have an impact on the kinds of assumptions participants made. The absence of a non-alcohol-using

comparison sample made it difficult to examine the unique contribution of alcohol to assumptions about HIV status of casual sex partners. It is quite possible, for example, that recall of partner serostatus or assumptions made regarding serostatus were compromised owing to frequent intoxication before/during sexual activity. Further research using nonclinical, non-substance-using comparison samples needs to be conducted in order to achieve this objective.

It should also be noted that the number of participants who had both assumed status partners and known partners of the same status (e.g., both a known HIV-negative and an assumed HIV-negative partner) was too few to systematically compare assumed serostatus sex behavior and known serostatus sex behavior. Therefore, we could not further explore why assumed status behavior did not produce parallel findings with known status behavior.

Other limitations of the study include the reliance on self-report measures and the heightened possibility that participants provided socially desirable responses. Furthermore, as this was a preliminary investigation of the nature of assumptions of serostatus, we did not separately measure sexual risk behaviors with unknown status partners according to whether or not the participant assumed they were HIV-positive or HIV-negative. Additionally, the results presented here are from a series of secondary analyses conducted within the framework of a larger study, results of which inspired the hypotheses that provided the basis for the current argument.

Future studies examining risk behavior with unknown status partners among MSM should employ more nuanced and targeted methodologies and analytical techniques than are typically used, and examine sexual risk with unknown partners separately from risk with known HIV-negative or known HIV-positive partners. These techniques should include complex questions about assumptions of partners' status, disclosure and should compare sexual risk behaviors with known status partners and assumed status partners. This may further clarify the issues of examining sexual behavior with unknown status partners based on actual serosorting (i.e., in which HIV status has been discussed and declared by each partner) and perceived serosorting (i.e., in which the partner's HIV status is assumed to be the same as one's own).

Just as researchers should be more sensitive to the many facets of sex risk with unknown partners, interventions focusing on populations with high rates of nondisclosure could benefit from an awareness of the assumptions underlying sexual risk behavior with unknown status partners. In addition, more information on serosorting and how the behavior is executed by MSM can benefit many researchers, educators, health care providers, and program administrators who need more effective prevention messages and strategies to reduce HIV incidence in this population.

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REFERENCES

- Catania JA, Gibson DR, Chitwood DD, Coates TJ. Methodological problems in AIDS behavioral research: Influences on measurement error and participation bias in studies of sexual behavior. *Psychological Bulletin* 1990;108:339–362. [PubMed: 2270232]
- Ciccarone DH, Kanouse DE, Collins RL, Miu A, Chen JL, Morton SC, et al. Sex without disclosure of positive HIV serostatus in a US probability sample of persons receiving medical care for HIV infection. *American Journal of Public Health* 2003;93:949–54. [PubMed: 12773361]

- Cochran SD, Mays VM. Sex, lies, and HIV. *New England Journal of Medicine* 1990;322:774–775. [PubMed: 2308606]
- Cook RL, Sereika SM, Hunt SC, Woodard WC, Erlen JA, Conigliaro J. Problem drinking and medication adherence among persons with HIV infection. *Journal of General and Internal Medicine* 2001;16:83–86.
- Cox J, Beauchemin J, Allard R. HIV status of sexual partners is more important than antiretroviral treatment related perceptions for risk taking by HIV positive MSM in Montreal, Canada. *Sexually Transmitted Infections* 2004;80:518–523. [PubMed: 15572627]
- Galvan FH, Bing EG, Fleishman JA, London AS, Caetano R, Burnam MA, et al. The Prevalence of alcohol consumption and heavy drinking among people with HIV in the United States: Results from the HIV Cost and Services Utilization Study. *Journal of Studies on Alcohol* 2002;63:179–186. [PubMed: 12033694]
- Gold RS, Rosenthal DA. Examining self-justifications for unsafe sex as a technique of AIDS education: The importance of personal relevance. *International Journal of STD & AIDS* 1998;9:208–213. [PubMed: 9598747]
- Gold RS, Skinner MJ. Desire for unprotected intercourse preceding its occurrence: the case of young gay men with an anonymous partner. *International Journal of STD and AIDS* 1993;4:326–329. [PubMed: 8305572]
- Gold RS, Skinner MJ. Judging a book by its cover: Gay men's use of perceptible characteristics to infer antibody status. *International Journal of STD and AIDS* 1996;7:39–43. [PubMed: 8652709]
- Gold RS, Skinner MJ, Hinchey J. Gay men's stereotypes about who is HIV infected: A further study. *International Journal of STD & AIDS* 1999;10:666–605.
- Golden MR, Brewer DD, Kurth A, Holmes KK, Handsfield HH. Importance of sex partner HIV status in HIV risk assessment among men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes* 2004;36:734–742. [PubMed: 15167293]
- Greenfield TK, Midanik LT, Rogers JD. A 10-year national trend study of alcohol consumption, 1984-1995: Is the period of declining drinking over? *American Journal of Public Health* 2000;90:47–52. [PubMed: 10630136]
- Halkitis PN, Parsons JT. Intentional unsafe sex (barebacking) among HIV seropositive gay men who seek sexual partners on the internet. *AIDS Care* 2003;15:367–378. [PubMed: 12745400]
- Kaplan BJ, Shane VT. Unsafe sex: decision-making biases and heuristics. *AIDS Education and Prevention* 1993;5:294–301. [PubMed: 8297709]
- Kauth MR, St. Lawrence JS, Kelly JA. Reliability of retrospective assessments of sexual HIV risk behavior: A comparison of bi-weekly, three-month, and twelve-month self-reports. *AIDS Education and Prevention* 1991;3:207–214. [PubMed: 1834142]
- Kippax, S. Negotiated safety agreements among gay men. In: O'Leary, A., editor. *Beyond condoms: Alternative approaches to HIV prevention*. Plenum; New York: 2002. p. 1-15.
- Lefevre F, O'Leary B, Moran M, Mossar M, Yarnold PR, Martin GJ, et al. Alcohol consumption among HIV-infected patients. *Journal of General Internal Medicine* 1995;10:458–460. [PubMed: 7472704]
- Mansergh G, Marks G, Colfax G, Guzman R, Rader M, Buchbinder S. Barebacking in a diverse sample of men who have sex with men. *AIDS* 2002;16:653–659. [PubMed: 11873010]
- Niccolai LM, Farley TA, Ayoub MA, Magnus M, Kissinger PJ. HIV-infected persons' knowledge of their sexual partners' HIV status. *AIDS Education and Prevention* 2002;14:183–189. [PubMed: 12092920]
- Nimmons D, Folkman S. Other-sensitive motivation for safer sex among gay men: Expanding paradigms for HIV prevention. *AIDS and Behavior* 1999;3:313–324.
- O'Leary, A. Guessing games: Sex partner serostatus assumptions in the SUMS. In: Halkitis, PN.; Gomez, C.; Wolitski, R., editors. *HIV+ sex: The psychological and interpersonal dynamics of HIV-seropositive gay and bisexual men's relationships*. American Psychological Association; Washington, DC: 2005. p. 121-132.
- Parsons, JT. HIV-positive gay and bisexual men. In: Kalichman, SC., editor. *Positive Prevention: Reducing HIV Transmission among People Living with HIV/AIDS*. Kluwer; New York: 2005. p. 99-133.

- Parsons JT, Halkitis PN, Wolitski RJ, Gomez CA. Correlates of sexual risk behaviors among HIV-positive men who have sex with men. *AIDS Education and Prevention* 2003;15:383–400. [PubMed: 14626462]
- Parsons JT, Kutnick A, Punzalan JC, Halkitis PN, Carbonari JP. Sexual risk behaviors and substance use among alcohol abusing HIV+ men who have sex with men. *Journal of Psychoactive Drugs* 2005;37:27–36. [PubMed: 15916249]
- Parsons JT, Schrimshaw EW, Wolitski RJ, Halkitis PN, Purcell DW, Hoff CC, et al. Sexual harm reduction practices of HIV-seropositive gay and bisexual men: Serosorting, strategic positioning, and withdrawal before ejaculation. *AIDS* 2005;19:13–27.
- Parsons JT, Vicioso K, Kutnick A, Punzalan JC, Halkitis PN, Velasquez MM. Alcohol use and stigmatized sexual practices of HIV seropositive gay and bisexual men. *Addictive Behaviors* 2004;29:1045–1051. [PubMed: 15219356]
- Parsons JT, Vicioso K, Punzalan JC, Halkitis PN, Kutnick A, Velasquez MM. The Impact of alcohol use on the sexual scripts of HIV+ men who have sex with men. *Journal of Sex Research* 2004;41(2):160–172. [PubMed: 15326541]
- Purcell D, Parsons J, Halkitis P, Mizuno Y, Woods W. Substance use and sexual transmission risk behavior of HIV-positive men who have sex with men. *Journal of Substance Abuse* 2001;13:185–200. [PubMed: 11547619]
- Reinert DF, Allen JP. The Alcohol Use Disorders Identification Test (AUDIT): A review of recent research. *Alcoholism: Clinical & Experimental Research* 2002;26:272–279.
- Sacco WP, Rickman RL. AIDS-relevant condom use by gay and bisexual men: The role of person variables and the interpersonal situation. *AIDS Education and Prevention* 1996;8:430–443. [PubMed: 8911570]
- Samet JH, Phillips SJ, Horton NJ, Traphagen ET, Freedberg KA. Detecting alcohol problems in HIV-infected patients: Use of the CAGE questionnaire. *AIDS Research and Human Retroviruses* 2004;20:151–155. [PubMed: 15018702]
- Semple SJ, Patterson TL, Grant I. Partner type and sexual risk behavior among HIV positive gay and bisexual men: Social cognitive correlates. *AIDS Education and Prevention* 2000;12:340–356. [PubMed: 10982123]
- Sheon N, Crosby MG. Ambivalent tales of HIV disclosure in San Francisco. *Social Science and Medicine* 2004;58:2105–2118. [PubMed: 15047070]
- Suarez TP, Kelly JA, Pinkerton SD, Stevenson YL, Hayat M, Smith MD, et al. Influence of a partner's HIV serostatus, use of highly active antiretroviral therapy, and viral load on perceptions of sexual risk behavior in a community sample of men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes* 2001;28:471–477. [PubMed: 11744837]
- Suarez T, Miller J. Negotiating risks in context: A perspective on unprotected anal intercourse and barebacking among men who have sex with men—where do we go from here? *Archives of Sexual Behavior* 2001;30:287–300. [PubMed: 11330118]
- Van de Ven P, Kippax S, Crawford J, Rawstorne P, Prestage G, Grulich A, et al. In a minority of gay men, sexual risk practice indicates strategic positioning for perceived risk reduction rather than unbridled sex. *AIDS Care* 2002;14:471–480. [PubMed: 12204150]
- Watters JK, Biernacki P. Targeted sampling: Options and considerations for the study of hidden populations. *Social Problems* 1989;36:416–430.
- Weinhardt LS, Carey MP, Maisto SA, Carey KB, Cohen MM, Wickramasinghe BS. Reliability of the timeline follow-back sexual behavior interview. *Annals of Behavioral Medicine* 1998;20:25–30. [PubMed: 9755348]
- Wolitski RJ, Bailey CJ, O'Leary A, Gomez CA, Parsons JT. Self-perceived responsibility of seropositive MSM for preventing HIV transmission to sex partners. *AIDS and Behavior* 2003;7:363–372. [PubMed: 14707533]
- Wolitski RJ, Parsons JT, Gomez CA. Prevention with HIV-seropositive men who have sex with men: Lessons from the Seropositive Urban Men's Study (SUMS) and the Seropositive Urban Men's Intervention Trial (SUMIT). *Journal of Acquired Immune Deficiency Syndrome* 2004;37(S2):101–109.

TABLE 1
Unprotected Anal Sex in the Past Three Months by Serostatus of Partner

Serostatus of Partner	Any Unprotected Anal Sex	
	<i>n</i>	%
Known HIV-Positive	25	23%
Known HIV-Negative	11	10%
Serostatus Unknown	55	55%

Note. Cochran $Q(2) = 50.53, p < .0001$.

TABLE 2

Prevalence (%) of Characteristics On Which Participants Based Their Serostatus Assumptions

Characteristic Type	Assumed Positive <i>n</i> = 60	Assumed Negative <i>n</i> = 23
Physical	3%	25%
Behavioral	30%	25%
Normative	22%	10%
Circumstantial/Associational	33%	20%
Discussion-based	7%	20%
Combination	5%	13%

Note. $\chi^2 (5) = 34.254, p < .001$