Published in final edited form as:

AIDS Educ Prev. 2014 February ; 26(1): 56–67. doi:10.1521/aeap.2014.26.1.56.

FINDING AND RECRUITING THE HIGHEST RISK HIV-NEGATIVE MEN WHO HAVE SEX WITH MEN

Andrea C. Vial, Tyrel J. Starks, and Jeffrey T. Parsons

Andrea C. Vial, B.A., Tyrel J. Starks, Ph.D., Jeffrey T. Parsons, Ph.D., are affiliated with the Center for HIV/AIDS Educational Studies and Training (CHEST), New York, New York. Jeffrey T. Parsons, Ph.D., is affiliated with the Department of Psychology, Hunter College of the City University of New York (CUNY), Health Psychology and Basic and Applied Social Psychology Doctoral Subprograms, The Graduate Center of CUNY, and CUNY School of Public Health at Hunter College, New York, New York.

Abstract

This study compared the ability of different field and online recruitment venues to reach those at highest risk for HIV infection among HIV-negative men who have sex with men (MSM), given that some subgroups are difficult to reach, and venues vary in the demographic characteristics of the samples they yield. Compared to other venues, dating/hookup websites reached significantly higher-than-expected concentrations of White MSM aged 40 and above, including those who reported unprotected anal intercourse (UAI). Facebook was the most successful venue for the recruitment of MSM who used stimulants, including those who reported UAI. MSM who reported UAI were more likely to be recruited online. This study points to systematic variation in the samples obtained via different recruitment strategies, which should be taken into consideration when designing intervention/prevention programs targeting HIV-negative MSM.

Almost three decades since its inception, the HIV/AIDS epidemic continues to disproportionately affect men who have sex with men (MSM; Centers for Disease Control and Prevention [CDC], 2012a; Heath, Lanoye, & Maisto, 2012; Rausch, Dieffenbach, Cheever, & Fenton, 2011). Despite a decline in overall HIV transmission rates in the U.S., MSM accounted for 63% of new HIV diagnoses in 2010 (CDC, 2012b). And, in the first half of 2011, for the first time in a given reporting period, more than half (51.4%) of new HIV/AIDS diagnoses in New York City were among MSM (New York City Department of Health and Mental Hygiene [DOH], 2012).

To be relevant, HIV behavioral surveillance, prevention work, and research must adequately represent those subgroups of MSM at greatest risk of infection (Halkitis, Wolitski, & Millett, 2013; Hatfield et al., 2010; McKellar, Valleroy, Karon, Lemp, & Janssen, 2006). Reflecting this need, one of the objectives of the National HIV/AIDS Strategy included the intensification of HIV prevention efforts among the groups where HIV is most heavily

concentrated (CDC, 2011; White House Office of National AIDS Policy, 2010). Recent epidemiological reports (CDC, 2011, 2012b; Prejean et al., 2011) suggested two specific subgroups of MSM at highest risk for contracting HIV: (1) racial/ethnic minority emerging adult MSM, who account for a disproportionate number of new HIV infections among MSM; and (2) White adult MSM aged 40–49, who continue to represent the plurality of new HIV infections among MSM.

Black MSM have the highest HIV prevalence and incidence rates among MSM in the U.S. (CDC, 2012b; Hatfield et al., 2010; Millett & Peterson, 2007; Prejean et al., 2011). Similarly, disproportionate rates of HIV/AIDS cases occur among Hispanic/Latino MSM (Bedoya et al., 2012; CDC, 2012b; Fernández et al., 2007; Fisher et al., 2011). Black and Hispanic/Latino MSM are also more likely to become infected at younger ages (13–29 years). In 2009, 60% of new HIV infections among Black MSM and 45% among Hispanic/Latino MSM happened in men aged 13–29, compared to 28% among White MSM (Prejean et al., 2011).

Contrasting this trend, recent epidemiological reports suggested White MSM are becoming infected at increasingly older ages: Between 2001 and 2010 in New York City, almost 80% of newly diagnosed young MSM were Black or Hispanic, whereas the largest share of newly diagnosed MSM aged 40 and above were White (DOH, 2012). Nationally, between 2006 and 2008, the cohort most affected among White MSM were men 30–39 years of age, who accounted for 31–35% of infections; and in 2009, men 40–49 years old accounted for 30% of new infections among White MSM (Prejean et al., 2011). Thus, epidemiological reports suggested that adult White MSM aged 40 to 49 constitute a second group at heightened risk for HIV infection, along with young Black and Hispanic/Latino MSM (CDC, 2012b; DOH, 2012; Prejean et al., 2011).

Finding high-risk MSM remains a challenge (Fuqua et al., 2012; Jenkins, 2012; McKellar et al., 2006; Sullivan et al., 2011). As a consequence, racial and ethnic minorities continue to be included in HIV research in disproportionately low numbers relative to their HIV prevalence (Du Bois, Johnson, & Mustanski, 2012; Halkitis et al., 2013). Research shows that recruitment venues vary in the demographic and behavioral characteristics of the samples they yield (Burrell et al., 2012; Grov, 2012; Grov & Crow, 2012; Grov, Ventuneac, Rendina, Jimenez, & Parsons, 2013). For example, McKee, Picciano, Roffman, Swanson, and Kalichman (2006), found that field recruitment was more effective at reaching younger MSM (i.e., under 40 years old), but less effective at reaching minority and non-gay identified MSM. Additionally, different recruitment strategies may have very different associated costs as well as staff and technology needs (Grov, Bux, Parsons, & Morgenstern, 2009; Parsons, Vial, Starks, & Golub, 2013). To illustrate, compared to online recruitment, enrolling a single MSM in a randomized controlled trial via field-based recruitment strategies could require an additional 2.5 person-hours on average (Parsons et al., 2013). Thus, knowing where to concentrate scarce resources when recruiting high-risk MSM may contribute to more effective recruitment plans (Grov et al., 2009).

Parsons et al. (2013) offered a timely comparison of the overall demographic and behavioral characteristics of samples of MSM yielded by field and online recruitment strategies;

however, more research is needed to examine how various strategies may differentially reach specific subgroups of MSM at heightened risk for HIV-infection. Similarly, while Parsons et al. (2013) combined different recruitment venues and focused on venue type (i.e., field versus online), a more nuanced analysis at the venue level would be of great utility for researchers implementing recruitment strategies. Despite their potential value in targeting recruitment efforts, few studies have reported associations among recruitment venue and risk behaviors or HIV prevalence (Barresi et al., 2010), and the link between patterns of risk and recruitment source is not well understood (Fisher, Purcell, Hoff, Parsons, & O'Leary, 2006).

The primary goal of this study was to address this need (e.g., Parsons et al., 2013; Fisher et al., 2011; Rausch et al., 2011) and expand on prior research by re-analyzing Parsons et al.'s (2013) data at the venue level. Specifically, we sought to determine which recruitment venues would be most likely to yield HIV-negative MSM from the two high-risk groups identified in recent epidemiological reports— Black and Hispanic/Latino emerging adult MSM, and White MSM aged 40 to 49 (CDC, 2012b; DOH, 2012; Prejean et al., 2011). Additionally, we examined the effectiveness of different venues to reach HIV-negative MSM who report engaging in two high-risk behaviors: Unprotected anal intercourse (UAI) and stimulant use.

Substance use has long been recognized as an important factor related to HIV risk in MSM (CDC, 2008; Drumright, Patterson, & Strathdee, 2006; Lelutiu-Weinberger, Botsko, & Golub, 2013; Stueve, O'Donnell, Duran, San Doval, & Geier, 2002). In particular, research on HIV risk among MSM points to stimulant use as a major focus for primary prevention efforts (CDC, 2007; Garofalo, Mustanski, McKirnan, Herrick, & Donenberg, 2006; Halkitis et al., 2011). Past research has highlighted the role of stimulants in behavior disinhibition, which likely contributes to increased rates of unprotected sex and HIV seroconversion (Garofalo et al., 2006; Heath et al., 2012; Ostrow et al., 2009; Stueve et al., 2002). Thus, MSM who use stimulants represent a third subgroup within the MSM population at heightened risk for HIV infection.

Parsons et al. (2013) found a general pattern of higher UAI as well as stimulant (i.e., methamphetamine and/or cocaine) use in MSM recruited online (versus in the field). Here, we re-analyzed these data in order to compare specific field and online venues in their likelihood to reach HIV-negative MSM who report UAI and/or stimulant use, both generally as well as among MSM who belong to the aforementioned two high-risk groups. These new analyses present a more nuanced picture of recruitment effectiveness in light of the increasing need to intensify HIV prevention efforts among the groups where HIV is most heavily concentrated (i.e., National HIV/AIDS Strategy; CDC, 2011).

In summary, this study presents a re-evaluation of Parsons et al. (2013), expanding on their findings by examining which venues were more likely to yield MSM from three subgroups at heightened risk for HIV infection: (1) Black or Hispanic/ Latino MSM aged 18 to 29; (2) White MSM aged 40 and above; and (3) MSM who use stimulants. We further examined which venues were most likely to reach MSM at the intersections of these subgroups (e.g., stimulant users who were either minority MSM aged 18 to 29, or White MSM aged 40 and

above). Finally, we evaluated which venues were better at finding MSM in the three aforementioned groups who report engaging in UAI.

METHOD

Details of the recruitment methodology have been reported elsewhere (Parsons et al., 2013). Data were gathered simultaneously in the field and online as part of recruitment efforts for two behavioral intervention trials of drug-using MSM in the New York City area, aiming to enroll adult (i.e., 18+) MSM regardless of race or ethnic background. Both field and online recruitment strategies directed respondents to complete an 11-item survey to determine preliminary eligibility to participate in one of the two studies. The analyses presented here correspond to the preliminary eligibility survey data. Both online and field-based recruitment strategies aimed to enroll participants into both intervention trials. All recruitment materials employed both in the field and online utilized the same images and text, which minimized media-related variability across recruitment strategies. Likewise, the images and text used to post online were the same regardless of the specific type of website.

PARTICIPANTS AND PROCEDURES

A total of 3,640 men completed the 11-item survey between July 2009 and January 2010; however, 797 (21.9%) were excluded from analyses—420 for not meeting basic eligibility criteria (i.e., not MSM, not residing in the NYC area, or under 18 years of age), and 377 for missing data on key variables, yielding a final analytic sample of 2,843 MSM.

Field Recruitment—Staff used electronic devices (Palm Pilot Z22) to survey men in the field, which allowed participants to read sensitive questions and enter their responses privately. Recruiters approached men at a variety of venues in the NYC area, such as clubs and bars and community venues, like bookstores, coffee shops, and street fairs. Viable venues were identified by ethnographic research (see Parsons et al., 2013) and reliance on a popular magazine promoting gay bars and nightclubs in the NYC area. Additionally, staff partnered with community-based organizations (such as Gay Men's Health Crisis [GMHC]), as well as neighborhood shops and stores, and were allowed to leave recruitment materials on display. Finally, staff surveyed individuals on site by setting up tables in areas with gay establishments.

Online Recruitment—An online version of the survey was used to screen men on the Internet. Recruiters regularly visited different dating/hookup websites catering to MSM and posted recruitment messages with information about the two intervention studies, as well as a link to the preliminary survey. A variety of websites catering to different MSM subgroups were utilized, including racial and ethnic minority MSM, in order to increase the diversity of the online sample. Craigslist.org, a site hosting classified ads, was also employed; staff posted a daily message with study information within the personals category for MSM in the NYC area. Those interested had the option of contacting staff via email, and received a link to the online survey. Finally, the social networking site Facebook.com was utilized. Staff created a page and posted a recruitment message on its wall daily, including a link to the online survey. Targeted Facebook ads were employed as well, which were visible only to

men in the NYC area, who were 18 years old and above, and who were interested in men (as listed in their Facebook profile). Whenever users clicked on these ads, they were routed to the online survey.

Participants who learned about the studies in community venues had the chance to complete the online survey by visiting a website. In order to focus on the characteristics of recruitment venue vs. response venue, these participants were categorized by venue of origin (i.e. community venues) and not by survey medium (i.e., field vs. online). In summary, we compared two field venues: clubs/bars and community venues; and two online venues: dating/hookup websites and Facebook.

MEASURES

The survey assessed basic demographic information (e.g., age, race/ethnicity, place of residence), HIV status (positive, negative, unknown), and whether respondents had engaged in anal sex with another man in the past 90 days (yes/no). Participants of HIV-negative/unknown status who responded yes to this last question were subsequently asked to report their frequency of condom use during anal sex in the past 90 days (from every time to never). Based on their responses, participants were categorized as having had UAI (i.e., those who selected any answer except every time) or not. Participants were also asked, “Which of the following drugs, if any, have you used in the last 90 days?” (i.e., cocaine, ecstasy, meth, ketamine, GHB, poppers, or none of the above). Those who reported having used cocaine and/or methamphetamine specifically were categorized as stimulant users.

ANALYTIC STRATEGY

We used Chi-Square tests of independence to evaluate associations between recruitment strategy and risk subgroups, since all variables of interest were assessed categorically. Instances in which variables included more than three response categories and significant differences were found across recruitment strategies were further evaluated with follow-up analyses using Fischer’s Exact Tests. When examining the intersection between White MSM aged 40 and above and stimulant users, the omnibus χ^2 test involved a large number of cells (> 20%) with expected frequencies below 5 in tables with degrees of freedom > 1. Under such conditions, evaluation of significance is unreliable (Cochran, 1954). Fischer’s Exact Tests utilize the hypergeometric distribution, and are independent of expected values. They are therefore a better alternative when assumptions of χ^2 are violated. The application of Fischer’s Exact Tests was limited by the analytic capacity of available statistical calculators. An omnibus test for 2 (stimulant use: yes/no) $\times$ 4 (venue) tables could not be calculated for a total N of the size involved in the current analyses (i.e., $N = 2,843$). Therefore, all possible cell-by-cell differences were evaluated using a series of 2 $\times$ 2 Fischer’s Exact Tests and a Bonferroni correction setting $\alpha = .008$.

RESULTS

About 46% of MSM in the analytic sample ($N = 2,843$) were between 18 and 29 years old; 29.5% were between 30 and 39, and the remaining 24.6% were aged 40 and above. Most (55.3%) identified as White, followed by Hispanic/Latinos (16.9%), other race and ethnicity

(15.1%), and Blacks (12.7%). Most of the sample (73.5%, $n = 2,089$) was recruited from clubs and bars; 6.6% ($n = 189$) from community venues; 12.5% ($n = 355$) from Facebook; and 7.4% ($n = 210$) from dating/hookup websites. The majority identified as HIV-negative or of unknown status ($n = 2,331$; 82%). Among them, 82.5% ($n = 1,924$) were recruited from clubs and bars; 3.5% ($n = 82$) were recruited from community venues; 9.6% ($n = 224$) from Facebook; and 4.3% ($n = 101$) from dating/hookup websites.

HIGH-RISK SUBGROUP CATEGORIZATION OF HIV-NEGATIVE MSM

Of the 2,331 HIV-negative men who completed the survey, 1,190 (51.1%) were categorized into at least one of the high-risk subgroups. For a detailed account of the different subgroups evaluated in this study, see Table 1. We compared HIV-negative Black and Hispanic/Latino MSM between 18 and 29 years old to see if any differences were present that would contraindicate combining them into a single group. Both were significantly more likely to be found at community venues than elsewhere, $\chi^2(3) = 38.70$, $p < .001$ (Black MSM), and $\chi^2(3) = 23.17$, $p < .001$ (Hispanic/Latino MSM). Blacks and Hispanic/Latino MSM did not differ significantly in their reports of stimulant use, $\chi^2(1) = 2.13$, $p = .09$; or UAI, $\chi^2(1) = 2.46$, $p = .29$. Thus, we combined these MSM into one subgroup for the rest of our analyses. Similarly, HIV-negative White MSM aged 40 and above were grouped together. A total of 649 respondents were categorized into one of these two subgroups, whereas the remaining 2,194 MSM did not meet criteria for either. We also created a stimulant use subgroup (i.e., those who reported having used cocaine and/or methamphetamine in the past 3 months). This subgroup is not mutually exclusive with the first two subgroups. A total of 627 respondents were HIV-negative stimulant users, while 2,216 respondents were not (see Table 1).

HIGH-RISK SUBGROUPS OF HIV-NEGATIVE MSM BY RECRUITMENT STRATEGY

As shown in Table 2, both field venues resulted in significantly lower-than-expected concentrations of MSM belonging to at least one subgroup. Dating/hookup websites also resulted in significantly lower-than-expected concentrations of minority emerging adult MSM; however, they reached significantly higher-than-expected concentrations of White MSM aged 40 and above. Stimulant users were significantly more likely to be found on Facebook than other venues, while a lower-than-expected concentration of them was found at community venues. Additionally, community venues and Facebook resulted in lower-than-expected concentrations of White MSM aged 40 and above.

INTERSECTIONS AMONG HIGH-RISK SUBGROUPS OF HIV-NEGATIVE MSM AND UAI BY RECRUITMENT STRATEGY

As shown in Table 3, higher-than-expected concentrations of minority emerging adult MSM who used stimulants were recruited via Facebook, while clubs/bars reached significantly lower-than-expected concentrations of them. A series of 2×2 Fisher's Exact tests showed that White MSM aged 40 and above who used stimulants were equally likely to be found at any venue.

Data on UAI were missing from 766 participants (116 among minority emerging adult MSM, 106 among White MSM aged 40 and above, 106 among stimulant users, and the

remaining 438 among participants not categorized into any group). Missing data were spread evenly across recruitment venues (ranging between 32% and 39% of the total HIV-negative subsample from each venue). To avoid missing data from biasing our results, χ^2 tests compared the number of MSM reporting UAI within each subgroup from each venue to the total number of HIV-negative MSM reporting UAI from each venue (see Table 3). In general, HIV-negative MSM who reported UAI were significantly more likely to be recruited online, $\chi^2(3) = 55.64, p < .001, \phi = .188$, both via Facebook and dating/hookup sites (both $p < .001$ per Fisher's exact test). Among participants categorized into at least one subgroup who reported UAI, a significantly higher-than-expected concentration was found on Facebook, while clubs and bars reached a significantly lower-than-expected concentration of them (see Table 3). This was also the case among stimulant users who reported UAI. In contrast, significantly higher-than-expected concentrations of White MSM aged 40 and above who reported UAI were found on dating/hookup websites, while significantly lower concentrations of them were found on Facebook. Minority emerging adult MSM who engaged in UAI were equally likely to be found at any venue.

DISCUSSION

To be most effective, HIV surveillance and prevention efforts need to reach those at highest risk for HIV infection (Halkitis et al., 2013). The re-analyses of Parsons et al.'s (2013) data presented here suggest that recruitment strategies can be tailored to improve efficiency in reaching highly vulnerable subpopulations of MSM. While Parsons et al.'s (2013) aggregated analyses showed that field-based recruitment strategies reached higher-than-expected frequencies of HIV-negative MSM as well as minority MSM in general, our venue-level examination of specific subgroups of HIV-negative MSM revealed that HIV-negative minority emerging adult MSM were equally likely to be recruited in field venues and on Facebook; however, dating/ hookup websites were least successful at reaching them. In contrast, HIV-negative White MSM aged 40 and above were significantly more likely to be found at dating/hookup websites, and less likely to be recruited from community venues and Facebook.

Stimulant use and UAI greatly increase the risk for HIV infection; thus, MSM who report engaging in these behaviors are of particular interest to HIV prevention work. In general, HIV-negative MSM reporting UAI were more likely to be found online than in field venues, consistent with previous findings (Parsons et al. 2013). Novel to our analysis is the finding that Facebook in particular was more likely to reach MSM who reported UAI among HIV-negative stimulant users. However, this venue reached a lower-than-expected concentration of White MSM aged 40 and above who reported UAI. Instead, this group was more likely to be found at dating/ hookup websites.

It is possible that the high prevalence of reported stimulant use among MSM recruited via Facebook might be due to its targeting capabilities. Online recruitment materials were worded to target substance users, and MSM who did not meet these basic criteria could self-select out, increasing the proportion of stimulant users in the online sample. Such targeting is virtually impossible in the field, where recruiters approach any available men without being able to estimate whether they will meet behavioral criteria or not. Parsons et al. (2013)

advanced this targeting hypothesis, suggesting that higher targeting capabilities should lead to higher concentrations of MSM meeting recruitment criteria (in this case, high-risk behavior). The venue-level analysis presented here supports such hypothesis, as Facebook allows for much more powerful targeting than other online venues (e.g., through targeted Facebook ads), and accordingly, we found higher prevalence of stimulant use in the Facebook sample compared to dating/hookup websites.

Additionally, while the focus of dating/hookup websites is mainly sexual, Facebook has a broader social scope and a larger user base. Facebook can be used to look for sexual partners (and recent reports have shown that minority MSM do use Facebook for this purpose; see Young, Szekeres, & Coates, 2013), but users also typically engage in a wide variety of non-sexual social interactions, which may extend the amount of time users spend on Facebook relative to dating/hookup websites. In these conditions, recruiting on Facebook may reach an overall larger number of MSM. Moreover, online recruitment strategies rely heavily on self-selection, i.e., users must (1) detect a recruitment message among other visual stimuli; (2) find it self-relevant; and (3) choose to click on it. The highly sexual nature of dating/hookup websites might make some users less likely to notice and/or respond to recruitment materials, while Facebook users may not have the same distractions. In this way, Facebook's powerful targeting capabilities, combined with its larger user base and reduced distractions from sexual stimuli may increase the number of MSM recruited on Facebook in general, as well as facilitate the self-selection of MSM who engage in the behaviors referenced in the online recruitment materials.

The data presented here indicate that programs and studies aimed at MSM who use stimulants would likely benefit from including Facebook (and perhaps other similar social networking sites, such as MySpace) in their recruitment strategies. While Parsons et al. (2013) noted that MSM recruited online had rates of cocaine and methamphetamine use that exceeded previous estimates for the New York City area (DOH, 2011), our venue-level analysis revealed that, among HIV-negative MSM, this disparity is likely driven by MSM recruited from a specific type of online venue (i.e., Facebook). This conclusion complements and qualifies previous recommendations that interventions targeting drug-using MSM would benefit from including Internet-based strategies in their overall recruitment efforts (Jenkins, 2012; Parsons et al., 2013).

LIMITATIONS AND CONCLUSIONS

While convenience sampling is a common approach to studying hard-to-reach populations in HIV surveillance work (Magnani, Sabin, Saidel, & Heckathorn, 2005), it nonetheless reduces the generalizability of the results presented here. Venue selection was limited to establishments that explicitly welcomed and/or implicitly tolerated the presence of recruiters, potentially resulting in a somewhat biased sample. Similarly, this study focused on an urban sample from New York City, and results may not generalize to other areas. Rural MSM may be easier to find online (Bowen, 2005).

Additionally, the brief preliminary screening survey did not collect data on frequency/quantity of stimulant use or routes of administration (e.g., smoking vs. snorting vs. injecting). Nor did it collect information on socioeconomic status, education level, etc.

Further, the sample included only individuals over 18 years of age, which limited our ability to examine an additional important high-risk group: According to epidemiological reports (Prejean et al., 2011), those aged 13–29 are at heightened risk for HIV-infection, especially among minority MSM. Future research may address these limitations by employing a more extensive survey with an expanded sample that includes MSM younger than 18.

Another potential limitation refers to the large numbers of missing data on UAI discussed in the results section. We believe this might be a consequence of minor technical problems with the survey, rather than the result of any systematic differences in venues or respondents (i.e., specific subgroups of MSM choosing to skip this question). Although we took steps to limit any bias that might be introduced by missing data, we nonetheless recommend that the findings on UAI reported here be interpreted with caution. It is relevant to note, however, that the percentages of MSM reporting UAI in the Facebook sample were considerably lower than those reported elsewhere for minority MSM recruited on Facebook (i.e., between 3.1% and 25.7% in our study, compared to 40–45%; Young et al., 2013).

While Parsons et al. (2013) reported combined analyses of HIV-positive and negative MSM, the current study focused on HIV-negative MSM only. Reaching HIV-positive MSM presents unique challenges, but also the possibility of recruiting in venues that are typically not included in strategies aimed at reaching HIV-negative MSM (e.g., AIDS service organizations), which makes venue-level analyses very difficult in combined samples of HIV-positive and negative MSM. Thus, the data presented here do not necessarily imply that HIV-positive MSM would be successfully recruited from the same venues. Future studies should examine differences across recruitment venue subtypes among sub-populations of HIV-positive MSM.

Despite these limitations, our results point to systematic variation in the samples obtained via different recruitment venues, which should be taken into consideration when designing intervention/prevention programs or research studies targeting HIV-negative MSM at heightened risk for HIV infection. Above and beyond Parsons et al.'s (2013) findings, we have shown that all Internet is not equal when it comes to recruiting high-risk MSM. We believe future HIV surveillance work may benefit from this knowledge by focusing scarce recruitment resources on venues likely to reach members from the specific high-risk subgroups being targeted.

Acknowledgments

This research was supported by grants from the National Institute on Drug Abuse (NIDA) (R01 DA020366) and (NIDA) (R01 DA023395) (both Jeffrey T. Parsons, Principal Investigator).

The Young Men's Health Project was supported by a grant from the National Institute on Drug Abuse (NIDA) (R01 DA020366 Jeffrey T. Parsons, Principal Investigator) and the authors gratefully acknowledge Dr. Corina L. Weinberger, the Project Director, and the contributions of the Young Men's Health Project team—Michael Adams, Anthony Bamonte, Kristi Gamarel, Chris Hietikko, Catherine Holder, Dr. John Pachankis, Anthony Surace, and Dr. Brooke Wells. The ACE Project was supported by a grant from the National Institute on Drug Abuse (NIDA) (R01 DA023395, Jeffrey T. Parsons, Principal Investigator) and the authors gratefully acknowledge Dr. Julia Tomassilli, the Project Director, and the contributions of the ACE Project Team—Michael Adams, Kristi Gamarel, Chris Hietikko, Catherine Holder, Dr. John Pachankis, and Dr. Ja'Nina Walker. The authors would like to thank Kevin Robin, the Director of Recruitment at the time these data were collected, and all of the members of the CHEST Recruitment Team. We would also like to thank Dr. Sarit A. Golub and Dr. Christian Grov for their helpful

suggestions to the manuscript, Dr. Richard Jenkins for his support of the Young Men's Health Project, and Dr. Shoshana Kahana for her support of the ACE Project.

REFERENCES

- Barresi P, Husnik M, Camacho M, Powell B, Gage R, LeBlanc D, Koblin B. Recruitment of men who have sex with men for large HIV intervention trials: Analysis of the EXPLORE study recruitment effort. *AIDS Education and Prevention*. 2010; 22:28–36. [PubMed: 20166785]
- Bedoya CA, Mimiaga MJ, Beauchamp G, Donnell D, Mayer KH, Safren SA. Predictors of HIV transmission risk behavior and seroconversion among Latino men who have sex with men in project EXPLORE. *AIDS and behavior*. 2012; 16:608–617. [PubMed: 21390540]
- Bowen A. Internet sexuality research with rural men who have sex with men: Can we recruit and retain them? *The Journal of Sex Research*. 2005; 42:317–323.
- Burrell ER, Pines HA, Robbie E, Coleman L, Murphy RD, Hess KL, Gorbach PM. Use of the location-based social networking application GRINDR as a recruitment tool in rectal microbicide development research. *AIDS and behavior*. 2012; 16:1816–1820. [PubMed: 22851153]
- Centers for Disease Control and Prevention. Methamphetamine use and risk for HIV/AIDS. Fact Sheet. 2007. Retrieved from <http://www.cdc.gov/hiv/resources/fact-sheets/PDF/meth.pdf>
- Centers for Disease Control and Prevention. Trends in HIV/AIDS diagnoses among men who have sex with men—33 states, 2001–2006. *Morbidity and Mortality Weekly Report*. 2008; 57:681–686. [PubMed: 18583954]
- Centers for Disease Control and Prevention. HIV risk, prevention, and testing behaviors among men who have sex with men—National HIV Behavioral Surveillance System, 21 U.S. cities, United States, 2008. *Morbidity and Mortality Weekly Report, Surveillance Summaries*. 2011; 60(SS14):1–34. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/ss6014a1.htm?s_cid=ss6014a1_w.
- Centers for Disease Control and Prevention. HIV infections attributed to male-to-male contact—metropolitan statistical areas, United States and Puerto Rico, 2010. *Morbidity and Mortality Weekly Report*. 2012a; 61:962–966. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6147a3.htm>. [PubMed: 23190569]
- Centers for Disease Control and Prevention. Diagnoses of HIV infection and AIDS in the United States and dependent areas, 2010. *HIV Surveillance Report*. 2012b; 22 Retrieved from <http://www.cdc.gov/hiv/surveillance/resources/reports/2010report/index.htm>.
- Cochran WG. Some methods of strengthening the common χ^2 tests. *Biometrics*. 1954; 10:417–451.
- Drumright LN, Patterson TL, Strathdee SA. Club drugs as causal risk factors for HIV acquisition among men who have sex with men: A review. *Substance Use & Misuse*. 2006; 41:1551–1601. [PubMed: 17002993]
- Du Bois S, Johnson S, Mustanski B. Examining racial and ethnic minority differences among YMSM during recruitment for an online HIV prevention intervention study. *AIDS and behavior*. 2012; 16:1430–1435. [PubMed: 21986869]
- Fernández MI, Warren JC, Varga LM, Prado G, Hernandez N, Bowen GS. Cruising in cyber space. *Journal of Ethnicity in Substance Abuse*. 2007; 6:143–162. [PubMed: 18192208]
- Fisher H, Patel-Larson A, Green K, Shapata-va E, Uhl G, Kalayil EJ, Chen B. Evaluation of an HIV prevention intervention for African Americans and Hispanics: Findings from the VOICES/VOCES community-based organization behavioral outcomes project. *AIDS and behavior*. 2011; 15:1691–1706. [PubMed: 21573724]
- Fisher H, Purcell DW, Hoff CC, Parsons JT, O'Leary A. Recruitment source and behavioral risk patterns of HIV-positive men who have sex with men. *AIDS and behavior*. 2006; 10:553–561. [PubMed: 16761116]
- Fuqua V, Chen YH, Packer T, Dowling T, Ick TO, Nguyen B, Raymond HF. Using social networks to reach Black MSM for HIV testing and linkage to care. *AIDS and behavior*. 2012; 16:256–265. [PubMed: 21390535]

- Garofalo R, Mustanski BS, McKirnan DJ, Herrick A, Donenberg GR. Methamphetamine and young men who have sex with men understanding patterns and correlates of use and the association with HIV-related sexual risk. *Archives of Pediatric and Adolescent Medicine*. 2006; 161:591–596.
- Grov C. HIV risk and substance use in men who have sex with men surveyed in bathhouses, bars/clubs, and on Craigslist.org: Venue of recruitment matters. *AIDS and behavior*. 2012; 16:807–817. [PubMed: 21748276]
- Grov C, Bux DA, Parsons JT, Morgenstern J. Recruiting hard-to-reach drug-using men who have sex with men into an intervention study: Lessons learned and implications for applied research. *Substance Use and Misuse*. 2009; 44:1855–1871. [PubMed: 20001284]
- Grov C, Crow T. Attitudes about and HIV risk related to the “most common place” MSM meet their sex partners: Comparing men from bathhouses, bars/clubs, and Craigslist.org. *AIDS Education and Prevention*. 2012; 24:102–116. [PubMed: 22468972]
- Grov C, Ventuneac A, Rendina HJ, Jimenez RH, Parsons JT. Recruiting men who have sex with men on Craigslist.org for face-to-face assessments: Implications for research. *AIDS and behavior*. 2013; 17:773–778. [PubMed: 23073646]
- Halkitis PN, Pollock JA, Pappas MK, Dayton A, Moeller RW, Siconolfi D, Solomon T. Substance use in the MSM population of New York City during the era of HIV/AIDS. *Substance Use, Misuse*. 2011; 46:264–273. [PubMed: 21303246]
- Halkitis PN, Wolitski RJ, Millet GA. A holistic approach to addressing HIV infection disparities in gay, bisexual, and other men who have sex with men. *American Psychologist*. 2013; 68:261–273. [PubMed: 23688093]
- Hatfield L, Ghiselli M, Jacoby S, Cain-Nielsen A, Kilian G, McKay T, Rosser B. Methods for recruiting men of color who have sex with men in prevention-for-positives interventions. *Prevention Science*. 2010; 11:56–66. [PubMed: 19731034]
- Heath J, Lanoye A, Maisto SA. The role of alcohol and substance use in risky sexual behavior among older men who have sex with men: A review and critique of the current literature. *AIDS and behavior*. 2012; 16:578–589. [PubMed: 21390534]
- Jenkins RA. Recruiting substance-using men who have sex with men into HIV prevention research: Current status and future directions. *AIDS and behavior*. 2012; 16:1411–1419. [PubMed: 22016329]
- Lelutiu-Weinberger C, Botsko M, Golub SA. Predictors of day-level sexual risk for young gay and bisexual men. *AIDS and behavior*. 2013; 17:1465–1477. [PubMed: 22614745]
- Magnani R, Sabin K, Saidel T, Heckathorn D. Review of sampling hard-to-reach and hidden populations for HIV surveillance. *AIDS*. 2005; 19(Suppl 2):67–72.
- McKee MB, Picciano JF, Roffman RA, Swanson F, Kalichman SC. Marketing the “Sex check”: Evaluating recruitment strategies for a telephone-based HIV prevention project for gay and bisexual men. *AIDS Education and Prevention*. 2006; 18:116–131. [PubMed: 16649957]
- McKellar DD, Valleroy L, Karon J, Lemp G, Janssen RS. The Young Men’s Survey: methods for estimating HIV sero-prevalence and risk factors among young men who have sex with men. *Public Health Reports*. 2006; 11:138–144.
- Millett GA, Peterson JL. The known hidden epidemic: HIV/AIDS among Black men who have sex with men in the United States. *American Journal of Preventive Medicine*. 2007; 32:S31–S33. [PubMed: 17386333]
- New York City Department of Health and Mental Hygiene. Substance use and sexual risk among men who have sex with men, injection drug users, and high-risk heterosexuals: Results from the National Health Behavior Surveillance study in New York City. 2011. Retrieved from <http://www.nyc.gov/html/doh/downloads/pdf/dires/nhbs-sex-rsk-and-substance-use-jun2010.pdf>
- New York City Department of Health and Mental Hygiene. HIV epidemiology and field services semiannual report. 2012; 7(1) Retrieved from <http://www.nyc.gov/html/doh/downloads/pdf/dires/2012-1st-semi-rpt.pdf>.
- Ostrow DG, Plankey MW, Cox C, Li X, Shoptaw S, Jacobson LP, Stall RC. Specific drug combinations contribute to the majority of recent HIV seroconversions among MSM in the MACS. *Journal of Acquired Immune Deficiency Syndrome*. 2009; 51:349–355.

- Parsons JT, Vial AC, Starks T, Golub SA. Recruiting drug-using men who have sex with men in behavioral intervention trials: A comparison of internet and field-based strategies. *AIDS and Behavior*. 2013; 17:688–699. [PubMed: 22684657]
- Prejean J, Song R, Hernandez A, Ziebell R, Green T, Walker F, Hall HI. Estimated HIV incidence in the United States, 2006–2009. *PLoS ONE*. 2011; 6:e17502. [PubMed: 21826193]
- Rausch D, Dieffenbach C, Cheever L, Fen-ton KA. Towards a more coordinated federal response to improving HIV prevention and sexual health among men who have sex with men. *AIDS and Behavior*. 2011; 15(Suppl. 1):107–111.
- Stueve A, O'Donnell L, Duran R, San Doval A, Geier J. Being high and taking sexual risks: Findings from a multisite survey of urban young men who have sex with men. *AIDS Education and Prevention*. 2002; 14:482–495. [PubMed: 12512849]
- Sullivan PS, Khosropour CM, Luisi N, Ams-den M, Coggia T, Wingood GM, DiClemente RJ. Bias in online recruitment and retention of racial and ethnic minority men who have sex with men. *Journal of Medical Internet Research*. 2011; 13:e38. [PubMed: 21571632]
- White House Office of National AIDS Policy. The National HIV/AIDS strategy. Washington, DC: Author; 2010. Retrieved from <http://www.whitehouse.gov/sites/default/files/uploads/NHAS.pdf>
- Young SD, Szekeres G, Coates T. Sexual risk and HIV prevention behaviours among African-American and Latino MSM social networking users. *International Journal of STD and AIDS*. 2013; 24:643–649. [PubMed: 23970575]

TABLE 1

High-Risk HIV-Negative Subgroup Categories

	Age	Race/Ethnicity	N	% Total Sample (n = 2,843)	% HIV-Neg/unknown (n = 2,331)
Minority 18–29	18–29	Black/Latino	359	12.60	15.40
White 40+	40 and above	White	290	10.20	12.40
Stimulant Users*	Any	Any	627	22.10	26.90
Any Subgroup†	Any	Any	1125	39.60	48.30

Note. The first two subgroups are mutually exclusive.

* Stimulant Use is defined as having used either cocaine or methamphetamine in the past 90 days.

† Includes individuals who may belong to more than one subgroup simultaneously.

TABLE 2

High Risk HIV-Negative Subgroups by Recruitment Strategy

	All Venues n(%)	Clubs/Bars n(%)	Comm. Venues n(%)	Facebook website n(%)	Dating/Hook- up websites n(%)	$\chi^2(3)$	Effect Size (Phi)
Total Sample [†]	2843 (100)	2089 (73.5) ^a	189 (6.6) ^a	355 (12.5) ^a	210 (7.4) ^a	3586.50 [*]	—
Minority 8–29	359 (12.6)	288 (80.2) ^a	24 (6.7) ^a	37 (10.3) ^a	10 (2.8) ^b	15.88 [*]	0.075
White 40+	290 (10.2)	238 (82.1) ^a	10 (3.4) ^b	9 (3.1) ^b	33 (11.4) ^b	37.96 [*]	0.116
Stimulant Users	627 (22.1)	453 (72.2) ^a	21 (3.3) ^b	117 (18.7) ^b	36 (5.7) ^a	40.83 [*]	0.12
Any Subgroup	1125 (40.0)	875 (77.8) ^a	47 (4.2) ^b	141 (12.5) ^a	62 (5.5) ^b	30.64 [*]	0.104

Note. Within columns, cells with different superscripts differ from expected values relative to totals.

*
 $p < .01$.

[†]The total sample refers to all men who took the preliminary survey, regardless of HIV-status.

TABLE 3
Intersections Among HIV-Negative Subgroups and Unprotected Anal Sex by Recruitment Strategy

	All Venues n(%)	Clubs/Bars n(%)	Comm. venues n(%)	Facebook website n(%)	Dating/Hook- up websites n(%)	$\chi^2(3)$	Effect Size (Phi)
Total Sample [†]	2843 (100)	2089 (73.5)	189 (6.6)	355 (12.5)	210 (7.4)	—	—
Minority 18–29	359 (12.6)	288 (80.2) ^a	24 (6.7)	37 (10.3) ^a	10 (2.8)	—	—
Stimulant Users	85 (23.7)	59 (69.4) ^b	5 (5.9)	19 (22.4) ^b	2 (2.4)	17.49*	0.221
White 40+	290 (10.2)	238 (82.1)	10 (3.4)	9 (3.1)	33 (11.4)	—	—
Stimulant Users	66 (15.1)	45 (68.2)	3 (4.5)	3 (4.5)	15 (22.7)	12.55	—
UAI (Yes) ^{††}	792 (27.9)	616 (77.8) ^a	25 (3.2)	101 (12.8) ^a	50 (6.3) ^a	—	—
Minority 18–29	125 (15.8)	101 (80.8)	3 (2.4)	18 (14.4)	3 (2.4)	4.35	—
White 40+	97 (12.2)	73 (75.3)	5 (5.2)	3 (3.1) ^b	16 (16.5) ^b	27.77*	0.187
Stimulant Users	323 (40.7)	196 (60.7) ^b	13 (4.0)	83 (25.7) ^b	31 (9.6)	103.10*	0.361
Any Subgroup	462 (58.3)	323 (69.9) ^b	16 (3.5)	87 (18.8) ^b	36 (7.8)	45.36*	0.239

Note. Within columns, cells with different superscripts differ from expected values relative to totals. UAI: Unprotected anal sex, defined as using condoms less than all the time in the last 90 days.

*
 $p < .01$.

[†]The total sample refers to all men who took the preliminary survey, regardless of HIV-status;

^{††}Analyses based on total numbers of HIV-negative MSM reporting UAI, rather than on the full MSM sample.