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Feasibility and Promise of a Couple-Based HIV/STI Preventive Intervention for Methamphetamine-Using, Black Men Who have Sex with Men

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Abstract

Accumulating evidence supports couple-based approaches for HIV/STI preventive interventions. Yet, to date, no studies have examined couple-based sexual risk reductions intervention specifically for men who have sex with men (MSM) from populations with elevated rates of HIV/STI transmission, such as black MSM and methamphetamine-involved MSM. We pilot tested —using a pre-/post-test design—a seven-session couple-based intervention for black, methamphetamine-using, black MSM couples engaging in sexual risk. Feasibility was assessed via recruitment and retention rates; potential efficacy relied on self-reported sexual risk and drug use prior to and two months following intervention delivery. We enrolled 34 couples (N = 68 men). Over 80% attended all seven intervention sessions, and retention exceeded 95% at two-month follow-up. At follow-up, participants reported significantly fewer sexual partners, fewer episodes

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of unprotected anal sex, and greater condom use with their main partner; participants also reported significantly less methamphetamine use, any illicit drug use, and number of illicit drugs used. These findings indicate that couple-based HIV/STI intervention is feasible and promising for at-risk black MSM couples.

Keywords

HIV; Prevention; Couples—Men who have sex with men; African American; Black; Methamphetamine

Introduction

Prior HIV prevention research has supported the efficacy of a couple-based modality [1–5] or couple-focused information/content [6, 7]. Those earlier risk reduction intervention studies have been conducted exclusively with mixed-gender ("heterosexual") couples. While male-to-male sexual contact continues to represent the major conduit of HIV transmission in the US [8], a recent systematic review of couple-based HIV preventive intervention studies noted the lack of any studies involving men who have sex with men (MSM) [9]; thus, to date, it appears that a promising avenue of HIV prevention for MSM remains untapped. Couple-based intervention with MSM in longer-term relationships may be especially valuable given that twice as many HIV transmissions among MSM in the U.S. are estimated to come from primary partners compared to casual partners [10].

This study represents an initial foray regarding the feasibility of conducting couple-based behavioral risk reduction intervention with MSM as well as preliminary findings on whether such an intervention approach/modality may reduce sexual risk behavior and drug use among MSM couples. The starting point was driven by a well-established base of epidemiological and behavioral research that identifies three prominent, contemporary trends regarding HIV infection among MSM in the U.S.: (1) blacks are disproportionately represented and adversely affected [8, 11]; (2) methamphetamine use directly and indirectly increases the risk for HIV transmission and worsens prognosis among people living with HIV/AIDS [12, 13]; and (3) the major sexual transmission risk among MSM stems from primary partners [10, 14]. In addition, including or targeting HIV-positive individuals in prevention efforts ("prevention with positives") has been put forth as an important component of the U.S. national public health strategy to achieve greater reductions in new infections. Despite a call specifically for focusing on dyads/couples in prevention with positives [15], there have been no couple-based sexual risk reduction interventions identified in the intervention literature for people living with HIV [16–18]. The *Connect With Pride* intervention was developed to target the nexus of these issues [19]. Specifically, the structured intervention is a couple-based behavioral HIV/STI preventive intervention for black men in same sex intimate relationships—including MSM living with HIV in which he and/or his partner engages in sexual risk with an extradyadic partner—in which at least one partner is using methamphetamine (herein referred to as "methamphetamine-using, black MSM couples").

This pilot study examined the feasibility of a couple-based behavioral risk reduction intervention for methamphetamine-using, black MSM couples. We present empirical data regarding the recruitment, attendance, and retention study participants into a couple-based sexual risk reduction intervention that is heretofore untested with MSM. Using a pre-/post-test design, this study also examined preliminarily the efficacy of *Connect With Pride* in reducing sexual risk behaviors, methamphetamine use, and other illicit drug use.

Methods

This study involved a pre-/post-test pilot study of *Connect With Pride.* Data were collected from participants prior to receipt of the intervention ("baseline") and two months after conclusion of intervention delivery ("follow-up"). Each participant was compensated $25 for completing the baseline assessment, $25 for each intervention session completed, and $45 for completing the follow-up assessment.

Intervention Development, Content, and Delivery

The structured, manualized intervention was developed by adapting an existing evidence-based intervention originally for heterosexual couples (*Connect*) [1, 2]. The adaptation to incorporate the worldviews and lived experiences of methamphetamine-using, black MSM couples and the community has been described elsewhere [19]. Briefly, *Connect With Pride* is guided by Social Cognitive Theory [20] and a relationship-oriented ecological perspective [21]. Core components of the intervention target the following mediators: knowledge and technical skills related to transmission of HIV and other STIs, condom use, and drug use/risk reduction; outcome expectancies of sexual risk and methamphetamine use; and social and self-regulatory skills (e.g., couple communication, joint problem-solving, couple condom negotiation). Recognizing that intervention participants may already by HIV-positive and in concordant relationships, serosorting [22, 23] and strategic positioning [23, 24] as possible harm reduction strategies were acknowledged in the intervention, and participants were encouraged to build upon such successes and skills in risk reduction with current extradyadic or future partners. However, sexual risk reduction was still prominently promoted in the intervention via concern for STIs other than HIV as well as the possibility of superinfection and attendant concerns about risk of increased viral pathogenicity and antiretroviral resistance [25, 26]. The intervention activities also are designed to increase awareness of and ability to redress the impact of the multiple, marginalized statuses—racial/ethnic minority, sexual minority, methamphetamine/illicit drug user, and/or person living with HIV/AIDS. Particular attention is paid to phenomena and experiences arising from the intersection of these statuses (e.g., feeling like black men are responsible for the HIV/AIDS epidemic, being on the "down low," lack of positive role models of black MSM couples). In addition, couples work to strengthen social support for their relationship well-being and encouraged to protect other black MSM from HIV/STIs.

The intervention sessions—each of which lasted approximately 90 min—were delivered by a facilitator to a single couple. Both partners were required to be present for an intervention session to be conducted; if only one partner arrived, the session was rescheduled. Couples were offered the choice to have a male or female facilitator. Both facilitators possessed

experience working with and are a part of the black lesbian/gay/bisexual/transgender communities. Intervention sessions were audio-recorded for review to ensure fidelity of intervention delivery.

At the end of each session, each participant completed a Participant Feedback Form, which included an item asking a participant to indicate the extent to which he agreed or disagreed —using a Likert Scale (−2 = strongly disagree, −1 = disagree, 0 = neither disagree nor agree, +1 = agree, +2 = strongly Agree)—with the statement "I enjoyed today's session." Completed forms were placed in a locked box; participants were informed and reminded that information was collected and de-identified by separate Research Assistants (RAs) and that intervention facilitators could not see individual responses.

Sample

To select a sample of methamphetamine-using, black MSM couples at elevated risk for sexual transmission of HIV/STIs, the following eligibility criteria were employed for men and their male sexual partners: (1) At least 18 years old; (2) Report having a "primary main male partner" operationalized as (a) a male with whom he has had an ongoing sexual relationship over the prior 6 months, and (b) a male with whom the participant has an emotional relationship/bond more than with any other person; (3) Self-identify as African American and/or black, or identify having a main partner who self-identifies in this manner; (4) Report having had unprotected anal sex with a man who is a non-main partner in the past 60 days (or whose main partner meets this criterion); (5) Report using methamphetamine at least once in the past 60 days (or whose main partner meets this criterion); (6) Report not being either in or seeking drug treatment; (7) Identify each other as their main partner; and (8) Not be newly diagnosed as HIV-positive within the last 6 months. Many of these criteria have been used and/or are analogous to prior sexual risk reduction intervention research studies with [heterosexual] couples, drug-involved couples, and African American couples [1, 27].

Procedures

Recruitment and Screening—Recruitment was conducted at local service agencies, bars, clubs, and community events frequented by MSM. Referrals were made from service providers at local community-based organizations (CBOs), other study participants, and individuals/couples who screened out of other ongoing studies but provided data indicating the possibility of being eligible for this study. Information about the study was also distributed at a monthly open/drop-in group social event that was provided for black MSM couples in the community; these meetings involved film screenings, simulated game shows, talent shows, and readings from local artists/members of the community.

Screening for eligibility typically was conducted over the phone when interested individuals called to inquire for more information about the study as directed in recruitment materials. A potentially eligible individual was asked to invite his main [male] partner to participate. Potential participants were given a letter addressed to their partner that introduced the study, described its purpose, described reimbursement for participation, and contained a contact telephone number. Only after a partner contacted the study were any recruitment, screening,

or enrollment procedures initiated with that partner. In no case was any information provided by the first individual shared with his partner. The nature of the population undermined "traditional" or heteronormative means of verifying relationship status (e.g., proof of marital status or cohabitation) used in prior studies with mixed-gender couples; instead, verification of relationship status was attempted as in other couple-based studies [28] by subjectively ensuring partners could independently describe similar circumstances (e.g., date, location) of their first meeting and/or sexual encounter.

Assessment—Self-reported data at baseline and follow-up assessments were collected via audio computer-assisted self-interview (ACASI). In a private room, participants were presented with a series of questions and answer choices on a computer screen with an accompanying audio track that articulated question and answer choice. A dedicated data collection RA emphasized the confidentiality of participants' responses, remained in a nearby room, and encouraged participants to voice concerns or technical/comprehension questions. Most participants completed the ACASI interview within 30–60 min.

HIV status was also confirmed at baseline via the OraQuick ADVANCE Rapid HIV-1/2 test kit using oral fluid. An RA provided an introduction and overview of the OraQuick test procedures and administered the RESPECT-2 Single Session Counseling Protocol for Rapid Test [29, 30]. Participants were provided with results from the Oraquick assay. For participants whose assay was reactive, a confirmatory OraSure assay was offered for participants who did not have a prior HIV-positive diagnosis; results from the confirmatory tests were provided in person at a subsequent private meeting. All participants who tested HIV-positive were offered referrals to local healthcare providers and AIDS service organizations for treatment and supportive services. To minimize potential participant burden, we accepted documentation of HIV-positive status (e.g., test results from a physician or clinic, active prescription for antiretroviral medication) in lieu of administering the HIV counseling and testing procedures.

Human Participation Protection

The Institutional Review Boards from both the funding agency and the investigative team's institution approved all protocols, materials, and information used in this study. Prior to the baseline assessment, participants provided full informed consent for procedures and participation in all pilot trial activities.

Measures

Sociodemographic data included self-identified/reported age, race/ethnicity, employment status, and sexual orientation. For income, participants were asked to chose among "No income," "$1–9,999," "$10,000–19,999," "$20,000–29,999"…"$50,000–59,999," "$60,000–100,000," and "More than $100,000." Annual income for an individual was estimated to be the midpoint for each category (no participant indicated "More than $100,000").

Sexual risk behavior was assessed by asking respondents to report the number of male sexual partners. This was followed by a series of questions that prompted the respondent to

indicate the number of receptive anal intercourse (AI) episodes, number of insertive AI episodes, and times condoms were used for each type of AI. All of the questions prompted the respondent to recall these behaviors over the prior 2 months, and all were asked for the participant's main partner as well as non-main partners. Participants were also prompted to indicate their beliefs regarding the HIV status of the sexual partners, with a forced choice among "HIV-positive," "HIV-negative," or "unknown status." Sexual risk outcome measures used in statistical analyses for hypothesis testing regarding intervention effects were: (1) the number of male sexual partners; (2) the number of unprotected AI episodes, calculated by summing the number of receptive and insertive AI episodes with the main partner and subtracting the number of times condoms were used during these episodes; and (3) the proportion of protected AI episodes, calculated by taking the sum of the number of times condoms were used during receptive and insertive AI episodes with the main partner and dividing by the sum of receptive and insertive AI episodes with the main partner. Descriptive data using reported HIV status of partners are presented to examine possible serosorting risk reduction, although the low numbers prohibited meaningful multivariate analyses. To accommodate couples that broke up by the follow-up assessment, we used data regarding the most recent partner at follow-up for those who reported no longer being in a relationship with their main partner.

Illicit drug use was assessed by sequentially asking participants to report whether during the prior 2 months they used methamphetamine, marijuana, cocaine in various forms, heroin/other opiates, tranquilizers, other club drugs and stimulants, and non-prescribed erectile dysfunction drugs. If a respondent indicated that a particular drug was used during the prior 2 months, he was prompted to report frequency using the following Likert scale: "Less than once a month" (coded as 1); "Once a month" (coded as 2), "2 or 3 days a month" (coded as 3),…, "Every day" (coded as 7); for those who indicated that they did not use the indicated drug in the prior 2 months, the response was coded as 0. Drug use outcome measures used in statistical analyses regarding intervention effects were: (1) methamphetamine use, using the frequency scale value specifically for methamphetamine use; (2) frequency of illicit drug use, using a rough proxy measure consisting of the average frequency scale value for all drugs for which at least one participant in the sample reported using at the baseline and/or follow-up assessment; and (3) the number of types of illicit drugs used by a participant, calculated by taking the count of frequency scale values that are greater than zero.

Statistical Analyses

Potential promise of the intervention was assessed using multivariate analyses of the pre-/post-test data. Statistical analyses primarily relied on generalized linear mixed models (GLMM), which can account for correlations that arise from repeated measures from a participant (i.e., the level 2 unit), and correlations from an individual and his partner who both participated in the intervention as a couple (i.e., the level 3 unit) and measures that may involve behaviors between the two partners. Discrepant reports between two partners on conjoint behaviors can be handled and treated in the error terms in GLMM, altogether providing a better approach to handling uncertainty due to discordant reports compared to alternatives (e.g., using the mean) that will not propogate or result in underestimated standard errors. GLMM analyses were conducted using the SuperMix software package

(Scientific Software International, Inc., version 1.1). Each outcome variable was regressed on time—which was treated as a fixed effect (0 = baseline, 1 = follow-up)—and included covariance adjustment. For sexual risk outcome measures, whether the participant reported methamphetamine use at baseline was also included as a covariate. Random effects implemented a random intercept and slope for level 2 (participant) and level 3 (couple) units. Hypothesis testing regarding change from pre- to post-test relied on inspection of the coefficient and standard error for the time term (and associated *P*-value). In addition, a "dose" analysis was conducted to examine whether behavior change was different among those who completed the intervention versus those who missed at least one intervention session; this was accomplished by adding an intervention completion × time term to the multivariate models where intervention completion was 1 if the couple attended all seven intervention session and 0 if the couple missed at least one session.

Because of the possibility of serosorting as a risk reduction strategy among participants, sexual risk behavior among HIV-positive participants also was examined among those who reported having sexual partners who were HIV-negative or an unknown status. Only descriptive findings with respect to serosorting behaviors are presented because the small numbers of participants in these subgroup analyses prohibited multivariate statistical techniques.

Results

Recruitment and Participation

A typical recruitment month involved 2–4 evenings of outreach at bars/clubs, 1 social event open to the public for black MSM couples, and responding to telephone or electronic inquiries stemming from CBO and word-of-mouth referrals. Recruitment was conducted for just over 5 months. Figure 1 depicts the participant flow and yield for each of the study's main activities.

The characteristics of the 68 participants that constitute the 34 couples enrolled in the study are presented in Table 1. With respect to self-identified sexual orientation, 57 (84%) identified as gay or homosexual, 9 (13%) as bisexual, and 2 (3%) as straight or heterosexual. The large majority of the sample was HIV-positive (64/68 = 94%), with four of the couples being HIV serodiscordant and the remaining couples being HIV-positive seroconcordant. With respect to other couple-level characteristics, slightly more than half (19/34 = 56%) were composed of partners who both used methamphetamine in 2 months prior to enrollment in the study. For a large majority of the couples (31/34 = 91%), both partners reported having at least one other sexual partner other than main partner.

Five couples specifically requested a male facilitator, four couples stated that they wanted a female facilitator, and the remaining couples noted that either gender for facilitator was acceptable. Of the 34 enrolled couples, 28 (82%) attended all seven sessions of the intervention. From Participant Feedback Forms completed at the end of each session, the proportion of participants who indicated agreement or strong agreement with enjoying intervention activities ranged from 92 to 98% across sessions. The sessions with the highest

enjoyment ratings were those focused on relationship-building and conjoint problem-solving.

Intervention "dropouts" did not differ significantly from those who completed the intervention on baseline measures of sexual risk and drug use behaviors, except for frequency of methamphetamine use: a Mann–Whitney test indicated that those who subsequently attended all intervention sessions reported a higher frequency of methamphetamine use at baseline (median = 1) compared to those who did not finish the intervention (median = 3 ["2 or 3 days a month"]), $U = 179.0$, $P = 0.03$, $r = .27$.

At 2-month post-intervention, 65 (96%) of the participants completed the follow-up assessment; the small number of those lost at follow-up ($n = 3$) prohibited meaningful attrition analyses. At follow-up assessment, 22 of the couples were still together. Among those who were broken up at follow-up, 14 individuals reported being in new relationships; 6 of these reported that their new main partner was HIV positive, 2 reporting having an HIV negative partner, and the remainder were not sure or did not know the HIV status of their new main partner. No study-related adverse events or complaints about privacy/confidentiality were detected or reported.

Sexual Risk Behavior

At baseline, 57/68 (81%) of sample reported having more than one male sexual partner; this proportion decreased to 20/65 (31%) at the 2-month post-intervention follow-up assessment. At baseline, 58/68 (85%) of the respondents reported engaging in unprotected AI with their main partner compared to 27/65 (42%) at the 2-month post-intervention assessment. Figure 2 shows comparisons of the sexual risk behaviors at pre- and post-intervention time-points with respect to the three primary measures of sexual risk: number of male sexual partners, number of AI episodes without condom use, and proportion of condom-protected episodes of AI. On average, less sexual risk was reported at follow-up compared to baseline. While controlling for sociodemographics and methamphetamine use at baseline, statistically significant differences over time from pre- to post-intervention were observed in the direction of reduced risk among the participants for all three primary sexual risk outcomes as shown in Table 2 (Panel A). If analyses were restricted to the 22 couples who remained together throughout the study, statistically significant risk reduction from baseline to follow-up was observed for number of AI episodes without condom use ($b = -11.60$, $SE(b) = 2.06$, $P < 0.001$) and proportion of protected AI ($b = 0.54$, $SE(b) = 0.07$, $P<0.001$). Analyses restricted to the 14 participants who reported new main partners also revealed statistically significant risk reduction between their original main partner and their new main partner for number of unprotected acts of AI ($b = -7.36$, $SE(b) = 3.53$, $P = 0.037$) and proportion of protected AI episodes ($b = 0.35$, $SE(b) = 0.14$, $P = 0.011$).

Couples who completed the full intervention had a lower mean ($\bar{x}$) number of sexual partners than those who received an incomplete dose—$\bar{x} = 1.41$ ($SE = 0.15$) and $\bar{x} = 2.37$ ($SE = 0.61$) respectively—at the 2-month post-intervention assessment. Those who received a complete dose reported on average fewer episodes of unprotected AI compared to those who received an incomplete dose— $\bar{x} = 1.53$ ($SE = 0.41$) and $\bar{x} = 5.27$ ($SE = 4.00$) respectively—at the 2-month post-intervention assessment. There was significantly greater

risk reduction among those who received the complete dose of the intervention ($b = -11.04$, $SE(b) = 5.15$, $P = 0.03$ for intervention completion × time). The overall average proportion of condom-protected AI episodes was higher at follow-up among those who received the complete intervention ($\bar{x} = 79\%$, $SE = 4\%$) compared to those who received an incomplete dose of the intervention ($\bar{x} = 31\%$, $SE = 16\%$); this change was significantly greater for those who received the complete dose ($b = 0.39$, $SE(b) = 0.14$, $P = 0.006$ for intervention completion × time).

With respect to possible serosorting risk reduction, at baseline, 21 (33%) out of the 64 HIV-positive participants reported having an HIV-negative or unknown status partner, and all but two of those reported engaging in unprotected sex with an HIV-negative or unknown status partner. In fact, among the 15 HIV-positive participants who had both HIV-positive and HIV-negative/unknown non-main partners, unprotected AI was more common among HIV-negative/unknown partners than among HIV-positive partners (93 vs. 57% respectively). At the couple level, a little more than half (16 of 30, 53%) of the HIV-positive concordant couples had at least one partner who had unprotected AI with an HIV-negative or unknown partner at baseline. At follow-up, 10 (16%) of the 61 HIV-positive respondents reported having an HIV-negative or unknown status partner, and only 2 reported engaging in unprotected sex with an HIV-negative or unknown status partner. If we assume the worst case scenario whereby all of the three individuals who did not complete the follow-up interval would have reported unprotected AI with an HIV-negative or unknown status partner, the maximum number of HIV-positive concordant couples with serodiscordant risk would be 5 out of 30 (25%) couples.

Methamphetamine and Illicit Drug Use

At baseline, 53/68 (78%) of respondents reported using methamphetamine in the prior 2 months; the prevalence decreased to 24/65 (35%) at 2-months post-intervention. After methamphetamine, the most frequently reported drugs used at baseline were marijuana ($n = 37$, 54% of respondents), rock/crack cocaine ($n = 22$, 32%), and powdered cocaine ($n = 14$, 21%). At baseline, 64/68 (94%) of the respondents reported recent use of any illicit drug during the prior two months, and 56/64 (82%) of the sample reported use of an illicit drug other than methamphetamine. At follow-up, 51/65 (78%) of the respondents reported illicit drug use during the prior two months, and 45/65 (69%) reported use of illicit drugs other than methamphetamine. Study outcome measures of methamphetamine use and other illicit drugs among the sample at pre- and post-intervention timepoints are depicted in Fig. 3. Overall, participants reported a significantly lower frequency of methamphetamine use and of any illicit drug, and a lower number of illicit drugs types at 2-month post-intervention compared to baseline. As shown in Table 2 (Panel B), the decreases in all three drug use measures remained significant in the multivariate statistical models.

The frequency of methamphetamine use among intervention completers at follow-up was actually higher than those who did not receive the complete dose of the intervention—$\bar{x} = 0.89$ ($SE = 0.27$) and $\bar{x} = 0.50$ ($SE = 0.34$) respectively; however, completers had a significantly higher frequency of methamphetamine use at baseline, and two couples discontinued the intervention because a partner went into residential drug treatment for

methamphetamine use. Frequency of any illicit drug use was lower on average among those who received the complete dose ($\bar{x}$ = 0.78, SE = 0.06) compared to those who received an incomplete dose of the intervention ($\bar{x}$ = 0.82, SE = 0.12). Couples who completed the intervention also reported on average using fewer different types of drugs at follow-up ($\bar{x}$ = 1.57, SE = 0.18) compared to those who did not receive the full intervention ($\bar{x}$ = 2.00, SE = 0.54).

Discussion

The successful recruitment process combined with high attendance and retention rates with no adverse events supports an assertion that conducting couple-based intervention and research with MSM at elevated risk for HIV/STI transmission is feasible. This is supported and strengthened given the high levels of participant agreement with the sessions being enjoyable, especially since the sessions that focused on couple dynamics (versus other topics such as HIV/STI knowledge for example) received the highest satisfaction scores. In addition to the high rates of attendance, retention, and satisfaction, the finding that more frequent methamphetamine use was associated with a completing the entire intervention may suggest that those with greater methamphetamine dependence are hungry for services and/or find the couple-based intervention particularly valuable.

Findings also support the potential promise of the intervention. There was a statistically significant change from baseline to two months post-intervention in the direction of lower sexual risk for all of the primary outcomes: fewer number of male sexual partners, fewer episodes of unprotected AI with a main partner, and higher proportion of episodes of AI with a main partner that were condom-protected. Statistically significant changes from pre- to post-intervention in the beneficial direction were also found with respect to the secondary drug use outcomes: lower frequency of methamphetamine use, lower frequency of any illicit drug use, and fewer types of illicit drugs used. Furthermore, the magnitudes of changes suggest behavior change that is clinically significant in addition to statistically significant. For example, the number of male sexual partners dropped by over 60%, the number of unprotected AI episodes decreased by over 80%, and the proportion of AI episodes that were condom-protected increased by over 50 percentage points on average.

Limitations

Without the financial compensation provided by the study—which is likely to be the case when the intervention is delivered by community-based organizations—success in enrollment, attendance, and retention may not be as high overall or among those who participate primarily due to receiving money. Given the eligibility criteria that required the simultaneous presence or co-occurrence of several risk indicators, it is unclear whether MSM with fewer HIV/STI risk factors will be as willing or able to engage in couple-based intervention [research], a concern arising from prior couple-based HIV prevention research with heterosexual couples; [31] this concern may be underscored given the large proportion of the study sample that was HIV-positive. Potential biases arising from recruitment procedures (e.g., study recruiters could not approach partners of potential participants directly) and the small sample size also prohibits generalization to the larger population(s) of

methamphetamine users, black MSM, and men in longer-term same-sex relationships. The lack of a comparison or control group leaves open the possibility of other potential explanations for the changes observed over time, such as regression toward the mean, reactivity to assessment, social desirability, etc. Although ACASI was used in an attempt to increase reliability as well as reduce underreporting of potentially stigmatized behavior [32–34], another limitation is the use of self-reported data. Almost all of these limitations were accepted a priori as part of the funding mechanism for pilot studies designed to establish the promise of innovative interventions addressing methamphetamine and HIV risk among MSM.

Conclusions

To our knowledge, this is the first feasibility study of a sexual risk-reduction intervention designed specifically for male same-sex couples. The successes in engaging, enrolling, and following-up with methamphetamine-using, black MSM couples—combined with the pre-/post-test results supporting the potential promise of *Connect With Pride* in reducing sexual-risk and drug-use behaviors—lay the foundation for a larger randomized clinical trial with longer follow-up to more rigorously test the efficacy of the intervention as well as duration of behavior changes. A study with a larger sample that also has more variability among important subpopulations—e.g., HIV-negative concordant couples, HIV serodiscordant couples, couples in which only one partner uses drugs—could also shed light on mediators of behavior change, potentially addressing whether the mechanisms and reasons for behavior change are similar or different between these groups. This could lay the foundation for tailoring or “modularizing” interventions to increase efficacy and efficiency by specific targeting the ingredients for behavior change that are most salient or influential for specific subpopulations.

Although the funding mechanism and eligibility criteria specifically focused on methamphetamine use, over 80% of the participants used illicit drugs other than methamphetamine. Taken together with the reductions observed for measures of illicit drug use, this study may provide an impetus to examine and test the effectiveness of the couple-based intervention for [black] MSM who use illicit drugs other than or in addition to methamphetamine. Moving from a potential “niche” population of methamphetamine users to target a wider spectrum of illicit drug users is likely to be important given the prominence of substance abuse and poly drug use among MSM as well as their connections to HIV risk [35]. Conversely, the utility of the intervention is not strictly limited to drug-using MSM since some participants in the sample reported no current illicit drug use yet are nevertheless affected by their partner’s drug use. Since some of the core components of the intervention do not focus on drug use *per se* (e.g., couple communication, joint problem-solving), future research can also examine the ways in which the couple-based approach can be valuable for other non-drug using MSM.

The predominance of participants who were HIV-positive in the sample was not anticipated at the start of the study. Findings support the notion that couple-based intervention would be a feasible and potentially valuable asset in prevention with positives efforts stemming from the CDC’s HIV Prevention Strategic Plan objective that states, “Among people living with

HIV, increase the proportion who consistently engage in behaviors that reduce risk of HIV transmission." Thus, future research can examine whether *Connect With Pride* may help close this gap and answer the call "to focus much more attention on dyads in developing effective HIV prevention strategies for HIV-positive persons" [15].

If these future research pursuits are successful, the couple-based intervention approach could usher in a potentially powerful, innovative, and evidence-based approach that can target more recent/emerging risks for HIV transmission, such as methamphetamine use, as well as redress longer-standing HIV-related disparities, such as the high infection rates among black MSM.

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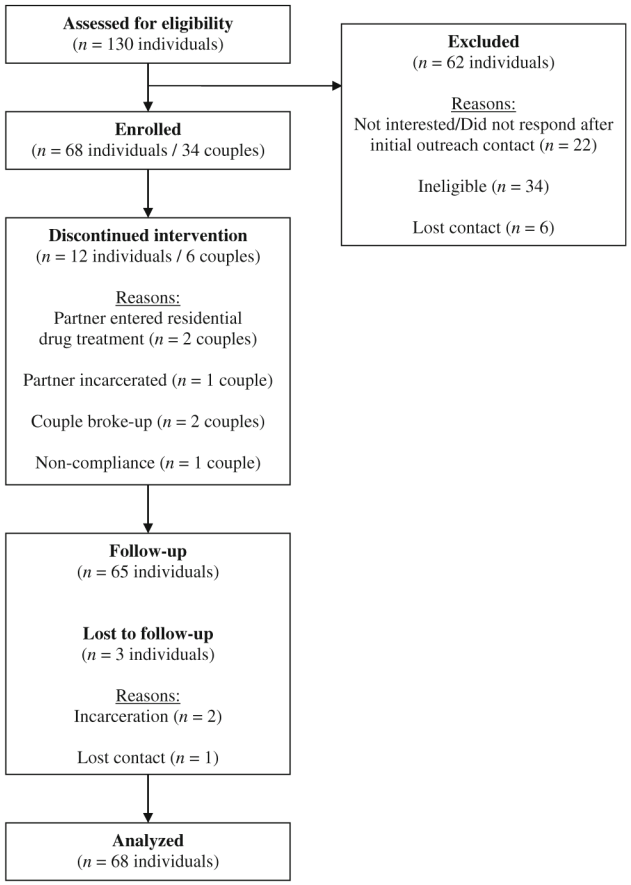

Fig. 1.

Recruitment and participation flowchart for a pilot trial of a couple-based HIV/STI preventive intervention for methamphetamine-using, black MSM couples

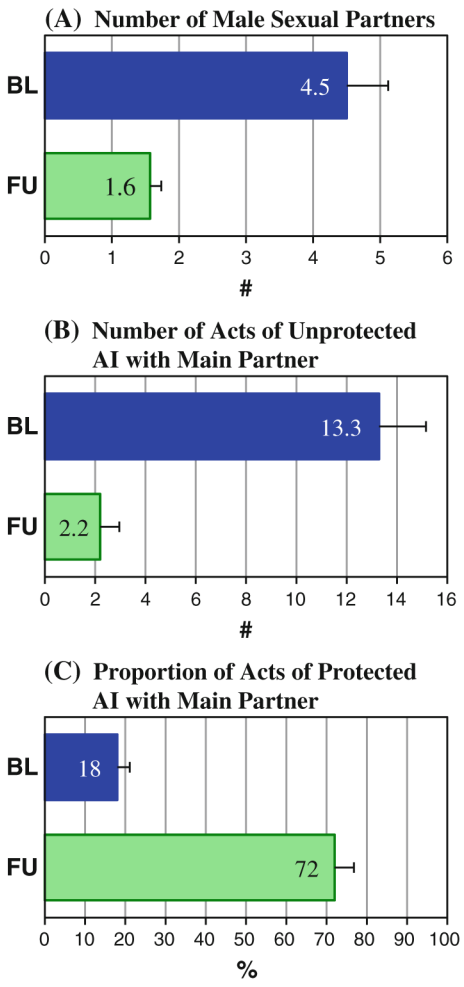

Fig. 2.

Sexual risk outcome variables before and after receipt of a couple-based HIV/STI preventive intervention for methamphetamine-using, black MSM couples. *Note* Graphs display sample means, with associated standard errors indicated by the rising stems; samples sizes were 68 and 65 for *baseline* (BL) and 2-month post intervention *follow-up* (FU) timepoints respectively

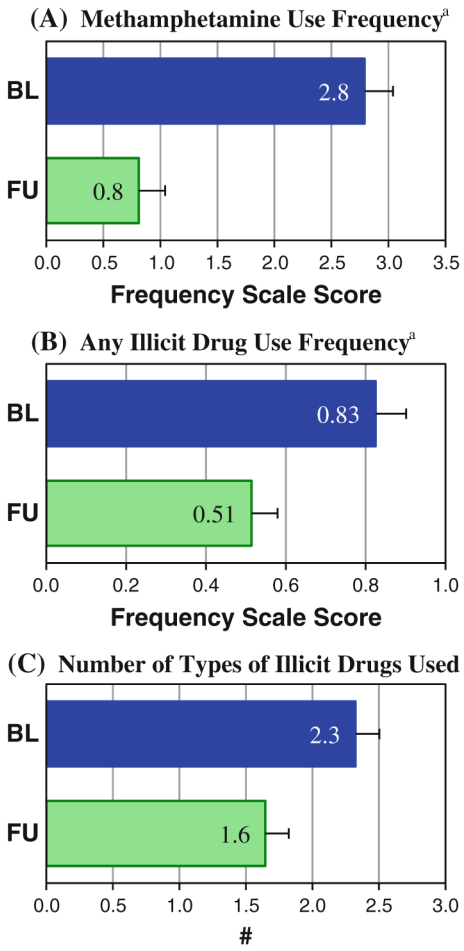

Fig. 3.

Drug use outcome variables before and after receipt of a couple-based HIV/STI preventive intervention for methamphetamine-using, black MSM couples. *Note* Graphs display sample means, with associated standard errors indicated by the rising stems; samples sizes were 68 and 65 for *baseline* (BL) and 2-month post intervention *follow-up* (FU) timepoints respectively. [a]Frequency scale response choices: 0 = None, 1 = Less than once a month, 2 = Once a month, 3 = 2 or 3 days a month,…, 7 = Every day

Table 1

Sociodemographic characteristics of the 68 individuals constituting the sample of 34 methamphetamine-using, black MSM couples enrolled in a pilot test of a couple-based HIV/STI preventive intervention

Age (years)	$\bar{x}$ = 41.5 (SD = 8.7)
Employment status	
Unemployed	*n* = 60 (88.2%)
Employed part-time	*n* = 6 (8.8%)
Employed full-time	*n* = 2 (2.9%)
Has HS diploma/GED or more education	*n* = 57 (83.8%)
Income over past 12 mos. (× $1000)	$\bar{x}$ = 12.6 (SD = 9.9)
Race	
Black/African American	*n* = 62 (91.2%)
Latino/Hispanic/Chicano	*n* = 5 (7.4%)
Mixed	*n* = 1 (1.5%)
HIV-Positive	*n* = 64 (94.1%)
Used methamphetamine during 2 mos. prior to enrollment	*n* = 53 (77.9%)

Table 2

Fully adjusted generalized linear mixed model regression estimates of outcomes for a pre-/post-test evaluation of a couple-based HIV/STI preventive intervention for methamphetamine-using, black MSM couples

	A. Sexual risk			B. Illicit drug use		
	Number of male sexual partners	Number of unprotected AI	% Protected AI	Methamphetamine use frequency	Illicit drug use frequency	Number of types of illicit drugs used
	b (*SE*)	*b* (*SE*)	*b* (*SE*)	*b* (*SE*)	*b* (*SE*)	*b* (*SE*)
Time	−2.84*** (0.70)	−11.42*** (2.07)	0.54*** (0.06)	−1.85*** (0.28)	−0.31** (0.10)	−0.68** (0.26)
Age (yrs.)	−0.08† (0.05)	−0.34* (0.16)	0.005 (0.004)	−0.04† (0.02)	−0.01 (0.01)	−0.002 (0.02)
Employed (part- or full-time)	−0.53 (1.19)	−2.42 (3.96)	0.04 (0.09)	−0.25 (0.68)	−0.30† (0.16)	−0.38 (0.45)
Has HS diploma/GED	−1.32 (1.04)	0.78 (3.41)	−0.02 (0.08)	0.26 (0.57)	−0.03 (0.14)	−0.42 (0.39)
Annual income (× $1000)	0.04 (0.04)	−0.06 (0.13)	−0.005 (0.003)	0.01 (0.02)	0.002 (0.005)	−0.01 (0.01)
Is black/African American	0.76 (1.67)	5.05 (5.44)	−0.0003 (0.13)	1.17 (0.86)	0.52* (0.23)	1.07† (0.60)
Is HIV-positive	−0.004 (1.64)	5.24 (5.48)	−0.29* (0.13)	1.40 (0.89)	0.13 (0.22)	−0.17 (0.60)
Used methamphetamine during 2 mos. prior to enrollment	1.25 (0.86)	−3.86 (2.84)	−0.0005 (0.06)	–	–	–

† $P<0.10$;

* $P < 0.05$;

** $P<0.01$;

*** $P<0.001$