Incarceration, Social Support Networks, and Health among Black Sexual Minority Men and Transgender Women: Evidence from the HPTN 061 Study

Joy D. Scheidell 1,* 2, Farzana Kapadia 2, Rodman E. Turpin 3,4, Medha Mazumdar 1, Typhanye V. Dyer 3, Jonathan Feelemyer 1, Charles M. Cleland 1, Russell Brewer 5, Sharon D. Parker 6, Natalia M. Irvine 1, Molly Remch 7, Kenneth H. Mayer 8,9 and Maria R. Khan 1

1 Department of Population Health, New York University Grossman School of Medicine, New York, NY 10016, USA
2 School of Global Public Health, New York University, New York, NY 10012, USA
3 School of Public Health, Epidemiology and Biostatistics, University of Maryland at College Park, College Park, MD 20742, USA
4 Department of Global and Community Health, College of Health and Human Services, George Mason University, Fairfax, VA 22030, USA
5 Department of Medicine, University of Chicago, Chicago, IL 60637, USA
6 Department of Social Work, North Carolina Agricultural and Technical State University, Greensboro, NC 27411, USA
7 Department of Epidemiology, UNC Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA
8 Department of Global Health and Population, Harvard T.H. Chan School of Public Health, Harvard University, Boston, MA 02115, USA
9 The Fenway Institute, Fenway Health, Boston, MA 02215, USA

* Correspondence: joy.scheidell@nyulangone.org; Tel.: +1-646-501-2892

Abstract: Support from social networks buffers against negative effects of stress but is disrupted by incarceration. Few studies examine incarceration, social support networks, and health among Black sexual minority men (BSMM) and Black transgender women (BTW). We conducted a secondary analysis using HIV Prevention Trials Network 061 (HPTN 061), a sample of BSMM/BTW recruited from six US cities. We measured associations between recent incarceration reported at six months follow-up and social support networks at twelve months follow-up, and cross-sectional associations between support networks and twelve-month health outcomes (e.g., sexual partnerships, substance use, healthcare access, and depressive symptoms). Among the analytic sample (N = 1169), recent incarceration was associated with small medical support networks (adjusted risk ratio [aRR] 1.16, 95% CI 1.01, 1.34) and small financial support networks (aRR 1.18, 95% CI 1.04, 1.35). Support networks were associated with multiple partnerships (adjusted prevalence ratio [aPR] 0.77, 95% CI 0.65, 0.90), unhealthy alcohol use (aPR 1.20, 95% CI 0.96, 1.51), and depressive symptoms (aPR 1.16, 95% CI 0.99, 1.36). Incarceration adversely impacts social support networks of BSMM/BTW, and support networks were associated with a range of important health outcomes.

Keywords: incarceration; social networks; sexual minorities

1. Introduction

Social networks provide support across a range of domains, including emotional, financial, and medical, and are vital for a person’s health. The stress-buffering hypothesis of social support posits that the size and quality of one’s social networks can mitigate the negative effects of stress on health [1,2]. The ameliorating effects of support from one’s networks may be especially important for Black sexual minority men (BSMM) and Black transgender women (BTW), considering that minority stress theory suggests overall stress combined with stress experienced related to one’s identities in minority groups may
increase vulnerability to discrimination and subsequent adverse health [3]. In the United States (US), there are no federal laws that prohibit discrimination in public accommodations based on sexual orientation or gender identity [4], and although lesbian, gay, bisexual, and transgender (LGBT) acceptance has increased in the past two decades, the US lags behind similar countries such as Canada [5]. Among sexual minorities, aspects of social networks, such as the size and the roles of relationships within them, protect against negative effects of stress and discrimination on health, depression, and life satisfaction [6]. Among BSMM and BTW, most research focuses on HIV risk and associated factors such as depression, violence, and substance use, and shows the protective role of social networks [7–12]. Disrupting social networks increases the spread of disease and negatively affects health [13,14]. Mass incarceration in the US is a population-level driver of network disruption, and is likely a mechanism by which incarceration increases risk of disease and other negative health outcomes [15]. Despite declines in incarceration rates since their height in 2009 [16], rates of incarceration in the US remain high [17]. Importantly, structural racism inherent in the US criminal justice system has led to Black men experiencing incarceration at rates at least five times higher than their white counterparts [18]. Racial/ethnic inequity in incarceration is exacerbated among sexual and gender minority persons, with up to two-thirds of BSMM and 40% of BTW experiencing incarceration during their lifetime, and substantial proportions incarcerated annually [19–23].

Incarceration separates people from their social networks and often leads to network instability upon release. During re-entry, people report inconsistent contact with network members and that their post-release network consists of different people [24,25]. Post-release network instability may drive those who were formerly incarcerated into networks with higher risk of drug use or to replace stable sexual network members with new, additional, and/or concurrent partners [26–28]. While this is likely true regardless of race, incarceration-related network disruption and instability may be particularly salient for BSMM and BTW. The excessively high rates of incarceration among Black people disproportionately impacts their networks [29], and their social networks may be more sensitive to turnover and instability [30]. Among Black sexual and gender minority persons, non-family social networks have often been constructed as alternative familial and kinship networks in response to exclusion from biological or other heteronormative networks [31,32]. Compared to heterosexual individuals, sexual minority people receive fewer dimensions of social support from their networks [33], and the sexual networks of young BSMM who have been incarcerated are more likely to contain members who have also been incarcerated [34]. Therefore, lacking support and network turnover may be further heightened for BSMM and BTW during the re-entry period.

There has been little examination of incarceration, social support networks, and health among BSMM and BTW. In the current study, we examined the relationship between incarceration and subsequent social support network characteristics, and explored whether social support networks were associated with health outcomes in a sample of BSMM and BTW in six US cities.

2. Materials and Methods

2.1. Sample and Study Design

The HIV Prevention Trials Network (HPTN) 061 cohort has been described in detail previously [35]. In brief, HPTN 061 was a longitudinal cohort study that enrolled 1553 participants in 2009–2010 from Atlanta, New York City, Washington DC, Los Angeles, San Francisco and Boston; who were at least 18 years old; self-identified as male or being assigned male at birth; self-identified as Black, African American, Caribbean Black, or multiethnic Black; and reported at least one condomless anal intercourse event with a male partner in the past six months. At study visits conducted at baseline, 6-, and 12-month follow up, participants completed surveys using audio computer assisted self-interviewing technology that measured topics including criminal justice involvement, sexual behaviors, substance use, and mental health. Participants completed social network inventories at
baseline and the 12-month visit. Biological specimens were collected for STI and HIV testing (i.e., syphilis and HIV assessed via blood; gonorrhea and chlamydia assessed via urine/rectal swab).

2.2. Measures

Incarceration. At the six-month follow-up visit, participants reported the number of times that they had spent one or more nights in jail or prison in the past six months; those who reported they had spent at least one night incarcerated were defined as having experienced recent incarceration.

Social Support Networks. A social network inventory was completed by the participants to assess perceived social support [36]. Participants were asked to name up to five persons they could rely on for the following forms of support: (1) medical support, defined as “Is there anybody who would go to a medical appointment with you?”; (2) financial support, defined as “Is there anybody you know who you would ask to lend you $100 or more if you needed it?”; (3) social support, defined as “Is there anybody that you get together with, spend time talking, relaxing or just hanging out with?”; and (4) emotional support, defined as “If you wanted to talk to someone about things that are very personal and private is there anybody you could talk to?” We created dichotomous indicators for each type of support, in which each item was dichotomized to capture “small” support networks, defined as ≤1 member in the network providing that form of support (versus ≥2 members).

Using the above measures, we created three additional support measures. The first dichotomous variable measured having a consistent person in their network providing all four forms of social support, in which the same individual provided each form of support. The second variable measured whether participants reported that they had ≥1 network member providing each form of support for all four support domains; this did not need to be the same person. The third variable identified those who had ≤1 person in network providing each form of support for all four support domains (i.e., categorized as having “small” support networks as defined above for all forms of support).

Health Outcomes. We measured the following outcomes, which were self-reported on the 12-month follow-up survey: multiple sexual partnerships, defined as reporting ≥3 partners (i.e., sample median) in the past six months; hard drug use, defined as any use of heroin, crack/cocaine, methamphetamine, prescription misuse, or other drugs in the past six months; unhealthy alcohol use, defined as having an AUDIT (Alcohol Use Disorders Identification Test) score ≥ 8; emergency department (ED) use, defined as having any care provided to them at an emergency room or urgent care facility in past six months; and depressive symptoms, based on Centers for Epidemiologic Studies–Depression scale score ≥ 16 [37].

Covariates. Baseline covariates included self-reported measures of: recruitment city; age; gender identity; unstable housing; high school education or less; insufficient income in the past six months; hard drug use in the past six months; weekly marijuana use; current healthcare coverage; lifetime incarceration; unhealthy alcohol use; depressive symptoms; physical and/or threatened violence due to race and/or sexuality; perceived racism and homophobia [38]; internalized homophobia [39]; social support scale score; sexual behavior in the past six months (i.e., sex with female partners; transactional sex; multiple partnerships; concurrent partnership defined as partners in addition to their primary partner); HIV testing; and currently cohabiting with a primary partner. Biologically ascertained covariates included baseline HIV status and any STI.

2.3. Analyses

Our analytic sample included participants who returned for the six-month visit who had data on recent incarceration (N = 1169). Scales with missing values were replaced with the mean value of the remaining items if fewer than 20% of items were missing; when more than 20% scale items were missing, the score was coded as missing. Approximately 77% of participants in the analytic sample were missing data on at least one covariate, and multiple
imputation was used to reduce bias and increase power in the analyses by imputing data 77 times using predictive mean matching in the “mice” package.

The propensity (i.e., predicted probability) of recent incarceration was calculated using logistic regression with the Ridge penalty conditional on the baseline covariates above, including sociodemographic characteristics, sexual risk behavior, substance use, and experienced and internalized racism and homophobia. Propensity scores were used to estimate inverse probability of treatment weights (IPTW), which were stabilized using the probability of the observed exposure. Models were conducted for each of the 77 imputed datasets.

We examined baseline factors associated with having ≤ 1 person in the network providing each form of support and having a consistent person in their network by calculating the frequency and prevalence of each covariate by these measures. We used unweighted and weighted modified Poisson regressions with robust standard errors to assess the associations between recent incarceration measured at six months and the social support network variables measured at 12 months, and estimated risk ratios and 95% confidence intervals (CIs) within each of the imputed datasets by extracting parameter estimates and variances from each model and pooling following Rubin’s rules. The pooled results are presented.

We used modified Poisson regressions with robust standard errors to estimate prevalence ratios and 95% confidence intervals for associations between social network support and health outcomes at 12 months. In multivariate models, we adjusted for baseline age, education, household income, housing status, city of recruitment, reporting a place to go for medical care when sick, having seen health care provider in the past six months and the corresponding outcome reported at baseline (e.g., adjusting for baseline multiple partnership for the multiple partnership outcome). R version 4.0.5 (R Core Team, Vienna, Austria) was used for analysis [40].

3. Results

In the sample of 1169 (BSMM n = 1118; BTW n = 49), approximately half of participants reported ≤ 1 member in their network provided medical or financial support (i.e., small support networks), 26% reported small social support networks, and 40% reported small emotional support networks. For composite network support indicators, 46% of participants reported they had a consistent person in their network (i.e., someone who provided all forms of support), 65% reported ≥ 1 person providing support for each domain, and 16% reported ≤ 1 person in their network provided support for each domain (i.e., all support networks were defined as small). Among those with a consistent person in their network, those who had been incarcerated, versus those without incarceration, were more likely to report this person was a sexual partner (37.3% versus 25.1%; p-value 0.04) and less likely to report this person was a friend (45.8% versus 63.6%; p-value 0.008). Approximately one-third reported this was a family member, which did not vary by incarceration.

Participants who reported having less than a high school education, multiple sexual partnerships, and engaging in sex trade had higher odds of small support networks (Table 1). However, individuals who reported having sufficient income, receiving HIV testing, having healthcare coverage and a place to go for medical care, and having sex with men and women had lower odds of having small support networks. Increasing age and having less than a high school-level education was associated with lower odds of a consistent person in the network. Importantly, people with lifetime incarceration history, unstable housing, and sex trade engagement had lower odds of consistency in network membership; conversely, those who reported sufficient income and having sex with both men and women had higher odds.
Table 1. Baseline Characteristics of HPTN 061 Sample and Associations with Network Size and Types at 12 Months (N = 1169).

| Characteristic at Baseline | Overall N (%) | N (% with One Person or Fewer in Network Providing Each Form of Support N = 192 | OR * (95% CI) for Association between Characteristic and One Person or Fewer in Network Providing Each Form of Support | p-Value for Association between Characteristic and One Person or Fewer in Network Providing Each Form of Support | OR * (95% CI) for Association between Characteristic and Consistent Network Support N = 542 | p-Value for Association between Characteristic and Consistent Network Support |
|----------------------------|---------------|--------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Age                        | Mean (SD)     | 37.7 (11.8) | 38.40 (12.24) | 1.01 [0.99, 1.02] | 0.402 | 37.1 (12.1) | 0.98 [0.97, 0.99] | 0.001 |
| Education                  |               |             |                |                |                |                |                |                |
| High School or More        | 568 (48.6) | 74 (13.0) | Referent       | 307 (54.0) | Referent       |                |                |                |
| Less than High School      | 601 (51.4) | 118 (19.6) | 1.84 [1.34, 2.54] | <0.001 | 235 (39.1) | 0.61 [0.48, 0.78] | <0.001 |
| Transgender                |               |             |                |                |                |                |                |                |
| No                         | 1118 (95.6) | 182 (16.3) | Referent       | 522 (46.7) | Referent       |                |                |                |
| Yes                        | 49 (4.2)     | 10 (20.4)  | 1.32 [0.61, 2.62] | 0.455 | 20 (40.8)  | 0.76 [0.41, 1.39] | 0.371 |
| City                       |               |             |                |                |                |                |                |                |
| Atlanta                    | 207 (17.7)  | 52 (25.1)  | Referent       | 68 (32.9)  | Referent       |                |                |                |
| Boston                     | 173 (14.8)  | 31 (17.9)  | 0.71 [0.42, 1.18] | 0.192 | 64 (37.0)  | 1.41 [0.90, 2.21] | 0.131 |
| Los Angeles                | 207 (17.7)  | 39 (18.8)  | 0.68 [0.42, 1.10] | 0.117 | 109 (52.7) | 2.50 [1.65, 3.83] | <0.001 |
| New York City              | 256 (21.9)  | 42 (16.4)  | 0.53 [0.33, 0.85] | 0.008 | 116 (45.3) | 1.58 [1.07, 2.35] | 0.022 |
| San Francisco              | 149 (12.7)  | 13 (8.7)   | 0.27 [0.13, 0.50] | <0.001 | 86 (57.7)  | 2.94 [1.86, 4.69] | <0.001 |
| Washington DC              | 177 (15.1)  | 15 (8.5)   | 0.25 [0.13, 0.45] | <0.001 | 99 (55.9)  | 2.51 [1.64, 3.89] | <0.001 |
| Incarcerated               |               |             |                |                |                |                |                |                |
| Ever                       | 465 (39.8)  | 72 (15.5)  | 1.14 [0.83, 1.59] | 0.420 | 238 (51.2) | 0.73 [0.57, 0.94] | 0.013 |
| Experienced Violence       |               |             |                |                |                |                |                |                |
| No                         | 284 (24.3)  | 37 (13.0)  | Referent       | 135 (47.5) | Referent       |                |                |                |
| Yes                        | 866 (74.1)  | 152 (17.6) | 1.40 [0.95, 2.09] | 0.094 | 400 (36.8) | 0.90 [0.68, 1.20] | 0.474 |
| Insufficient Income        |               |             |                |                |                |                |                |                |
| No                         | 655 (56.0)  | 132 (20.2) | 0.49 [0.35, 0.68] | <0.001 | 262 (40.0) | 1.76 [1.37, 2.25] | <0.001 |
| Yes                        | 513 (43.9)  | 60 (11.7)  | Referent       | 280 (54.6) | Referent       |                |                |                |
| Unstable Housing           |               |             |                |                |                |                |                |                |
| No                         | 1055 (90.2) | 171 (16.2) | 1.27 [0.74, 2.08] | 0.361 | 507 (48.1) | 1.16 [0.79, 1.70] | 0.446 |
| Yes                        | 113 (9.7)   | 21 (18.6)  | Referent       | 35 (31.0)  | 0.50 [0.32, 0.76] | <0.001 |
| Ever tested for HIV        |               |             |                |                |                |                |                |                |
| No                         | 140 (12.0)  | 31 (22.1%) | Referent       | 59 (42.1)  | Referent       |                |                |                |
| Yes                        | 1028 (87.9) | 161 (15.7%)| 0.62 [0.40, 0.97] | 0.031 | 483 (47.0) | 1.16 [0.79, 1.70] | 0.446 |
| Health Care Coverage       |               |             |                |                |                |                |                |                |
| No                         | 456 (39.0)  | 90 (19.7)  | Referent       | 203 (44.5) | Referent       |                |                |                |
| Yes                        | 712 (60.9)  | 102 (14.3) | 0.66 [0.48, 0.91] | 0.011 | 339 (47.6) | 1.12 [0.87, 1.44] | 0.363 |
| Place to Go for Medical Care when Sick |               |             |                |                |                |                |                |                |
| No                         | 247 (21.1)  | 54 (21.9)  | Referent       | 109 (44.1) | Referent       |                |                |                |
| Yes                        | 922 (78.9)  | 138 (15.0) | 0.61 [0.43, 0.88] | 0.008 | 433 (47.0) | 1.12 [0.83, 1.51] | 0.465 |
| Seen a Medical Provider in Past 6 Months |               |             |                |                |                |                |                |                |
| No                         | 462 (39.5)  | 87 (18.8)  | Referent       | 226 (48.9) | Referent       |                |                |                |
| Yes                        | 707 (60.5)  | 105 (14.9) | 0.73 [0.53, 1.00] | 0.052 | 316 (44.7) | 0.80 [0.62, 1.02] | 0.076 |
| Sexual Partnership Types   |               |             |                |                |                |                |                |                |
| Men Only                   | 511 (43.7)  | 109 (21.3) | Referent       | 187 (36.6) | Referent       |                |                |                |
| Men and Women              | 657 (56.2)  | 83 (12.6)  | 0.48 [0.35, 0.65] | <0.001 | 355 (54.0) | 1.88 [1.47, 2.42] | <0.001 |
| Multiple Partnership      |               |             |                |                |                |                |                |                |
| No                         | 673 (57.6)  | 97 (14.4)  | Referent       | 323 (48.0) | Referent       |                |                |                |
| Yes                        | 494 (42.3)  | 95 (19.2)  | 1.43 [1.04, 1.96] | 0.025 | 219 (44.3) | 0.85 [0.67, 1.09] | 0.205 |
| Concurrency                |               |             |                |                |                |                |                |                |
| No                         | 882 (75.4)  | 141 (16.0) | Referent       | 399 (45.2) | Referent       |                |                |                |
| Yes                        | 287 (24.6)  | 51 (17.8)  | 1.07 [0.74, 1.52] | 0.709 | 143 (49.8) | 1.10 [0.83, 1.46] | 0.500 |
Table 1. Cont.

| Characteristic at Baseline | Overall N (%) | N (%) with One Person or Fewer in Network Providing Each Form of Support N = 192 | OR * (95% CI) for Association between Characteristic and One Person or Fewer in Network Providing Each Form of Support | p-Value for Association between Characteristic and One Person or Fewer in Network Providing Each Form of Support | N (%) with Consistent Network Support | OR * (95% CI) for Association between Characteristic and Consistent Network Support | p-Value for Association between Characteristic and Consistent Network Support |
|---------------------------|---------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Lives with Primary Partner |               |                                                                                 |                                                                                                           |                                                                                                           |                      |                                                                                                           |                                                                                                           |
| No                        | 975 (83.4)    | 158 (16.2)                                                                      | Referent                                                                                                   | 1.04 [0.67, 1.58]                                                                              | 0.857                | 1.14 [0.81, 1.59]                                                                                     | 0.452                                                                       |
| Yes                       | 177 (15.1)    | 31 (17.5)                                                                       | Referent                                                                                                   | 0.74 [0.43 1.21]                                                                              | 0.252                | 0.71 [0.48, 1.02]                                                                                     | 0.044                                                                       |
| Any STI                   |               |                                                                                 |                                                                                                           |                                                                                                           |                      |                                                                                                           |                                                                                                           |
| No                        | 1010 (86.4)   | 171 (16.9)                                                                       | Referent                                                                                                   | 1.68 [1.20, 2.35]                                                                              | 0.002                | 1.68 [1.20, 2.35]                                                                                     | 0.006                                                                       |
| Yes                       | 138 (11.8)    | 19 (13.8)                                                                        | Referent                                                                                                   | 0.80 [0.50, 1.31]                                                                              | 0.498                | 0.68 [0.48, 0.95]                                                                                     | 0.024                                                                       |
| Sex Trade                 |               |                                                                                 |                                                                                                           |                                                                                                           |                      |                                                                                                           |                                                                                                           |
| No                        | 872 (74.6)    | 126 (14.4)                                                                       | Referent                                                                                                   | 0.74 [0.43 1.21]                                                                              | 0.252                | 0.74 [0.43 1.21]                                                                                     | 0.252                                                                       |
| Yes                       | 297 (25.4)    | 66 (22.2)                                                                        | Referent                                                                                                   | 0.74 [0.43 1.21]                                                                              | 0.252                | 0.74 [0.43 1.21]                                                                                     | 0.252                                                                       |
| HIV Status at Baseline    |               |                                                                                 |                                                                                                           |                                                                                                           |                      |                                                                                                           |                                                                                                           |
| HIV+ Acute                | 3 (0.3)       | 1 (33.3)                                                                         | Referent                                                                                                   | 1.33 (3.3)                                                                                 | 0.001                | 1.33 (3.3)                                                                                           | 0.001                                                                       |
| Negative                  | 935 (80.0)    | 145 (15.5)                                                                       | Referent                                                                                                   | 0.43 [0.04, 9.24]                                                                              | 0.490                | 0.43 [0.04, 9.24]                                                                                     | 0.490                                                                       |
| Positive                  | 214 (18.3)    | 45 (21.0)                                                                        | Referent                                                                                                   | 0.58 [0.05, 12.58]                                                                              | 0.656                | 0.58 [0.05, 12.58]                                                                                     | 0.656                                                                       |
| Unknown                   | 16 (1.4)      | 1 (6.2)                                                                           | Referent                                                                                                   | 0.14 [0.00, 4.56]                                                                              | 0.225                | 0.14 [0.00, 4.56]                                                                                     | 0.225                                                                       |
| Hard Drug Use             |               |                                                                                 |                                                                                                           |                                                                                                           |                      |                                                                                                           |                                                                                                           |
| No                        | 651 (55.7)    | 101 (15.5)                                                                       | Referent                                                                                                   | 0.74 [0.43 1.21]                                                                              | 0.390                | 0.74 [0.43 1.21]                                                                                     | 0.390                                                                       |
| Yes                       | 471 (40.3)    | 82 (17.4)                                                                        | Referent                                                                                                   | 0.74 [0.43 1.21]                                                                              | 0.390                | 0.74 [0.43 1.21]                                                                                     | 0.390                                                                       |
| Marijuana Use Weekly      |               |                                                                                 |                                                                                                           |                                                                                                           |                      |                                                                                                           |                                                                                                           |
| No                        | 807 (69.0)    | 124 (15.4)                                                                       | Referent                                                                                                   | 1.23 [0.88, 1.70]                                                                              | 0.225                | 1.23 [0.88, 1.70]                                                                                     | 0.225                                                                       |
| Yes                       | 362 (31.0)    | 68 (18.8)                                                                        | Referent                                                                                                   | 1.03 [0.75, 1.42]                                                                              | 0.918                | 1.03 [0.75, 1.42]                                                                                     | 0.918                                                                       |
| AUDIT Score               | Mean (SD)     | 6.84 (7.76)                                                                      | 7.65 (9.00)                                                                                               | 1.02 [1.00, 1.04]                                                                              | 0.099                | 1.02 [1.00, 1.04]                                                                                     | 0.099                                                                       |
| Median [Min, Max]         | 4.00 [0, 40.0] | 4.00 [0, 36.0]                                                                    |                                                                                                           | 0.99 [0.97, 1.01]                                                                              | 0.272                | 0.99 [0.97, 1.01]                                                                                     | 0.272                                                                       |
| Depression Scale (CES-D)  | Mean (SD)     | 16.4 (11.0)                                                                      | 18.4 (11.8)                                                                                               | 1.02 [1.01, 1.03]                                                                              | 0.004                | 1.02 [1.01, 1.03]                                                                                     | 0.004                                                                       |
| Median [Min, Max]         | 14.0 [0, 59.0] | 16.0 [0, 59.0]                                                                    |                                                                                                           | 0.98 [0.97, 0.99]                                                                              | <0.001               | 0.98 [0.97, 0.99]                                                                                     | <0.001                                                                       |
| Experienced Homophobia Scale | Mean (SD)   | 53.2 (31.5)                                                                      | 51.0 (32.4)                                                                                               | 1.00 [0.99, 1.00]                                                                              | 0.164                | 1.00 [0.99, 1.00]                                                                                     | 0.164                                                                       |
| Experienced Racism Scale  | Mean (SD)     | 49.5 (24.0)                                                                      | 46.0 (25.0)                                                                                               | 0.99 [0.98, 1.00]                                                                              | 0.010                | 0.99 [0.98, 1.00]                                                                                     | 0.010                                                                       |
| Internalized Homophobia Scale | Mean (SD) | 15.6 (7.01)                                                                      | 16.4 (7.49)                                                                                               | 1.02 [1.00, 1.05]                                                                              | 0.053                | 14.8 (6.75)                                                                                           | 0.97 [0.96, 0.99] | 0.002  

* OR = Odds ratio.

Those who were recently incarcerated were more likely to report small support networks compared to those who were not recently incarcerated (Table 2), and were less likely to have a consistent network member, have multiple persons in their networks, and have one or fewer network members providing all forms of support. In the adjusted models applying the IPTW, effect estimates were relatively similar to unadjusted models and showed that recent incarceration was associated with a small medical support network (adjusted risk ratio [aRR] 1.16, 95% CI 1.01, 1.34) and a small financial support network (aRR 1.18, 95% CI 1.04, 1.35) but was not associated with other indicators of network support.

In the cross-sectional analyses examining the relationship between social support networks and health outcomes reported at 12 months follow-up in the sample (Table 3), the prevalence of multiple partnerships was approximately 20% lower for those reporting small social support networks, consistent network member, and ≤1 person in the network providing each form of support. Having small medical support network (aPR 1.20, 95% CI 0.96, 1.51), small financial support network (aPR 1.15, 95% CI 0.94, 1.41), small emotional
support network (aPR 1.16, 95% CI 0.94, 1.42) were associated with unhealthy alcohol use. Small emotional support network was associated with visiting the ED (aPR 1.22, 95% CI 0.99, 1.50). Small financial support networks (aPR 1.12, 95% CI 0.96, 1.30), small social support networks (aPR 1.16, 95% CI 0.99, 1.36), small emotional support networks (aPR 1.12, 95% CI 0.95, 1.33), having one person or fewer in the network providing each form of support (aPR 1.22, 95% CI 1.02, 1.46) were associated with depressive symptoms, as was reporting consistent network support (aPR 0.85, 95% CI 0.73, 0.99).

Table 2. Associations between Recent Incarceration and Types of Networks at 12 Months Follow Up (N = 1169).

| Network Type                        | % with Network Type | RR * (95% CI) | aRR ** (95% CI) |
|-------------------------------------|---------------------|---------------|-----------------|
| **Small Medical Support Network**   |                     |               |                 |
| No Recent Incarceration             | 501 (49.9)          | Referent      | Referent        |
| Recent Incarceration                | 106 (64.2)          | 1.26 [1.12, 1.41] | 1.16 [1.01, 1.34] |
| **Small Financial Support Network** |                     |               |                 |
| No Recent Incarceration             | 481 (47.9)          | Referent      | Referent        |
| Recent Incarceration                | 104 (63.0)          | 1.28 [1.14, 1.45] | 1.18 [1.04, 1.35] |
| **Small Social Support Network**    |                     |               |                 |
| No Recent Incarceration             | 256 (25.5)          | Referent      | Referent        |
| Recent Incarceration                | 51 (30.9)           | 1.19 [0.94, 1.52] | 1.15 [0.87, 1.52] |
| **Small Emotional Support Network** |                     |               |                 |
| No Recent Incarceration             | 379 (37.7)          | Referent      | Referent        |
| Recent Incarceration                | 74 (44.8)           | 1.17 [0.98, 1.40] | 1.01 [0.81, 1.26] |
| **Consistent Network Support**      |                     |               |                 |
| No Recent Incarceration             | 483 (48.1)          | Referent      | Referent        |
| Recent Incarceration                | 59 (35.8)           | 0.77 [0.63, 0.94] | 0.90 [0.73, 1.12] |
| **At Least One Person in Network Providing Each Form of Support** |                     |               |                 |
| No Recent Incarceration             | 666 (66.3)          | Referent      | Referent        |
| Recent Incarceration                | 94 (57.0)           | 0.87 [0.77, 0.99] | 0.97 [0.86, 1.09] |
| **One Person or Fewer in Network Providing Each Form of Support** |                     |               |                 |
| No Recent Incarceration             | 157 (15.6%)         | Referent      | Referent        |
| Recent Incarceration                | 35 (21.2%)          | 1.32 [0.95, 1.81] | 1.24 [0.85, 1.81] |

* RR = Risk ratio. ** aRR = Adjusted Risk Ratio; Models adjusted for covariates using IPTW: included study site; age; gender identity; unstable housing; education; insufficient income; hard drug use in the past six months; weekly marijuana use; current health coverage; lifetime incarceration; AUDIT score; Depression scale score; physical and/or threatened violence due to race and/or sexuality; perceived racism and homophobia; internalized homophobia; social support scale score; sex with female partners in the past six months; having received HIV testing; transactional sex in the past six months; multiple partnerships; concurrent partnership; currently cohabiting with primary partner. Biologically ascertained covariates included HIV status at baseline and any STI (i.e., syphilis assessed via blood testing, and gonorrhea and chlamydia assessed via urine/rectal swab testing).
Table 3. Associations between Types of Networks and Health Outcomes at 12 Months Follow Up (N = 1169).

| Network Type                          | % with Health Outcome | PR * (95% CI) | aPR (95% CI) ** | Unadjusted (Adjusted) p-Value |
|---------------------------------------|-----------------------|---------------|----------------|-----------------------------|
| **Multiple Sexual Partnerships**      |                       |               |                |                             |
| Small Medical Support Network         |                       |               |                |                             |
| No                                    | 191 (43.8)            | Referent      | Referent       | 0.978 (0.227)               |
| Yes                                   | 261 (43.0)            | 1.00 [0.87, 1.15] | 0.92 [0.80, 1.05] |                             |
| Small Financial Support Network       |                       |               |                |                             |
| No                                    | 197 (43.0)            | Referent      | Referent       | 0.740 (0.340)               |
| Yes                                   | 255 (43.6)            | 1.02 [0.89, 1.17] | 0.94 [0.82, 1.07] |                             |
| Small Social Support Network          |                       |               |                |                             |
| No                                    | 342 (43.6)            | Referent      | Referent       | 0.002 (0.001)               |
| Yes                                   | 110 (35.8)            | 0.77 [0.65, 0.91] | 0.77 [0.65, 0.90] |                             |
| Small Emotional Support Network       |                       |               |                |                             |
| No                                    | 249 (42.2)            | Referent      | Referent       | 0.403 (0.792)               |
| Yes                                   | 203 (44.5)            | 1.03 [0.97, 1.09] | 0.98 [0.86, 1.12] |                             |
| **Consistent Network Support**        |                       |               |                |                             |
| No                                    | 243 (48.5)            | Referent      | Referent       | <0.001 (0.008)              |
| Yes                                   | 209 (38.6)            | 0.90 [0.85, 0.96] | 0.83 [0.72, 0.95] |                             |
| **At Least One Person in Network Providing Each Form of Support** | | | | |
| No                                    | 132 (46.6)            | Referent      | Referent       | 0.135 (0.707)               |
| Yes                                   | 320 (42.1)            | 0.95 [0.89, 1.02] | 0.97 [0.84, 1.13] |                             |
| **One Person or Fewer in Network Providing Each Form of Support** | | | | |
| No                                    | 378 (44.4)            | Referent      | Referent       | 0.135 (0.018)               |
| Yes                                   | 74 (38.5)             | 0.94 [0.87, 1.02] | 0.80 [0.67, 0.96] |                             |
| **Hard Drug Use**                     |                       |               |                |                             |
| Small Medical Support Network         |                       |               |                |                             |
| No                                    | 124 (28.4)            | Referent      | Referent       | 0.054 (0.541)               |
| Yes                                   | 203 (33.4)            | 1.19 [1.00, 1.42] | 1.05 [0.89, 1.24] |                             |
| Small Financial Support Network       |                       |               |                |                             |
| No                                    | 131 (28.6)            | Referent      | Referent       | 0.079 (0.388)               |
| Yes                                   | 196 (33.5)            | 1.17 [0.98, 1.40] | 1.07 [0.91, 1.26] |                             |
| Small Social Support Network          |                       |               |                |                             |
| No                                    | 227 (30.8)            | Referent      | Referent       | 0.465 (0.511)               |
| Yes                                   | 100 (32.6)            | 1.07 [0.89, 1.29] | 0.95 [0.80, 1.12] |                             |
| Small Emotional Support Network       |                       |               |                |                             |
| No                                    | 173 (29.3)            | Referent      | Referent       | 0.083 (0.717)               |
| Yes                                   | 154 (34.0)            | 1.05 [0.99, 1.12] | 1.03 [0.88, 1.20] |                             |
Table 3. Cont.

| Network Type                                      | % with Health Outcome | PR * (95% CI) | aPR (95% CI) ** | Unadjusted (Adjusted) p-Value |
|---------------------------------------------------|-----------------------|---------------|----------------|-----------------------------|
| **Hard Drug Use**                                 |                       |               |                |                             |
| Consistent Network Support                        |                       |               |                |                             |
| No                                                | 174 (34.7)            | Referent      | Referent       | 0.021 (0.082)               |
| Yes                                               | 153 (28.2)            | 0.93 [0.88, 0.99] | 0.87 [0.74, 1.02] |                             |
| At Least One Person in Network Providing Each Form of Support |   |               |                |                             |
| No                                                | 95 (33.6)             | Referent      | Referent       | 0.340 (0.181)               |
| Yes                                               | 232 (30.5)            | 0.97 [0.91, 1.03] | 0.89 [0.75, 1.06] |                             |
| One Person or Fewer in Network Providing Each Form of Support | |               |                |                             |
| No                                                | 269 (31.6)            | Referent      | Referent       | 0.837 (0.403)               |
| Yes                                               | 58 (30.2)             | 0.99 [0.92, 1.07] | 0.92 [0.75, 1.12] |                             |
| **Unhealthy Alcohol Use**                         |                       |               |                |                             |
| Small Medical Support Network                      |                       |               |                |                             |
| No                                                | 87 (20.0)             | Referent      | Referent       | 0.057 (0.108)               |
| Yes                                               | 152 (25.0)            | 1.25 [0.99, 1.56] | 1.20 [0.96, 1.51] |                             |
| Small Financial Support Network                    |                       |               |                |                             |
| No                                                | 100 (21.8)            | Referent      | Referent       | 0.266 (0.175)               |
| Yes                                               | 139 (23.8)            | 1.13 [0.91, 1.41] | 1.15 [0.94, 1.41] |                             |
| Small Social Support Network                       |                       |               |                |                             |
| No                                                | 169 (23.0)            | Referent      | Referent       | 0.974 (0.892)               |
| Yes                                               | 70 (22.8)             | 1.00 [0.79, 1.26] | 1.02 [0.82, 1.26] |                             |
| Small Emotional Support Network                    |                       |               |                |                             |
| No                                                | 128 (21.7)            | Referent      | Referent       | 0.223 (0.156)               |
| Yes                                               | 111 (24.5)            | 1.03 [0.98, 1.09] | 1.16 [0.94, 1.42] |                             |
| Consistent Network Support                         |                       |               |                |                             |
| No                                                | 125 (25.0)            | Referent      | Referent       | 0.086 (0.075)               |
| Yes                                               | 114 (21.0)            | 0.96 [0.91, 1.01] | 0.84 [0.69, 1.02] |                             |
| At Least One Person in Network Providing Each Form of Support | |               |                |                             |
| No                                                | 72 (25.4)             | Referent      | Referent       | 0.198 (0.107)               |
| Yes                                               | 167 (22.0)            | 0.96 [0.90, 1.02] | 0.84 [0.67, 1.04] |                             |
| One Person or Fewer in Network Providing Each Form of Support | |               |                |                             |
| No                                                | 191 (22.4)            | Referent      | Referent       | 0.406 (0.428)               |
| Yes                                               | 48 (25.0)             | 1.03 [0.96, 1.10] | 1.11 [0.86, 1.44] |                             |
| **Visited ER in Past Six Months**                  |                       |               |                |                             |
| Small Medical Support Network                      |                       |               |                |                             |
| No                                                | 82 (18.8)             | Referent      | Referent       | 0.376 (0.673)               |
| Yes                                               | 125 (20.6)            | 1.10 [0.89, 1.37] | 1.05 [0.84, 1.32] |                             |
Table 3. Cont.

| Network Type                          | % with Health Outcome | PR * (95% CI) | aPR (95% CI) ** | Unadjusted (Adjusted) p-Value |
|---------------------------------------|-----------------------|---------------|----------------|------------------------------|
| **Visited ER in Past Six Months**     |                       |               |                |                              |
| Small Financial Support Network       |                       |               |                |                              |
| No                                    | 81 (17.7)             | Referent      | Referent       | 0.110 (0.243)               |
| Yes                                   | 126 (21.5)            | 1.19 [0.96, 1.47] | 1.14 [0.92, 1.42] |                             |
| Small Social Support Network          |                       |               |                |                              |
| No                                    | 145 (19.7)            | Referent      | Referent       | 0.873 (0.680)               |
| Yes                                   | 62 (20.2)             | 1.02 [0.81, 1.28] | 0.95 [0.76, 1.20] |                             |
| Small Emotional Support Network       |                       |               |                |                              |
| No                                    | 105 (17.8)            | Referent      | Referent       | 0.015 (0.063)               |
| Yes                                   | 102 (22.5)            | 1.08 [1.02, 1.15] | 1.22 [0.99, 1.50] |                             |
| Consistent Network Support            |                       |               |                |                              |
| No                                    | 116 (23.2)            | Referent      | Referent       | 0.070 (0.305)               |
| Yes                                   | 91 (16.8)             | 0.94 [0.88, 1.01] | 0.89 [0.71, 1.11] |                             |
| At Least One Person in Network Providing Each Form of Support | 66 (23.3) | Referent | Referent   | 0.202 (0.271) |
| No                                    | 141 (18.6)            | 0.95 [0.89, 1.03] | 0.88 [0.71, 1.10] |                             |
| Yes                                   |                       |               |                |                              |
| One Person or Fewer in Network Providing Each Form of Support | 164 (19.3) | Referent | Referent   | 0.234 (0.457) |
| No                                    | 43 (22.4)             | 1.05 [0.97, 1.15] | 1.10 [0.85, 1.42] |                             |
| Yes                                   |                       |               |                |                              |
| Depression                            |                       |               |                |                              |
| Small Medical Support Network         |                       |               |                |                              |
| No                                    | 133 (30.5)            | Referent      | Referent       | 0.086 (0.665)               |
| Yes                                   | 212 (34.9)            | 1.16 [0.98, 1.37] | 1.04 [0.88, 1.22] |                             |
| Small Financial Support Network       |                       |               |                |                              |
| No                                    | 132 (28.8)            | Referent      | Referent       | 0.006 (0.177)               |
| Yes                                   | 213 (36.4)            | 1.06 [1.00, 1.13] | 1.12 [0.96, 1.30] |                             |
| Small Social Support Network          |                       |               |                |                              |
| No                                    | 229 (31.1)            | Referent      | Referent       | 0.010 (0.071)               |
| Yes                                   | 116 (37.8)            | 1.24 [1.05, 1.46] | 1.16 [0.99, 1.36] |                             |
| Small Emotional Support Network       |                       |               |                |                              |
| No                                    | 184 (31.2)            | Referent      | Referent       | 0.066 (0.163)               |
| Yes                                   | 161 (35.5)            | 1.27 [1.07, 1.51] | 1.12 [0.95, 1.33] |                             |
| Consistent Network Support            |                       |               |                |                              |
| No                                    | 184 (36.7)            | Referent      | Referent       | 0.001 (0.035)               |
| Yes                                   | 161 (29.7)            | 0.90 [0.85, 0.96] | 0.85 [0.73, 0.99] |                             |
Table 3. Cont.

| Network Type | % with Health Outcome | PR * (95% CI) | aPR (95% CI) ** | Unadjusted (Adjusted) p-Value |
|--------------|-----------------------|---------------|-----------------|-----------------------------|
| At Least One Person in Network Providing Each Form of Support | | | | |
| No           | 106 (37.5)            | Referent      | Referent        | 0.025 (0.221)              |
| Yes          | 239 (31.4)            | 0.92 [0.86, 0.99] | 0.90 [0.77, 1.06] | |

| One Person or Fewer in Network Providing Each Form of Support | | | | |
| No           | 268 (31.5)            | Referent      | Referent        | 0.017 (0.031)              |
| Yes          | 77 (40.1)             | 1.11 [1.02, 1.20] | 1.22 [1.02, 1.46] | |

* PR = Prevalence ratio. ** aPR = Adjusted prevalence ratio; Models are adjusted for the following covariates measured at baseline: age, education, income, unstable housing, city of recruitment, reporting a place to go for medical care when sick, and having seen health care provider in the prior 6 months, and corresponding outcome variables reported at baseline.

4. Discussion

Among this sample of BSMM and BTW, recent incarceration was associated with having few network members providing medical and financial support after release. These findings suggest the need to mitigate the negative impact of incarceration on the social support networks of BSMM and BTW, potentially by increasing alternatives to incarceration along with programming to maintain support networks during incarceration. We observed some evidence that medical and financial support networks were protective against depression, alcohol use, and ED visitation, though results were not conclusive. These findings highlight the potential importance of social support networks for a range of health outcomes among BSMM and BTW and the need for additional research on the link between incarceration-related network disruption and health in this group.

Prior studies on incarceration and social networks have focused on networks as risk factors for incarceration [41], formation of networks within correctional facilities [42–44], and incarceration-related disruption of opposite-sex partnerships [27,28]. Our study is among the first to demonstrate deleterious effects of incarceration on social networks among BSMM and BTW. We found that those who had been incarcerated appeared less likely to have a consistent person in their network, and among those that did, participants who had been incarcerated were more likely to report that this person was a sexual partner. Among Black cisgender men, incarceration was associated with disrupting committed sexual partnerships with women [27,28]. Although we do not know if the person who was consistent across networks post release was the same as prior to incarceration, our results demonstrated the importance of having a consistent network member providing support and underscore the importance of sexual partners as a source of support for those who have been incarcerated, and the importance of non-familial network members overall for BSMM and BTW.

Our results indicate that incarceration may also affect network size, with people who were recently incarcerated reporting small medical and financial support networks. The sparse literature in this area is mixed. Some studies found that network size is reduced during the post-release period [42], whereas others have reported no difference pre- and post-incarceration [45]. However, these studies measured overall network size or networks defined by risk behavior (i.e., substance use) rather than forms of support from the networks. We did not observe an association between incarceration and the size of one’s emotional or social support networks, which may suggest the intimacy with network members who provide medical and financial support is more vulnerable to disruption from incarceration.
compared to the emotional and social support that may be provided by network members with more superficial relationships.

The importance of social support networks for health is well documented, but has focused mostly on STI/HIV risk among BSMM and BTW [7–12,46]. Our results extend to other important health outcomes, including substance use and health care utilization. We did not observe statistically significant relationships between social support networks and drug use, which is counter to hypotheses that people who are incarcerated may become enmeshed in drug use networks [41,45]. Social support networks were associated with unhealthy alcohol use, with small network size associated with higher prevalence, while having a consistent person network member was associated with lower prevalence. This supports prior evidence that disruption of partnerships during incarceration is linked to post-release binge drinking [47]. One’s networks’ substance use and incarceration explains how incarceration influences individual’s post-release substance use [34,45], but in this study we lack information on network members’ substance use. We also do not have information on the substance use norms within one’s networks, which are powerful drivers of an individual’s risk behavior and targets for network-based interventions [8,48,49].

Additional limitations must be noted. First, while we controlled for baseline measures of support networks, we lack data regarding the stability of networks before and after incarceration, and prior research has found that the number of people in one’s network may be stable after incarceration but that there is high turnover of people within the network [25]. We cannot measure other sources of social support that may be important for health during re-entry such as case managers [50,51]. There was also limited data on non-sexual network members and homophily (i.e., similarity) related to sexual minority status, which may confer specific protection for BSMM and BTW [6]. HPTN 061 was not focused on recruiting BTW and the small number enrolled does not allow for adequate statistical power to examine differences in the associations among BSMM versus BTW [9]. Analyses of support networks and health were cross-sectional, and we cannot ascertain temporality. For example, someone experiencing depressive symptoms may withdraw from their social networks. Our measures were self reported and subject to social desirability and recall bias. We included numerous baseline covariates that may effect recent incarceration, social support networks, and health outcomes in our IPTW models to account for their potential confounding effects. However, the relationships among the covariates, such as experiences and internalization of homophobia, likely intersect and are complex, warranting future research. Finally, our sample may not be generalizable to other BSMM and BTW.

5. Conclusions

This study is among the first to show that incarceration is associated with the size and composition of social support networks of BSMM and BTW, and that these support network characteristics are associated with a range of important health outcomes. Future research is needed to better characterize changes in social support networks pre- and post-incarceration and to develop interventions to bolster support networks during incarceration while also limiting exposure to incarceration among BSMM and BTW. Reducing the disproportionate levels of incarceration among BSMM and BTW is crucial to prevent subsequent adverse consequences on social support and health. Policies to address racism and homophobia in the criminal legal system to prevent unequal targeting of racial and/or gender minority people are needed, as is programming to support social support networks during incarceration and re-entry.

Author Contributions: Conceptualization: J.D.S., M.R.K. and F.K.; Methodology: J.D.S., M.R.K., M.M., C.M.C. and R.E.T.; Formal Analysis: M.M., M.R., J.F. and C.M.C.; Writing—Original Draft Preparation: J.D.S., F.K., J.F. and M.M.; Writing—Review and Editing: All authors. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by National Institute on Drug Abuse grant number R01DA044037.
Institutional Review Board Statement: This secondary data analysis of de-identified data is deemed non-human subjects research at NYU Grossman School of Medicine and does not require IRB review.

Informed Consent Statement: Not applicable.

Data Availability Statement: HPTN 061 data are available upon request: https://www.hptn.org/research/studies/hptn061/accessstostudydata.

Acknowledgments: This manuscript is a product of authors and has not been reviewed by and does not necessarily represent the views of the HPTN 061 protocol team, the HPTN or the study sponsor/funders. We are thankful to the following groups who made possible the HPTN 061 study: HPTN 061 study participants; HPTN 061 Protocol co-chairs, Beryl Koblin, Kenneth Mayer, and Darrell Wheeler, HPTN061 Protocol team members; HPTN Black Caucus; HPTN Network Laboratory, Johns Hopkins University School of Medicine; Vaccine and Infectious Disease Division, Fred Hutchinson Cancer Research Center; Statistical and Data Management Center, Statistical Center for HIV/AIDS Research and Prevention; HPTN CORE Operating Center, Family Health International (FHI) 360; Black Gay Research Group; clinical research sites, staff, and Community Advisory Boards at Emory University, Fenway Institute, GWU School of Public Health and Health Services, Harlem Prevention Center, New York Blood Center, San Francisco Department of Public Health, the University of California, Los Angeles, Center for Behavioral and Addiction Medicine, and Cornelius Baker, FHI 360. We are thankful to Sam Griffith, Senior Clinical Research Manager, FHI 360, and Lynda Emel, Associate Director, HPTN Statistical and Data Management Center, Fred Hutchinson Cancer Research Center, for their considerable assistance with HPTN 061 data acquisition and documentation. This research was supported by the National Institute on Drug Abuse grant ‘Stop-and-Frisk, Arrest, and Incarceration and STI/HIV Risk in Minority MSM’ (Principal Investigator: MRK, R01DA044037). This research uses data from the HIV Prevention Trials Network 061 (HPTN 061) study. HPTN 061 grant support was provided by the National Institute of Allergy and Infectious Disease (NIAID), National Institute on Drug Abuse (NIDA) and National Institute of Mental Health (NIMH): Cooperative Agreements UM1 AI068619, UM1 AI068617, and UM1 AI068613. Additional site funding included Fenway Institute Clinical Research Site (CRS): Harvard University CFAR (P30 AI063054) and CTU for HIV Prevention and Microbicide Research (UM1 AI069480); George Washington University CRS: District of Columbia Developmental CFAR (P30 AI087714); Harlem Prevention Center CRS and NY Blood Center/Union Square CRS: Columbia University CTU (5U01 AI069466) and ARRA funding (3U01 AI069466-03S1); Hope Clinic of the Emory Vaccine Center CRS and The Ponce de Leon Center CRS: Emory University HIV/AIDS CTU (5U01 AI069418), CFAR (P30 AI050409) and CTSA (UL1 RR025008); San Francisco Vaccine and Prevention CRS: ARRA funding (3U01 AI069496-03S1, 3U01 AI069496-03S2); UCLA Vine Street CRS: UCLA Department of Medicine, Division of Infectious Diseases CTU (U01 AI069424). The funder had a role in the design of the study by providing input into the design. The funder did not have a role in the data collection and analysis, decision to publish, or preparation of the manuscript. The funding agencies had no role in designing the research, data analyses and preparation of the report. Maria Khan, Charles Cleland, and Joy Scheidell received support from the New York University Center for Drug Use and HIV Research (P30 DA011041). MRK additionally was supported by the New York University-City University of New York (NYU-CUNY) Prevention Research Center (U48 DP005008). Typhanye Dyer and Rodman Turpin were supported by the University of Maryland Prevention Research Center (U48 DP006382). Russell Brewer was supported by a grant from NIDA (P30DA027828-08S1). Rodman Turpin is supported by the National Institute on Minority Health and Health Disparities (K01MD016346).

Conflicts of Interest: The authors declare no conflict of interest.

References
1. Cohen, S.; Wills, T.A. Stress, social support, and the buffering hypothesis. Psychol. Bull. 1985, 98, 310–357. [CrossRef] [PubMed]
2. Uchino, B.N. Social support and health: A review of physiological processes potentially underlying links to disease outcomes. J. Behav. Med. 2006, 29, 377–387. [CrossRef] [PubMed]
3. Meyer, I.H. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. Psychol. Bull. 2003, 129, 674–697. [CrossRef] [PubMed]
4. American Civil Liberties Union. Know Your Rights: LGBTQ Rights. Available online: https://www.aclu.org/know-your-rights/lgbtq-rights (accessed on 21 September 2022).
5. Poushter, J.; Kent, N. The Global Divide on Homosexuality Persists. Available online: https://www.pewresearch.org/global/2020/06/25/global-divide-on-homosexuality-persists/ (accessed on 21 September 2022).
6. Leahy, K.E.; Chopik, W.J. The Effect of Social Network Size and Composition on the Link Between Discrimination and Health Among Sexual Minorities. *J. Aging Health* **2020**, *32*, 1214–1221. [CrossRef] [PubMed]

7. Teixeira da Silva, D.; Bouris, A.; Voisin, D.; Hutton, A.; Brewer, R.; Schneider, J. Social Networks Moderate the Syndemic Effect of Psychosocial and Structural Factors on HIV Risk Among Young Black Transgender Women and Men who have Sex with Men. *AIDS Behav.* **2020**, *24*, 192–205. [CrossRef]

8. Arnold, E.A.; Sterrett-Hong, E.; Jonas, A.; Pollack, L.M. Social networks and social support among ball-attending African American men who have sex with men and transgender women are associated with HIV-related outcomes. *Glob. Public Health* **2018**, *13*, 144–158. [CrossRef]

9. Ezell, J.M.; Ferreira, M.J.; Duncan, D.T.; Schneider, J.A. The Social and Sexual Networks of Black Transgender Women and Black Men Who Have Sex with Men: Results from a Representative Sample. *Transgend. Health* **2018**, *3*, 201–209. [CrossRef]

10. Schneider, J.A.; Cornwell, B.; Ostrow, D.; Michaels, S.; Schumm, P.; Laumann, E.O.; Friedman, S. Network mixing and network influences most linked to HIV infection and risk behavior in the HIV epidemic among black men who have sex with men. *Am. J. Public Health* **2013**, *103*, e28–e36. [CrossRef]

11. Hermanstyne, K.A.; Green, H.D., Jr.; Cook, R.; Tieu, H.V.; Dyer, T.V.; Hucks-Ortiz, C.; Wilton, L.; Latkin, C.; Shoptaw, S. Social Network Support and Decreased Risk of Serocconversion in Black MSM: Results of the BROTHERS (HPTN 061) Study. *J. Acquir. Immune Defic. Syndr.* **2018**, *78*, 163–168. [CrossRef]

12. Hall, B.J.; Chen, W.; Wu, Y.; Zhou, F.; Latkin, C. Prevalence of potentially traumatic events, depression, alcohol use, and social network supports among Chinese migrants: An epidemiological study in Guangzhou, China. *Eur. J. Psychotraumatol.* **2014**, *5*, 26529. [CrossRef]

13. Sharara, S.L.; Kanji, S.S. War and infectious diseases: Challenges of the Syrian civil war. *PloS Pathog.* **2014**, *10*, e1004438. [CrossRef]

14. Friedman, S.; Rossi, D.; Flom, P.L. “Big Events” and Networks. *Connections* **2006**, *27*, 9–14. [PubMed]

15. Golembeski, C.; Fulilove, R. Criminal (in)justice in the city and its associated health consequences. *Am. J. Public Health* **2008**, *98*, S185–S190. [CrossRef] [PubMed]

16. Ghandnoosh, N. Prison Population Trends: Massive Buildup and Modest Decline; The Sentencing Project: Washington, DC, USA, 2019.

17. Sawyer, W.; Wagner, P. Mass Incarceration: The Whole Pie. 2020. Available online: https://www.prisonpolicy.org/reports/pie2020.html (accessed on 1 June 2021).

18. Nellis, A. *The Color of Justice: Racial and Ethnic Disparity in State Prisons*; The Sentencing Project: Washington, DC, USA, 2021.

19. Brewer, R.A.; Magnus, M.; Kuo, I.; Wang, L.; Liu, T.Y.; Mayer, K.H. The high prevalence of incarceration history among Black men who have sex with men in the United States: Associations and implications. *Am. J. Public Health* **2014**, *104*, 448–454. [CrossRef]

20. Brewer, R.A.; Magnus, M.; Kuo, I.; Wang, L.; Liu, T.Y.; Mayer, K.H. Exploring the relationship between incarceration and HIV among black men who have sex with men in the United States. *J. Acquir. Immune Defic. Syndr.* **2014**, *65*, 218–225. [CrossRef]

21. Grant, J.M.; Mottet, L.A.; Tanis, J.; Harrison, J.; Herman, J.L.; Keisling, M. *Injustice at Every Turn: A Report of the National Transgender Discrimination Survey*; National Center for Transgender Equality and National Gay and Lesbian Task Force: Washington, DC, USA, 2011.

22. Garofalo, R.; Johnson, A.K.; Kuhns, L.M.; Cotten, C.; Joseph, H.; Margolis, A. Life skills: Evaluation of a theory-driven behavioral HIV prevention intervention for young transgender women. *J. Urban Health* **2012**, *89*, 419–431. [CrossRef]

23. Reisner, S.L.; Bailey, Z.; Sevelius, J. Racial/ethnic disparities in history of incarceration, experiences of victimization, and associated health indicators among transgender women in the U.S. *Women Health* **2014**, *54*, 750–767. [CrossRef]

24. Seal, D.W.; Eldrige, G.D.; Kacanek, D.; Binson, D.; Macgowan, R.J.; Project, S.S.G. A longitudinal, qualitative analysis of the context of substance use and sexual behavior among 18- to 29-year-old men after their release from prison. *Soc. Sci. Med.* **2014**, *76*, 2394–2406. [CrossRef]

25. Freudenberg, N. Jails, prisons, and the health of urban populations: A review of the impact of the correctional system on community health. *J. Urban Health* **2001**, *78*, 214–235. [CrossRef]

26. Khan, M.R.; Behrend, L.; Adimora, A.A.; Weir, S.S.; White, B.L.; Wohl, D.A. Dissolution of primary intimate relationships during incarceration and implications for post-release HIV transmission. *J. Urban Health* **2011**, *88*, 365–375. [CrossRef] [PubMed]

27. Khan, M.R.; Behrend, L.; Adimora, A.A.; Weir, S.S.; Tisdale, C.; Wohl, D.A. Dissolution of primary intimate relationships during incarceration and associations with post-release STI/HIV risk behavior in a Southeastern city. *Sex Transm. Dis.* **2011**, *38*, 43–47. [CrossRef] [PubMed]

28. Adimora, A.A.; Schoenbach, V.J. Social context, sexual networks, and racial disparities in rates of sexually transmitted infections. *J. Infect. Dis.* **2005**, *191*, S115–S122. [CrossRef]

29. Cornwell, B. Social disadvantage and network turnover. *J. Gerontol. B Psychol. Sci. Soc. Sci.* **2015**, *70*, 132–142. [CrossRef] [PubMed]

30. Arnold, E.A.; Bailey, M.M. Constructing Home and Family: How the Ballroom Community Supports African American GLBTQ Youth in the Face of HIV/AIDS. *J. Gay Lesbian Soc. Serv.* **2009**, *21*, 171–188. [CrossRef]
32. Young, L.E.; Jonas, A.B.; Michaels, S.; Jackson, J.D.; Pierce, M.L.; Schneider, J.A.; uConnect Study Team. Social-structural properties and HIV prevention among young men who have sex with men in the ballroom house and independent gay family communities. Soc. Sci. Med. 2017, 174, 26–34. [CrossRef]
33. Frost, D.M.; Meyer, I.H.; Schwartz, S. Social support networks among diverse sexual minority populations. Am. J. Orthopsychiatry 2016, 86, 91–102. [CrossRef]
34. Schneider, J.A.; Lancki, N.; Schumm, P. At the intersection of criminal justice involvement and sexual orientation: Dynamic networks and health among a population-based sample of young Black men who have sex with men. Soc. Netw. 2017, 51, 73–87. [CrossRef]
35. Koblin, B.A.; Mayer, K.H.; Eshleman, S.H.; Wang, L.; Mannheimer, S.; del Rio, C.; Shoptaw, S.; Magnus, M.; Buchbinder, S.; Wilton, L.; et al. Correlates of HIV prevention in a cohort of Black men who have sex with men in the United States: HIV prevention trials network (HPTN) 061. PloS ONE 2013, 8, e70413. [CrossRef]
36. Latkin, C.; Yang, C.; Tobin, K.; Roebuck, G.; Spikes, P.; Patterson, J. Social network predictors of disclosure of MSM behavior and HIV-positive serostatus among African American MSM in Baltimore, Maryland. AIDS Behav. 2012, 16, 533–542. [CrossRef]
37. R Core Team. R: A Language and Environment for Statistical Computing. Available online: https://www.R-project.org (accessed on 21 September 2022).
38. Harrell, S.P.; Merchant, M.A.; Young, S.A. Psychometric Properties of the Racism and Life Experience Scale. In Proceedings of the 1997 Annual Convention of the American Psychological Association, Chicago, IL, USA, 15–19 August 1997.
39. Herek, G.M.; Glunt, E.K. An epidemic of stigma. Public reactions to AIDS. Am. Psychol. 1988, 43, 886–891. [CrossRef] [PubMed]
40. R Core Team. R: A Language and Environment for Statistical Computing. Available online: https://www.R-project.org [accessed on 21 September 2022].
41. Bellair, P.E.; Light, R.; Sutton, J. Prisoners’ Personal Networks in the Months Preceding Prison: A Descriptive Portrayal. Int. J. Offender Ther. Comp. Criminol. 2019, 63, 383–405. [CrossRef]
42. Nargiso, J.E.; Kuo, C.C.; Zlotnick, C.; Johnson, J.E. Social support network characteristics of incarcerated women with co-occurring major depressive and substance use disorders. J. Psychoact. Drugs 2014, 46, 93–105. [CrossRef]
43. Reid, S.E. The (Anti)Social Network: Egocentric Friendship Networks of Incarcerated Youth. Deviant Behav. 2017, 28, 154–172. [CrossRef]
44. Sentse, M.; Kreager, D.A.; Bosma, A.Q.; Nieuwbeerta, P.; Palmen, H. Social Organization in Prison: A Social Network Analysis of Interpersonal Relationships among Dutch prisoners. Justice Q. 2021, 38, 1047–1069. [CrossRef]
45. Owens, M.D.; McCrady, B.S. The Role of the Social Environment in Alcohol or Drug Relapse of Probationers Recently Released from Jail. Addict. Disord. Their Treat. 2014, 13, 179–189. [CrossRef]
46. Amirkhanian, Y.A. Social networks, sexual networks and HIV risk in men who have sex with men. Curr. HIV/AIDS Rep. 2014, 11, 81–92. [CrossRef]
47. Khan, M.R.; Scheidell, J.D.; Golin, C.E.; Friedman, S.R.; Adimora, A.A.; Lejuez, C.W.; Hu, H.; Quinn, K.; Wohl, D.A. Dissolution of Committed Partnerships during Incarceration and STI/HIV-Related Sexual Risk Behavior after Prison Release among African American Men. J. Urban Health 2018, 95, 479–487. [CrossRef]
48. Latkin, C.; Donnell, D.; Liu, T.Y.; Davey-Rothwell, M.; Celentano, D.; Metzger, D. The dynamic relationship between social norms and behaviors: The results of an HIV prevention network intervention for injection drug users. Addiction 2013, 108, 934–943. [CrossRef]
49. Latkin, C.A.; Donnell, D.; Metzger, D.; Sherman, S.; Aramrattana, A.; Davis-Vogel, A.; Quan, V.M.; Gandham, S.; Vongchak, T.; Perdue, T.; et al. The efficacy of a network intervention to reduce HIV risk behaviors among drug users and risk partners in Chiang Mai, Thailand and Philadelphia, USA. Soc. Sci. Med. 2009, 68, 740–748. [CrossRef] [PubMed]
50. Brewer, R.; Issema, R.; Moore, M.; Chestman, S.; Mukherjee, S.; Odlum, M.; Schneider, J.A. Correlates of Durable Viral Suppression (DVS) Among Criminal Justice-involved (CJI) Black Men Living with HIV in Louisiana. AIDS Behav. 2019, 23, 2980–2991. [CrossRef] [PubMed]
51. Brewer, R.A.; Chestman, S.; Mukherjee, S.; Mason, K.E.; Dyer, T.V.; Gamache, P.; Moore, M.; Gruber, D. Exploring the Correlates of Linkage to HIV Medical Care Among Persons Living with HIV Infection (PLWH) in the Deep South: Results and Lessons Learned from the Louisiana Positive Charge Initiative. AIDS Behav. 2018, 22, 2615–2626. [CrossRef] [PubMed]