



Published in final edited form as:

Subst Use Misuse. 2018 July 03; 53(8): 1281–1287. doi:10.1080/10826084.2017.1404105.

A Study of Sexual Relationship Power among Young Women Who Inject Drugs and Their Sexual Partners

Meghan D. Morris^a, Martha E. Montgomery^b, Alya Briceno^a, Jennifer L. Evans^a, Erin V. W. Andrew^c, Kimberly Page^c, and Judith A. Hahn^{a,d}

^aDepartment of Epidemiology & Biostatistics, University of California, San Francisco, California, USA

^bDepartment of Emergency Medicine, Alameda Health System – Highland Hospital, Oakland, California, USA

^cDepartment of Internal Medicine, University of New Mexico Health Center, Albuquerque, New Mexico, USA

^dDepartment of Medicine, University of California, San Francisco, California, USA

Abstract

Background—To date, research applying the Sexual Relationship Power Scale (SRPS) has been limited to sexual risk behaviors.

Objective—We measured levels of sexual relationship power and examined associations between sexual relationship power and injecting and sexual behaviors that place women at increased risk for blood borne infections.

Methods—Using data from a cross-sectional study of young women who inject drugs (WWID) in San Francisco, USA, logistic regression analysis identified independent associations between SRPS and subscale scores (relationship control [RC] and decision making dominance [DMD]) and injecting and sexual behaviors.

Results—Of the 68 young WWID, 24 (34%) reported receptive syringe sharing, 38 (56%) reused/shared a cooker to prepare drugs, and 25 (37%) injected someone else's drug residue during the three-months prior to enrollment. Most (60, 88%) reported condomless sex with main sex-partner, 8 (12%) reported transactional sex, and 36 (53%) had two or more recent sex partners. The median SRPS score was 2.98 (IQR: 2.65, 3.18), 3.23 (IQR: 3.23, 3.57) for RC and 2.40 (IQR: 2.20, 2.60) for DMD. No significant associations were detected between SRPS or DMD and injecting or sexual risk behaviors. After adjusting for gender and years injecting, for every one-point increase in RC, women had a 6.70 lower odds of recent condomless sex (95% CI: 0.92, 50.00, $p = 0.06$), and a 3.90 lower odds of recent transactional sex (95% CI: 1.22, 12.50, $p = 0.02$).

CONTACT: Meghan D. Morris, PhD, MPH, Meghan.Morris@ucsf.edu, Department of Epidemiology & Biostatistics, University of California, 550 16th Street, Box 1224, San Francisco, CA 94158, USA.

ORCID

Meghan D. Morris, <http://orcid.org/0000-0003-2762-2953>

Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Conclusion—Our study findings suggest that some components of sexual relationship power may play a role in sexual risk, but not in injecting risk.

Keywords

SRPS; young women; people who inject drugs; injecting partnerships; epidemiology; hepatitis C virus; sexual partnerships

Introduction

Young women who inject drugs (WWID) experience higher rates of both HIV and hepatitis C virus (HCV) infection compared to their male counterparts (Des Jarlais, Feelemyer, Modi, Arasteh, & Hagan, 2012; Esmaceli et al., 2017; Miller et al., 2002; Tracy et al., 2014). Compared to men, WWID are more likely to have overlapping sexual and drug use networks, thus placing the mat higher risk for sexually transmitted and blood-transmitted infections (Bourgois, Prince, & Moss, 2004; Latkin, Forman, Knowlton, & Sherman, 2003). WWID are also more likely to have a sexual partner who injects drugs and more often report being injected by their partner compared to men who inject drugs (Choi, Cheung, & Chen, 2006; Evans et al., 2003; Frajzyngier, Neaigus, Gyarmathy, Miller, & Friedman, 2007; Montgomery et al., 2002). Additionally, WWID in close relationships, such as sexual relationship or who live with their injecting partner are at greater risk for risky injecting behaviors and experience higher incidence of hepatitis C virus than those not in close injecting relationships (Morris et al., 2014; Tracy et al., 2014). Ethnographic reports of victimization, marginalization, and resource scarcity demonstrate the “everyday violence” WWID experience resulting in high vulnerability to HIV and HCV in young WWID (Scheper-Hughes & Bourgois, 2003).

For young WWID, the role of gender, as it relates to social norms and inequalities, may shape and define risk in the context of relationships (Amaro, 1995). HIV prevention research has highlighted gender inequality and the resulting power differential found in relationships between women and men as contributing factors in heterosexual HIV transmission and disproportionate rates of HIV among women (Campbell et al., 2009; Campbell, Tross, Hu, Pavlicova, & Nunes, 2012; Knudsen et al., 2008; Pulerwitz, Gortmaker, & DeJong, 2000). Power dynamics (also referred to as “relationship power dynamics” or “gendered power”) is a concept that encompasses a range of individual (empowerment), interpersonal (dominance and control in relationships) and social and structural factors (gender norms, economic inequalities). In the context of relationships amongst people who inject drugs (PWID), power dynamics have primarily been explored through qualitative research or via single measures describing additional relationship characteristics (gender-discordance, recent sex, living together) interpreted as intimacy, power, or decision-making (Harris & Rhodes, 2013; Rhodes, 1997; Tuchman, 2015). Imbalances or deficits in sexual relationship power may hinder women’s ability to negotiate safer sex and injection behavior.

The impact of gender and relationship power on sexual risk behavior has been previously measured using a quantitative tool known as the Sexual Relationship Power Scale (SRPS), developed by Pulerwitz, Amaro, De Jong, Gortmaker, & Rudd (2002) and Pulerwitz et al.

(2000). The SRPS has primarily been applied to nonsubstance using heterosexual partnerships in the field of HIV prevention research (Campbell et al., 2009; Conroy et al., 2016; Muldoon, Deering, Feng, Shoveller, & Shannon, 2015), in which lower SRPS scores have been associated with higher risk and inconsistent condom use and for HIV infection (Bonacquisti & Geller, 2013; Dunkle et al., 2004; Jewkes, Dunkle, Nduna, & Shai, 2010). However, we are unaware of any investigation of relationship dynamics in the intersecting injecting and sexual relationships of young WWID, or one that quantifies the impact of sexual relationship power on injecting or sexual risk behaviors in the context of WWID's sexual relationships. Given the increased risk for risky injecting practices and HCV infection observed for women who inject with sexual partners, we hypothesized that women with lower sexual relationship power would be associated with sexual and injection drug use risk behaviors.

The goal of this study was to apply the SRPS survey to a sample of young WWID to (1) assess the levels of sexual relationship power and (2) examine the associations between sexual relationship power and sexual and injection drug use risk behaviors.

Methods

Procedure

Participants were selected from an ongoing prospective epidemiological study of acute HCV among young adult (<30 years of age) PWID in San Francisco, USA known as the UFO study, which is a long-standing cohort study of HIV and HCV transmission among young adult PWID (Hahn et al., 2002; Page et al., 2009). As part of the UFO study behavioral survey, participants who identified as a woman and reported a main or primary sex partner with whom they had inter-course and injected drugs in the previous month were directed to an additional SRPS survey module. Between April 2010 and September 2013, all eligible women participants completed a one-time battery of standardized measures assessing sexual relationship power (the 23 item SRPS survey) in addition to the UFO study survey. Participants provided informed consent and received \$30USD. The Institutional Review Board of the University of California, San Francisco, approved all study protocols.

Measures

Participant characteristics—As part of the parent study interview, participants completed standard self-report measures of sociodemographics, including age, education, lifetime incarceration, recent housing, and ethnicity/race. Participants were also asked if they had ever received a mental health diagnosis.

Sexual relationship power domains—The SRPS is a theoretically based measure of sexual relationship power dynamics within heterosexual partnerships. An English and Spanish version of the scale was initially validated in a sample of women reporting a primary heterosexual partner (Pulerwitz et al., 2000). Prior to administering the SRPS to this sample, the study team conducted three cognitive interviews with young WWID (data not shown) to ensure item wording of the SRPS was appropriate for the research population. These interviews asked participants to describe how they arrived at the responses to each

item to assess whether items were being interpreted as intended. No SRPS items were changed or modified as a result of the cognitive interviewing.

Three primary variables were calculated using the overall 23-item SRPS and the two subscales: decision-making dominance (DMD) and sexual relationship control (RC) (Pulerwitz et al., 2000). The sexual RC subscale assesses women's sexual and emotional autonomy based on a 4-point Likert scale ranging from Strongly Agree (1) to Strongly Disagree (4). The DMD subscale consists of 8 questions that assess decision-making power within the relationship. Higher scores indicated greater sexual relationship power. In our study, the scale indicated "excellent" internal consistency (defined as $\alpha \geq 0.90$) for the full SRPS ($\alpha = 0.92$) and RC subscale ($\alpha = 0.92$), and "acceptable" for the DMD subscale ($\alpha = 0.78$). Alpha values for subscales were assessed using Cronbach's coefficient alpha with alpha values >0.70 as acceptable for an instrument (Cronbach, 1951; Nunnally, 1978).

Dependent variables—Our dependent variables included several items reflecting recent sexual behaviors and injection drug use behaviors known to increase the risk for HIV and HCV exposure. We examined three binary variables that indicate recent (previous 3 months) high-risk sexual behavior: (1) Any recent condomless sex with main/primary sex partner, referred to as inconsistent condom use hereafter ("...how often did you use a condom when you had vaginal or anal intercourse with [main partner]?" where responses other than "always" were recoded as "yes" for inconsistent condom use in the past 3 months; (2) traded sex for money, goods, services, or drugs ("...have you had sex with someone in exchange for money, drugs, food, clothing or a place to stay, where you wouldn't have had sex with them otherwise?") (3) two or more recent sexual partners ("... approximately how many male sex partners have you had?"). We examined three binary variables to indicate recent (previous 3 months) high-risk injecting behaviors: (a) receptive needle/syringe sharing (RNS) ("...have you used someone else's rig?"); (b) shared/reused cooker or container when mixing drugs ("Have you prepared drugs in the same cooker, spoon, or baggie...") and (c) did someone else's rinse ("have you done someone's rinse [injected the drug residue from someone else's cotton or cooker]...?").

Statistical analysis—We calculated frequency distributions for categorical variables, and central tendency (medians and interquartile range (IQR)) for continuous variables, overall and by low, medium, and high values of the SRPS, RC subscale, and DMD subscale. We fit logistic regression models to test for bivariate associations between our primary independent variables (continuous measures of SRPS, RC subscale, and DMC subscale) and participant characteristics to determine which values might be potential confounders. We fit logistic regression models, controlling for race/ethnicity, and years injecting, to assess independent associations between SRPS, RC and DMD subscale scores (continuous 1–4 point scale), and each sexual risk and injecting outcome variable of interest. All analyses were performed using STATA 13.

Results

Of the 362 persons enrolled into the parent study over the 3-year period, 107 (29.6%) identified as a woman and 95 of those (88.8%) reported recent sexual intercourse. Sixty-

eight (71.5%) met study eligibility (reported a main or primary male sex partner with whom they had intercourse and injected drugs in the previous month) and completed the SRPS survey.

The median age was 25.3 (IQR: 22.6, 26.1 years), 72% self-identified as Caucasian, two-thirds (66%) had not completed a high school education, and the majority (74%) were unstably housed, had ever been incarcerated (80%) and ever been diagnosed with a mental illness (85%) (Table 1). The median score on the SRPS was 2.98 (IQR: 2.65, 3.18), 3.23 (IQR: 3.23, 3.57) for the RC subscale and 2.40 (IQR: 2.20, 2.60) for the DMD subscale. Most (88%) reported inconsistent condom use, 12% reported trading sex, and 53% reported having intercourse with two or more partners in the past 3 months. Thirty-four percent reported recent (past 3 months) receptive needle/syringe sharing, 56% reported share/reusing cooker or container when dissolving drugs, and 37% did someone else's rinse. Table 1 shows descriptive statistics and bivariate associations between SRPS domains and participant characteristics and recent high-risk exposures; there were no statistically significant associations.

Logistic regression models adjusting for race/ethnicity, and duration of injection drug use indicated sexual relationship power (full SRPS) was not significantly associated with any injecting drug use behaviors, although all associations had odds ratios less than one (Table 2). Increases in RC subscore values were associated with lower odds of sexual and injecting risk behaviors, but only the association with recent sex work reached statistical significance (OR = 0.26, 95% CI: 0.08, 0.82). There were no statistically significant associations between the DMD subscale scores and these recent sexual and injecting behaviors, and the odds ratios included values below and above one suggesting no consistent pattern.

Discussion

In this study, we extend previous work examining sexual relationship power on HIV-risk behaviors by examining the associations between relationship power and sexual and injecting related risk behaviors among young WWID. On average SRPS values for women in this study were consistent with studies of nondrug using women (Conroy et al., 2016; Muldoon et al., 2015), but lower than RC and DMD values reported in a study of drug-involved women (Campbell et al., 2012). Significant findings emerge that provide support for the importance of sexual relationship power dynamics in the context of sexual behaviors for WWID. Though the overall SRPS scale and the DMD subscale were not significantly associated with any sexual or injecting risk behaviors, the RC subscale did seem to influence sexual behaviors. For every point increase in the RC subscale, WWID had 85% lower odds of recent inconsistent condom use and 74% lower odds of recent sex work participation in the past 3-months.

The RC subscale is explained by Campbell et al. to encompass the ability to “act as one desires,” in the context of a relationship (Campbell et al., 2009). The direction of the associations we observed between RC subscale scores and the sexual risk variables is consistent with other studies of heterosexual couples. In a recent systematic review of published articles reporting reliability and predictive accuracy of SRPS in HIV/AIDS

research, of 32 analyses reporting condom use outcomes, 19 (59%) found higher RC was associated with increased condom use (McMahon, Volpe, Klostermann, Trabold, & Xue, 2015). While the SRPS has been applied to study a variety of outcomes within the context of HIV/AIDS, to our knowledge, no study has assessed the association between SRPS and drug injecting behaviors. In fact, none of the 54 studies included in McMahon's systematic review included PWID. HIV/AIDS prevention researchers posit that the higher prevalence of injecting risk behaviors with sexual-injecting partnerships compared to nonsexual injecting partnerships and the elevated risk profiles of WWID, reflect sexual relationship power dynamics similar to those underlying risky sexual behaviors for these groups (Golub et al., 2007; Morris et al., 2014; Sherman, Latkin, & Gielen, 2001; Tortu, McMahon, Hamid, & Neaigus, 2003).

While the SRPS, RC subscale, and DMD subscale indicated good internal consistency, we observed few statistically significant associations and odds ratios varied above and below one for the associations of DMD with injecting and sexual risk behaviors. Other studies have shown the DMD subscale to have weak predictive validity, especially within specific populations (e.g., younger women) and in certain research settings (McMahon et al., 2015). Scale modifications may improve scale validity and application for WWID given the additional social norms of injecting drugs and cultural attitudes toward WWID. Our study relied on the full set of items for the SRPS, RC subscale, and DMD subscale. Unlike in other studies employing SRPS to examine HIV risk behaviors that removed poorly performing items to achieve improved predictive validity (Parrado, Flippen, & McQuiston, 2005), our study did not find improved construct validity when scale items were removed through factor analyses (data not shown). Sexual relationship power is a multidimensional concept reflective of individual decision making, interpersonal dominance, and gender factors exogenous to the individual such as social norms and systems favoring men (El-Bassel & Strathdee, 2015). Additional research to adapt concepts underlying the SRPS to assess mechanisms underlying relationship power and injecting behaviors may offer opportunities for quantitative measurement of power dynamics to explain elevated injecting risk for WWID.

By using the SRPS in this sample of WWID, we aimed to examine whether sexual relationship power might explain why rates of sexual and injecting risk behaviors are higher among WWID compared to men who inject drugs (Flom et al., 2001; Morris et al., 2014). Having multiple sexual partnerships including a main partner (sexual partner concurrency) has been previously associated with sex work among WWID (Bogart et al., 2005). While our results did not show a statistically significant association between sexual relationship power and sexual partner concurrency, we did see a significant association between increased sexual RC and reduced sex work participation. The decreased frequency of sex work participation among WWID with higher RC scores may reflect a level of control or dominance within WWID's primary relationships that enable them to avoid sexual partnerships outside of their primary relationship, even for monetary gain, and may lower their risk for HIV and HCV.

Certain limitations of this study deserve mention. First, because of the cross-sectional nature of the research design, a casual relationship between power and sexual and injecting

behaviors could not be established. More-over, the small sample size resulted in limited statistical power to precisely estimate the associations and detect associations between SRPS constructs and study outcomes. The consistency of odds ratios for the SRPS and the RC subscale and injecting and sexual risk behaviors (i.e., all less than one) suggests that further exploration of the associations between SRPS and RC and these risk behaviors may be warranted in larger samples. Next, the SRPS questionnaire has not been validated for use among young WWID. The internal consistency of the scale and subscales within our study was good ($\alpha = 0.78\text{--}0.92$), however the additional dimensions of injecting partnerships suggests there are likely additional relationship components within PWID relationships not measured by the SRPS. Knowledge derived from our study informed subsequent qualitative work to develop an extended measurement instrument to assess relationship factors underlying sexual and injecting risk among young PWID (Morris et al., 2017; Morris et al., 2017). Lastly, the cross-sectional design did not allow us to assess whether sexual relationship power and control are subject to v over time depending on relationship characteristics and factors exogenous to the partnership. Future research should examine the course of sexual relationship power dynamics for women with sexual injecting partners.

Our findings add to research exploring ways to develop effective programs and interventions to reduce the injecting and sexual risk WWID experience (El-Bassel & Strathdee, 2015; Harris & Rhodes, 2013; Page, Morris, Hahn, Maher, & Prins, 2013). Our data preliminarily suggest that sexual relationship power, especially RC, may be an important target for increasing risk reduction strategies. We suggest that future research and programmatic activities to examine leveraging the positive aspects of sexual relationships and network connections to mitigate risky sexual and injecting behaviors for young WWID are needed (Bryant, Brener, Hull, & Treloar, 2010; Montgomery et al., 2002; Morris et al., 2015; Simmons & Singer, 2006). Social connections and positive relationship bonds bring psychological benefits including empowerment, increased self-esteem, and improved self-care; factors cited as the source for sexual risk-reduction interventions for young women (Wagner et al., 2009). Future studies require data collected from both members of the partnerships to expand our understanding of the role of RC on women's sexual and injecting behaviors with their sexual and injecting partners. Dyadic data can better elucidate whether balanced RC within partnerships is more likely to refrain from high-risk behaviors, and if so, interventions can aim to elevate the disempowered partner's RC.

Acknowledgments

Funding statement

This work was supported by the National Institutes of Health (R01DA016017, K24AA02258, and K01DA037802). Dr. Morris received additional support through a NIH Clinical and Translational Sciences Institute program (KL2TR000143).

References

Amaro H. Love, sex, and power. Considering women's realities in HIV prevention. *American Psychologist*. 1995; 50(6):437–447. [PubMed: 7598292]

- Bogart LM, Kral AH, Scott A, Anderson R, Flynn N, Gilbert ML, Bluthenthal RN. Sexual risk among injection drug users recruited from syringe exchange programs in California. *Sexually Transmitted Diseases*. 2005; 32(1):27–34. [PubMed: 15614118]
- Bonacquisti A, Geller PA. Condom-use intentions and the influence of partner-related barriers among women at risk for HIV. *Journal of Clinical Nursing*. 2013; 22(23–24):3328–3336. [PubMed: 23451871]
- Bourgois P, Prince B, Moss A. The everyday violence of hepatitis c among young women who inject drugs in San Francisco. *Human Organization*. 2004; 63(3):253–264. [PubMed: 16685288]
- Bryant J, Brener L, Hull P, Treloar C. Needle sharing in regular sexual relationships: An examination of serodiscordance, drug using practices, and the gendered character of injecting. *Drug and Alcohol Dependence*. 2010; 107(2–3):182–187. [PubMed: 19942380]
- Campbell AN, Tross S, Dworkin SL, Hu MC, Manuel J, Pavlicova M, Nunes EV. Relationship power and sexual risk among women in community-based substance abuse treatment. *Journal of Urban Health*. 2009; 86(6):951–964. [PubMed: 19921541]
- Campbell AN, Tross S, Hu MC, Pavlicova M, Nunes EV. Predictors of relationship power among drug-involved women. *AIDS and Behavior*. 2012; 16(6):1532–1541. [PubMed: 22614746]
- Choi SY, Cheung YW, Chen K. Gender and HIV risk behavior among intravenous drug users in Sichuan Province, China. *Social Science & Medicine*. 2006; 62(7):1672–1684. [PubMed: 16185801]
- Conroy AA, Tsai AC, Clark GM, Boum Y, Hatcher AM, Kawuma A, ... Weiser SD. Relationship power and sexual violence among HIV-positive women in rural Uganda. *AIDS and Behavior*. 2016; 20(9):2045–2053. [PubMed: 27052844]
- Cronbach LJ. Coefficient alpha and the internal structure of tests. *Psychometrika*. 1951; 16:297–334.
- Des Jarlais DC, Feelemyer JP, Modi SN, Arasteh K, Hagan H. Are females who inject drugs at higher risk for HIV infection than males who inject drugs: An international systematic review of high seroprevalence areas. *Drug and Alcohol Dependence*. 2012; 124(1–2):95–107. [PubMed: 22257753]
- Dunkle KL, Jewkes RK, Brown HC, Gray GE, McIntyre JA, Harlow SD. Gender-based violence, relationship power, and risk of HIV infection in women attending antenatal clinics in South Africa. *Lancet*. 2004; 363(9419):1415–1421. [PubMed: 15121402]
- El-Bassel N, Strathdee SA. Women who use or inject drugs: An action agenda for women-specific, multilevel, and combination HIV prevention and research. *Journal of Acquired Immune Deficiency Syndromes*. 2015; 69(2):S182–190. [PubMed: 25978486]
- Esmaili A, Mirzazadeh A, Carter GM, Esmaili A, Hajarizadeh B, Sacks HS, Page KA. Higher incidence of HCV in females compared to males who inject drugs: A systematic review and meta-analysis. *Journal of Viral Hepatitis*. 2017; 24(2):117–127. [PubMed: 27790803]
- Evans JL, Hahn JA, Page-Shafer K, Lum PJ, Stein ES, Davidson PJ, Moss AR. Gender differences in sexual and injection risk behavior among active young injection drug users in San Francisco (the UFO Study). *Journal of Urban Health*. 2003; 80(1):137–146. [PubMed: 12612103]
- Flom PL, Friedman SR, Kottiri BJ, Neaigus A, Curtis R, Des Jarlais DC, ... Zenilman JM. Stigmatized drug use, sexual partner concurrency, and other sex risk network and behavior characteristics of 18- to 24-year-old youth in a high-risk neighborhood. *Sexually Transmitted Diseases*. 2001; 28(10):598–607. [PubMed: 11689758]
- Frajzyngier V, Neaigus A, Gyarmathy VA, Miller M, Friedman SR. Gender differences in injection risk behaviors at the first injection episode. *Drug and Alcohol Dependence*. 2007; 89(2–3):145–152. [PubMed: 17276623]
- Golub ET, Strathdee SA, Bailey SL, Hagan H, Latka MH, Hudson SM, ... Team DS. Distributive syringe sharing among young adult injection drug users in five U.S. cities. *Drug and Alcohol Dependence*. 2007; 91(Suppl 1):S30–38. [PubMed: 17398039]
- Hahn JA, Page-Shafer K, Lum PJ, Bourgois P, Stein E, Evans JL. Hepatitis C virus seroconversion among young injection drug users: relationships and risks. *The Journal of infectious diseases*. 2002; 186(11):1558–64. [PubMed: 12447730]

- Harris M, Rhodes T. Injecting practices in sexual partnerships: Hepatitis C transmission potentials in a 'risk equivalence' framework. *Drug and Alcohol Dependence*. 2013; 132(3):617–623. [PubMed: 23664125]
- Jewkes RK, Dunkle K, Nduna M, Shai N. Intimate partner violence, relationship power inequity, and incidence of HIV infection in young women in South Africa: A cohort study. *Lancet*. 2010; 376(9734):41–48. [PubMed: 20557928]
- Knudsen HK, Leukefeld C, Havens JR, Duvall JL, Oser CB, Staton-Tindall M, ... Inciardi JA. Partner relationships and HIV risk behaviors among women offenders. *Journal of Psychoactive Drugs*. 2008; 40(4):471–481. [PubMed: 19283951]
- Latkin CA, Forman V, Knowlton A, Sherman S. Norms, social networks, and HIV-related risk behaviors among urban disadvantaged drug users. *Social Science & Medicine*. 2003; 56(3):465–476. [PubMed: 12570967]
- McMahon JM, Volpe EM, Klostermann K, Trabold N, Xue Y. A systematic review of the psychometric properties of the Sexual Relationship Power Scale in HIV/AIDS research. *Archives of Sexual Behavior*. 2015; 44(2):267–294. [PubMed: 25331613]
- Miller CL, Spittal PM, LaLiberte N, Li K, Tyndall MW, O'Shaughnessy MV, Schechter MT. Females experiencing sexual and drug vulnerabilities are at elevated risk for HIV infection among youth who use injection drugs. *Journal of Acquired Immune Deficiency Syndromes*. 2002; 30(3):335–341. [PubMed: 12131571]
- Montgomery SB, Hyde J, De Rosa CJ, Rohrbach LA, Ennett S, Harvey SM, ... Kipke MD. Gender differences in HIV risk behaviors among young injectors and their social network members. *American Journal of Drug and Alcohol Abuse*. 2002; 28(3):453–475. [PubMed: 12211360]
- Morris MD, Bates A, Andrew E, Hahn J, Page K, Maher L. More than just someone to inject drugs with: Injecting within primary injection partnerships. *Drug and Alcohol Dependence*. 2015; 156:275–281. [PubMed: 26460140]
- Morris MD, Evans J, Montgomery M, Yu M, Briceno A, Page K, Hahn JA. Intimate injection partnerships are at elevated risk of high-risk Injecting: A multi-level longitudinal study of HCV-serodiscordant injection partnerships in San Francisco, CA. *PLoS One*. 2014; 9(10):e109282. [PubMed: 25286346]
- Morris MD, Andrew E, Hoff C, Darbes LA, Maher L, Hahn J, Page K. Relationships and injecting dyads: Identifying key interpersonal factors underlying injecting behaviors and hepatitis C virus (HCV) transmission among injecting partnerships. *Plos One*. 2017 under review.
- Morris MD, Neilands TB, Andrew E, Maher L, Page KA, Hahn JA. Development and validation of a novel scale for measuring interpersonal factors underlying injection drug using behaviours among injecting partnerships. *International Journal of Drug Policy*. 2017; 48:54–62. [PubMed: 28804051]
- Muldoon KA, Deering KN, Feng CX, Shoveller JA, Shannon K. Sexual relationship power and intimate partner violence among sex workers with non-commercial intimate partners in a Canadian setting. *AIDS Care*. 2015; 27(4):512–519. [PubMed: 25402720]
- NunnallyJC. *Psychometric Theory*. New York: McGraw Hill; 1978
- Page K, Morris MD, Hahn JA, Maher L, Prins M. Injection drug use and hepatitis C virus infection in young adult injectors: Using evidence to inform comprehensive prevention. *Clinical Infectious Diseases*. 2013; 57(Suppl 2):S32–38. [PubMed: 23884063]
- Page K, Hahn JA, Evans J, Shiboski S, Lum P, Delwart E, Tobler L, Andrews W, Avanesyan L, Cooper S, Busch MP. Acute hepatitis C virus infection in young adult injection drug users: a prospective study of incident infection, resolution, and reinfection. *Journal of Infection Diseases*. 2009; 200(8): 1216–1226.
- Parrado EA, Flippen CA, McQuiston C. Migration and relationship power among Mexican women. *Demography*. 2005; 42(2):347–372. [PubMed: 15986990]
- Pulerwitz J, Amaro H, De Jong W, Gortmaker SL, Rudd R. Relationship power, condom use and HIV risk among women in the USA. *AIDS Care*. 2002; 14(6):789–800. [PubMed: 12511212]
- Pulerwitz J, Gortmaker S, DeJong W. Measuring Sexual Relationship Power in HIV/STD Research. *Sex Roles*. 2000; 42(7):637–660.
- Rhodes T. Risk theory in epidemic times: Sex, drugs and the social organisation of 'risk behaviour'. *Social Health Illness*. 1997; 19(2):208–227.

- Scheper-Hughes N, Bourgois P. Introduction: Making sense of violence in war and peace: An anthology. Oxford: Blackwell Publishing; 2003:127.
- Sherman SG, Latkin CA, Gielen AC. Social factors related to syringe sharing among injecting partners: A focus on gender. *Substance Use & Misuse*. 2001; 36(14):2113–2136. [PubMed: 11794586]
- Simmons J, Singer M. I love you... and heroin: Care and collusion among drug-using couples. *Substance Abuse Treatment, Prevention, and Policy*. 2006; 1:1–8.
- Tortu S, McMahon JM, Hamid R, Neaigus A. Women's drug injection practices in East Harlem: An event analysis in a high-risk community. *AIDS and Behavior*. 2003; 7(3):317–328. [PubMed: 14586193]
- Tracy D, Hahn JA, Fuller CM, Evans J, Lum P, Morris MD, Page K. Higher risk of incident hepatitis C virus among young women who inject drugs compared with young men in association with sexual relationships: A prospective analysis from the UFO Study cohort. *BMJ Open*. 2014; 4(5):e004988.
- Tuchman E. Women's injection drug practices in their own words: A qualitative study. *Harm Reduction Journal*. 2015; 12:6. [PubMed: 25889492]
- Wagner K, Hudson S, Latka M, Strathdee S, Thiede H, Mackesy-Amity M, Garfein R. The effect of intimate partner violence on receptive syringe sharing among young female injection drug users: An analysis of mediation effects. *AIDS and Behavior*. 2009; 13(2):217–224. [PubMed: 17876699]

Table 1

Participant characteristics and bivariate associations between SRPS domains and participant characteristics ($n = 68$).

	Bivariate logistic regression models			
	n (%)*Median (IQR)	SRPS overall OR (95% CI)	RC subscale OR (95% CI)	DMD subscale OR (95% CI)
Participant characteristics				
Age*	25.3 (22.6, 26.4)	—	—	—
25 years		2.77 (0.93, 8.23)	2.09 (0.90, 4.82)	2.02 (0.84, 4.83)
Race/ethnicity				
Nonwhite	20 (29.4)	0.92 (0.33, 2.56)	1.10 (0.50, 2.50)	0.81 (0.34, 1.93)
Recently in permanent housing				
No	50 (73.5)	1.05 (0.40, 3.04)	1.14 (0.48, 2.72)	0.93 (0.38, 2.29)
Completed high school				
Yes	23 (34)	0.52 (0.20, 1.40)	0.93 (0.40, 1.82)	0.41 (0.20, 1.05)
Ever incarcerated				
Yes	54 (79.4)	1.29 (0.41, 4.00)	1.37 (0.56, 3.39)	1.05 (0.40, 2.78)
Ever mental health diagnosis				
Yes	58 (85.3)	1.51 (0.46, 5.62)	1.20 (0.42, 3.39)	1.76 (0.50, 5.41)
Ever drug treatment				
Yes	41 (60.3)	1.00 (0.39, 2.62)	0.90 (0.41, 1.96)	1.14 (0.51, 2.56)
Injected drugs with a sex partner	55 (80.9)	0.43 (0.11, 1.68)	0.60 (0.21, 1.72)	0.51 (0.18, 1.47)
Injected with 2 or more people in past month		0.35 (0.34, 3.64)	0.67 (0.30, 1.47)	1.03 (0.45, 2.37)
Positive HCV antibody status	20 (29.4)	0.88 (0.32, 2.43)	0.87 (0.37, 1.91)	0.98 (0.41, 2.35)
Years Since injection initiation*	5.3 (2.1, 9.3)	—	—	—
Recent high-risk sexual behavior (prior 3 months)				
Any condomless sex with sexual partner	60 (88.2)	0.29 (0.05, 1.72)	0.17 (0.03, 1.06)	0.76 (0.22, 2.62)
Any sex work	8 (11.8)	0.50 (0.13, 1.90)	0.24 (0.08, 0.76)	1.75 (0.50, 6.10)
2 sex partners	36 (52.9)	1.04 (0.40, 2.65)	0.85 (0.40, 1.81)	1.27 (0.60, 2.82)
Recent high-risk injecting behavior (prior 3 months)				
Receptive syringe sharing	24 (33.8)	0.85 (0.32, 2.28)	0.54 (0.24, 1.21)	1.57 (0.66, 3.73)
Shared/reused cooker when dissolving drugs	38 (55.9)	0.56 (0.20, 1.52)	0.60 (0.27, 1.31)	0.80 (0.35, 1.74)
Did someone else's rinse	25 (36.8)	0.74 (0.28, 1.94)	0.44 (0.20, 1.10)	1.11 (0.48, 2.52)
Sexual Relationship Power Scale				
SRPS overall score*	2.9 (2.7, 3.2)	—	—	—
Relationship control subscale score*	3.2 (2.7, 3.6)	—	—	—
Decision-making dominance subscale score*	2.4 (2.2, 2.6)	—	—	—

OR: odds ratio, for every one point increase in SRPS domain score. **Bolded** numbers indicate significant at $p < 0.05$.

Adjusted odds ratios and 95% confidence intervals for injecting and sexual risk behaviors in the context of Sexual Relationship Power Scale (SRPS) Scores, and relationship control (RC) and decision making dominance (DMD) subscale scores ($n = 68$).

Table 2

	Recent high-risk injecting drug use			Recent high-risk sexual behavior		
	Receptive syringe sharing	Cooker share/reuse	Rinse sharing	Condomless sex*	Participated in sex work	Two or more sex partners
SRPS total	0.84 (0.31, 2.27)	0.54 (0.20, 1.48)	0.68 (0.25, 1.84)	0.24 (0.03, 1.88)	0.52 (0.14, 1.90)	0.98 (0.36, 2.56)
RC subscale	0.53 (0.24, 1.20)	0.53 (0.23, 1.21)	0.55 (0.25, 1.25)	0.15 (0.02, 1.09)	0.26 (0.08, 0.82)	0.80 (0.36, 1.74)
DMD subscale	1.57 (0.65, 3.77)	0.77 (0.34, 1.75)	1.06 (0.45, 2.46)	0.76 (0.20, 2.91)	1.59 (0.48, 5.23)	1.22 (0.53, 2.77)

Adjusted for years injecting and race/ethnicity.

* Used Modified SRPS, RC and DMC subscale (no condom questions).

Recall period for all behaviors was prior 3 months. **Bold** text indicates significant at $p = 0.05$.