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Gender, Power and Risk for Young Women IDU

By

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A thesis submitted in partial satisfaction of the requirements for the degree of

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Dedication:

To the army of loved ones who have made this accomplishment possible, and much more enjoyable along the way.
And to homeless and IDU youth, who deserve much more, from all of us, than they get.

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Chapter 1: Gender, Power and Risk for Young Women Injection Drug Users

Introduction

This paper is an introduction to the unique individual, social and structural factors that impact young women injection drug user's risk for viral infection in the United States. Research in the last decade has not only focused on how young injection drug user (IDU) populations differ from older IDU, but also on the differences of special populations within the young IDU community, most notably those groups at increased risk for HIV and HCV infection (African American and Latino youth, men who have sex with men [MSM], women who have sex with women [WSW]). Young women IDU are a unique subpopulation who are getting increased attention in public health and prevention research circles because of evidence that they experience differential risk for viral infection when compared to their young male counterparts. While there is a growing body of research on the behavioral characteristics of young women IDU's risk for HIV and HCV, the theoretical underpinnings of the social and structural factors, such as gender roles and relationship power dynamics, may play an increasingly important role in understanding how to intervene to decrease their risk.

This chapter will review the literature on young women IDU's risk for viral infection in five parts. First will be the background epidemiology of HIV and HCV among IDU populations globally, with a specific focus in on young IDU in the US. Part two will focus on risk factors for HIV and HCV among young IDU, highlighting the research that has specifically focused on young women IDU's risk for viral infection. Part three will summarize the research that exists regarding young IDU's social networks and dyads, with an emphasis on the findings specific to young women. Part four will focus on the impact of gender, relationships and power on young women IDU. This chapter will close with a focus on interventions targeting young women IDU at the social- and relationship level.

I. Epidemiology of HIV and HCV among IDU

Injection drug use is an increasingly global phenomenon, touching the lives of individuals from all backgrounds and classes across the world. In 2007 it was estimated that there were roughly 16 million injection drug users (IDU) worldwide¹, with the largest concentration in countries including China, Russia and the United States.²

Injection drug use is an important cause of HIV globally: between 0.8 and 6.6 million IDU were estimated to be infected in 2007, out of 30-36 million individuals living with HIV worldwide.² The burden of HIV among IDU is due largely to transmission through contaminated injection equipment, though it is also compounded by sexual transmission. In the US in 2010, IDU represented 12% of the year's new HIV infections (not counting sexual transmission), and 19% of the total number of persons living with HIV nationally.³

Hepatitis C Virus (HCV) infection is also found worldwide,⁴ and is transmitted much more efficiently than HIV,^{1,5} representing a greater injection-related risk when compared to HIV. It is estimated that 130–170 million people are chronically infected with HCV globally,⁴ approximately 10 million of whom are current IDU.¹ While

transfusions and medical exposures still comprise the bulk of the HCV infections in low income countries, injection drug use is the leading cause of HCV infection in high income countries around the world.⁴ In the U.S. as of 2010, there were approximately 3.2 million persons infected with HCV.⁶

HIV and HCV among Young IDU

Young IDU (< 30 years of age) comprise an important group at high risk for viral infection due to a variety of individual, social and structural factors.⁷⁻¹⁴

Young people generally comprise a significant and growing portion of incident HIV infections in the US: while youth aged 13-29 comprised 21% of the total population in 2010, they accounted for 39% of new HIV infections in that same year.¹⁵ HIV prevalences are higher for young IDU (5-10%)^{9,11} than the general population of young adults in the US (0.97%),¹⁶ though several young IDU cohort studies have shown lower than expected prevalences of HIV infection.^{9,17} Injection drug using women, youth of color, and men who have sex with men (MSM) bear a disproportionate burden of those infections.^{11,17}

Additionally, while HCV infection is currently most prevalent among 30-49 year-old adults, young IDU are an important and growing group at risk for infection. In 2009, there were an estimated 16,000 new HCV infections in the US, with the highest age-adjusted incidence occurring among young adults aged 20-29.¹⁸ Published prevalences in the literature have ranged from 27-45% among young IDU,^{10,19-21} with incidence rates in the range of 10-40 person-years of observation [PYO].^{22,23} Hahn et al. found that when stratifying by length of injection history, the change in the prevalence of HCV antibodies went sharply up from 11% among those young IDU who had injected for less than 2 years, to 78% among those who had been injecting for 10 years or more.²² This prevalence and incidence data highlights the critical need to develop services and interventions targeting young/new injectors, before they become infected.

Differential Risk for Young Women IDU

Women account for 27% of all new HIV infections in the US, one-third of which are in adolescent girls and young women aged 13 to 30 years. HIV infections among women are largely attributable to heterosexual risk factors within casual and primary relationships, and to injection drug risk factors.³ Research with young IDU in North America have found HIV prevalence rates among young women IDU which are significantly higher than among young males.^{11,24}

In addition to the higher prevalence of HIV among young women, HCV has also been demonstrated to be elevated among young women IDU when compared to young men. In examining gender differences in HCV incidence among a cohort of young IDU in San Francisco, Evans et al. reported an overall HCV incidence rate (25 per 100 PYO), which was differentially elevated among the young female IDU (35 per 100 PYO) relative to males (23 per 100 PYO).¹²

While the individual risk behavior differences which contribute to elevated rates of HIV and HCV for young women IDU compared to young men IDU will be elucidated later in the paper, a discussion of the unique social and structural challenges facing young women is an important place from which to build. Morse et al. have posed that understanding not only the geographic-, race/ethnicity-, gender-, but also the age-related

behavioral and risk differences among US IDU populations are all key to understanding their HIV and HCV rates.²⁵ First, adolescence and young adulthood is a time when identity and behavioral patterns are first being established, including those related to sexuality, sexual behavior and drug use.²⁶ It is also a time when youth are experiencing a “developmentally normal sense of invulnerability,” which has long been documented among young, at-risk populations in general.²⁵ Young IDU face greater challenges than older IDU in this respect, as the newness of injection and sexual behaviors, a lack of knowledge about the inherent risks of those behaviors, and a lack of accessible youth-focused education and services contribute to heightened risk behavior among young IDU. In addition to the risks associated with adolescence and young adulthood that set young IDU apart from older IDU populations, young IDU face disproportionate social and structural challenges relative to adult IDU. These include increased frequency of abuse and neglect, contact with the foster care and juvenile justice system, and family histories of drug/alcohol abuse and incarceration.^{27,28} In a study of homeless, largely IDU youth in Los Angeles, Montgomery et al. found that more than a third of the study participants reported parental drug use, including injection drug use, and over 40% had prior foster home or group home experience.²⁸ In a cohort of IDU in San Francisco, Hahn et al. reported that only half of their study participants had completed high school, and more than two-thirds had been incarcerated in the previous year.¹⁰ These disparities undoubtedly play a role in exposure to, and decision making regarding, risk for HIV and HCV. Drug use has an established link with HIV risk in social contexts—the potential for legal repercussions, including incarceration, often forces illegal behavior underground, increasing the likelihood of unwanted violent and sexual encounters.²⁹ Finally, youth who are marginalized due to poverty, drug use, homelessness, racism and homophobia face an added layer of stigma, which increases risk behavior for HIV and HCV.

In addition to the social and structural challenges faced by young IDU, young women face increased threats of psychological, physical and sexual violence relative to young men. Research is limited regarding gender differences in the epidemiology and comorbidities of substance abuse in youth.³⁰ Substance abuse patterns among youth result from a complicated interaction between heritable traits and the environment, including the patterns of use of family, significant others and their peers.^{12,31,32}

Young women also face disparities in economic and social power (including decreased self esteem and relationship power), which impact their ability to negotiate safe sex and drug use. Young women IDU are typically younger than their male IDU counterparts, with median ages two years younger than young male IDU.^{12,28} Younger age has been associated with requiring help to inject, which may lead to viral exposure through the use of shared injection equipment.¹¹ Young women also typically have shorter injection histories than young male IDU,¹² which may heighten social vulnerability and lack of knowledge about viral transmission. While young women in general are more likely to have a history of physical or sexual abuse than young men,³³ Miller et al. have found higher rates of sexual abuse in young women IDU when compared to young men: while 38% of the young IDU (both men and women) in their Vancouver-based cohort reported a history of sexual abuse, more than 60% of the young women IDU reported this type of experience.¹¹ Childhood experiences with this kind of disempowerment and victimization have been linked to future risk for HIV and HCV, including participation in sex work, and a reduced ability to negotiate condom use.¹¹

The Role of Gender in Young Women IDU's Risk

For young women IDU, gender-based violence plays a key role in defining the risk environment. HIV prevention research in the last two decades has highlighted gender inequality, and the resulting power differential between women and men in sexual relationships, as a factor in heterosexual HIV transmission rates.^{34,35} Qualitative work focused on young women IDU in San Francisco has examined the impact of gender-based violence on risk behaviors, most significantly by Bourgois et al.³⁶ This team has drawn on three theoretical categories of gender-based violence—symbolic, structural and everyday -- to characterize the different levels of risk young women IDU experience³⁶. Participant-observation fieldwork with young women IDU in San Francisco has shown a high level of normalized violence against women in the context of street-youth culture, and has documented the common practice among young women IDU of forming of sexual relationships based on economic dependence and the need for physical protection. Bourgeois et al. explain that individual risk behavior among young women IDU can be linked to larger social and societal power imbalances between the genders, as well as practical and pragmatic survival considerations. According to Bourgois it is these social and societal forces which contribute both to the high rates of physical and sexual violence experienced by young women IDU, and also the differential rates of infection for HIV and HCV.

Bryant and Treloar have written about the link, previously identified in alcohol research, between masculinity and risk taking behaviors in studies of young IDU.³⁷ They have talked about a typically “gendered division of labor,” involving the ritual of drug procurement and use, and about young women’s involvement in injection as a “passive involvement,” in masculine activities. Playing a passive role in the shared injection experience can place young women IDU at both indirect and direct risk for viral infection, and may represent the reinforcement of power imbalances and traditional gender roles that place them at greater risk for viral infection.^{36,38}

However, Bryant and Treloar’s findings also point to a reframing, among young female IDU, of the definition of womanhood using traditionally masculine norms. This is an idea which has previously been discussed in the context of women in traditionally male school and work environments.^{39,40} For young women IDU, it may be that the more traditionally “masculine,” ideal of risk taking has become a desirable female characteristic, and that young women IDU are using a “same as men,” sensibility in order to establish a new kind of femininity within the young IDU culture, which includes heightened risk taking.³⁷ As such, young women IDU may not necessarily put themselves at risk due to passivity or to lack of control of the process of injecting within partnerships, but may in fact engage directly in risk behaviors to demonstrate their own power and identity. As young women redefine what it means to be a woman in the context of their specific social and relational landscapes, it is the very definition of this identity which may increase their risk for HIV and HCV.

The Role of Power in Young Women IDU's Risk

Power is also intimately related to notions of gender, and power in the context of relationships (sometimes called “gendered power,” or “relationship power,”) has been considered an important factor related to whether women can initiate, negotiate, or insist

on safer sex.^{41,42} Gendered/relationship power is a multidimensional concept which incorporates individual-level factors such as empowerment, relationship-level factors such as interpersonal dominance, and social- and structural-level factors, including gender norms and economic inequalities.^{43,44} While previous research has examined the association between gendered/relationship power and sexual risk behavior, quantification of power is complicated by inconsistent measurement across studies,⁴⁴ and a lack of differentiation of the different conceptual domains of relationship power.⁴⁵ With the exception of Amaro et al.⁴⁶ there is a scarcity of research on relationship power and sexual risk among drug-using women,⁴⁵ and an even greater deficit of research on the impact of power on injection risk behavior in the context of IDU relationships.

II. Risk factors for HIV and HCV in Young IDU

The research on risk factors for HIV and HCV among young IDU falls within one of two specific behavioral domains: injection risk behavior and sexual risk behavior. Research over the past two decades has emphasized the highly social character of injecting risk behavior for young IDU, and includes significantly higher frequencies of syringe and ancillary equipment sharing, as well as pooling money with others, than their older IDU counterparts. Gender differences in these behaviors have been highlighted in social network studies of young IDU, however important differences in both injecting and sexual risk behavior has also emerged in the studies focused on the sexual relationships of young IDU.

A. Injection Risk Behaviors Among Young IDU

There are a number of studies from the last decade that have established the association between specific injection behaviors and risk for HIV and HCV. While no studies have explicitly examined young women IDU, there are a handful of studies that have stratified their data by gender in order to examine the key behavioral differences between young men and young women. Among young IDU, women are more likely to report risky injection behaviors,^{12,28,47} and as a result are more likely to contract HIV and HCV.¹³ The differences that have been documented include initiation to injection, frequency of injection behavior, drug of choice for injection, syringe and ancillary equipment sharing, and pooling money with others to buy drugs. What follows is a description of the major findings in the literature regarding injection risk behavior among young IDU. Gender differences in these specific risk behaviors are included where appropriate, though findings are limited.

Initiation to Injection

The circumstances surrounding initiation to injection drug use from other non-injection drug use, as well as risky injection behaviors at time of initiation to injection, can vary by gender.⁴⁸⁻⁵² Multiple studies have shown that young women IDU report initiating injecting at an earlier age when compared to their young male counterparts,^{12,37,50,52} though other studies have shown that young women IDU are not necessarily younger than their male counterparts at initiation.^{48,49,53,54} According to Bryant and Treloar, young women often have experienced a shorter duration of illicit drug use prior to initiation to injecting,³⁷ indicating an accelerated progression of behaviors which may not allow for

education about viral transmission and safer injecting. In a prospective cohort of street youth in Montreal at risk for initiation to injection, Roy et al. calculated an initiation differential that was higher for young women than young men (7.0 PYO vs 5.9 PYO, respectively),⁵⁵ corroborating this accelerated timeline for some young women IDU. Young women are more likely to report being initiated by a romantic or sexual partner,^{12,37,48,50,52} or to have their injection equipment supplied by a partner.⁵⁰ This conveys a powerful social and relationship-based context in which injection operates for many young women IDU.

Differences in drug of choice at initiation have also been documented for young women IDU, relative to young men. Evans et al. found that young women were more likely to have been initiated into injection drug use with heroin (as opposed to other drug types) than their young male counterparts.¹² Roy et. al. found that crack use and heroin use each independently increased young women's risk for initiation to injecting, though both were also associated with initiation among young men in the study as well.⁵⁵

While some research has focused on coercion, power-imbalances and gender-based violence,^{36,51,52} others have focused on the reappropriation of masculine "norms," to redefine what it means to be a modern woman specific to injection initiation among drug using youth.^{37,40} Frajzngier et al. found that more young women reported "social persuasion," as a contributor to initiation than did young men.⁵¹ Relatedly, young women in this cohort reported increased risk of sharing injection equipment at their first injections when compared to young men, which may represent the end result of such "persuasion."⁵¹ In contrast, Bryant and Treloar found that young women IDU had a greater likelihood of being initiated into injecting within a group of other women,³⁷ indicating that some young women play an active role in their own, and others, initiation.^{37,49,52} In this way initiation may be an indication of empowerment for young women IDU. Whether it is coercion or empowerment, initiation to injection drug use is often a complicated and risk-laden debut for young women drug users.

Drug of Choice and Polysubstance Use

Data on drug of choice and frequency of injection have shown considerable variation between young IDU cohorts, however differences between young women and men have been highlighted in the literature, some of which has been associated with HIV infection.

First, there is considerable regional and seasonal variation of primary drug type injected among young IDU populations across the US. Among the young IDU in Montgomery et al.'s study of street youth in Los Angeles, heroin was the most commonly injected drug overall, followed by speed and cocaine, but when stratified by gender, young women IDU were significantly more likely than the young men to have injected heroin in the last 30 days (80% vs. 67%, p-value < 0.05).²⁸ While stimulants, including speed and cocaine, have been associated with hyperarousal, impulsivity, and disinhibition,⁵⁶ opiates have been linked to decreased interest in sexual behavior, and decreased sexual function, which may lead to sexual coercion and violence that ultimately increases risk for HIV.⁴⁵ Rondinelli et al. found that injecting methamphetamines alone or with heroin (vs. injecting heroin alone) was significantly associated with HIV infection among young IDU.⁵⁷ Further, Hahn et al. have found that among young IDU in San Francisco, injecting heroin was significantly associated with

testing positive for antibodies for HCV,²² though these results did not vary according to gender.

Next, polysubstance use has been long documented among young IDU, and has been shown to have important associations with risk for viral infection. In their research with street youth in eight major metropolitan areas across the US, Gleghorn et al. found that combined heroin/stimulant injectors reported higher risk injection behaviors than young IDU who were primary heroin or stimulant only users.⁹ Polysubstance use was high among current IDU in Montgomery et al.'s cohort as well, with over 50% injecting more than one type of drug in the 30 days prior to interview.²⁸ Specifically among young women, Miller et al. found that the drug use variable most strongly associated with HIV-positivity was daily speedball use (injecting heroin and cocaine together), indicating an important connection between polysubstance use and HIV risk.¹¹ Polysubstance use among young IDU may represent a combination of risk factors such as those described for stimulants and opiates above, but it may also represent a proxy measure of greater drug dependence, signaling a greater willingness to take risks related to HIV and HCV infection.

Frequency of Injection

There is considerable variation in the frequency of injection behaviors (weekly, daily, multiple times per day) among young IDU populations, but increased injections per time period result in increased exposures, or potential for exposures, to HIV and HCV. Gleghorn et al. found that young IDU in Northern California had injected an average of 30.5 times in the prior 30 days, indicating a high level of greater than daily injection among their study sample.⁹ Hahn et al. have also reported a high degree of daily injection behavior: 36% of participants reported daily injection, with a median number of 2.5 injections per day¹⁰ with daily injection significantly associated with anti-HCV positivity.²² When looking at injection frequency differences between men and women, Montgomery et al. found that young women IDU tended to inject more frequently than men (96.6 vs. 69.9 times in the 30 days prior to interview), though the difference was not statistically significant.

Pooling Money with Other IDU

Pooling money with other IDU to buy drugs has also been an important indicator of the social context of injection risk for young IDU. During follow-up interviews, Hahn et al. found that 93% of study subjects who pooled money with others to buy drugs also injected with the person with whom they pooled. Pooling money seems to provide both social bonding and economic benefit, including protection from heroin withdrawal symptoms, and reduced cost.²² Key differences between young women and men have been illuminated with respect to pooling: among young IDU in San Francisco, young women IDU were more likely to have pooled money with other IDU to buy drugs than their young male counter parts.¹²

Syringe and Ancillary Equipment Sharing

The social character of HCV risk for young IDU is best highlighted by the prevalence of syringe and ancillary equipment sharing among different young IDU populations. Street-involved young IDUs report rates of syringe sharing between 50-67%, and an even higher

frequency of ancillary equipment sharing as well.^{8-11,27,58} Receptive syringe sharing (RSS) has been reported by 30-49% of participants in young IDU cohorts in major cities across the US, including San Francisco, Chicago, New York and Baltimore.^{12,19,59-61} Factors associated with youth itself, such as impulsivity, and circumstances associated with the early stages of injection drug use, such as reliance on others to obtain and inject drugs, almost certainly contribute to participants' elevated levels of RSS relative to older populations.⁶¹ Social structural factors particular to young people, such as living with parents from whom they have to hide their drug use, also likely contribute to higher levels of needle sharing even where there is ready access to sterile syringes.⁶¹ When stratified by gender, a greater percentage of females reported ever using someone else's previously used syringe (71 vs. 56% of young male IDU, $p < 0.05$) in Montgomery et al.'s cohort of street-involved youth.²⁸ Evans et al. have also found that young women IDU may be especially vulnerable to viral infections because female IDUs have been observed to have greater frequency of injecting with used syringes and other injection equipment than their male counterparts¹².

Peer norms significantly impact the sharing and distribution of injection equipment among young IDU⁵⁸. Among 3129 IDUs ages 15–30, over 45% engaged in syringe sharing during the three months prior to baseline. Significant correlates of syringe sharing were: perception that peer norms condone needle sharing, frequent injection (\geq daily), not obtaining most syringes from needle exchange programs or pharmacies, injecting most frequently in shooting galleries and with sex partners, low perceived risk of HIV from sharing syringes, increased anxiety, low self-esteem, and having unprotected sex. The odds of syringe sharing were two times greater among those who had unprotected vaginal or anal sex compared with those who always used condoms. Peer norms encouraging receptive needle exchange have been positively associated with receptive syringe sharing in other studies as well.⁶¹

B. Sexual Risk Behavior among Young IDU

In addition to injection risk behavior, sexual risk behavior is an important component of risk for viral infection among young IDU, in particular HIV.^{62,63} Studies among young IDU populations consistently demonstrate low levels of condom use for vaginal and anal sex, in particular within primary sexual partnerships. While these behaviors are not different from those which have been identified as risk behaviors among non-IDU young women, Flom et al. have noted that young IDU engage in greater sexual risk behavior than their non-IDU peers, so that these behaviors compound the risk for women already at significant for viral infection due to injection.⁶⁴

The literature regarding sexual risk for young IDU suggests that women are more frequently engaged in sexual relationships, in particular sexual relationships with other IDU. It also suggests that they less frequently use condoms for vaginal and anal sex, and more frequently share needles/syringes with their sex partners relative to young male IDU.^{12,65,66} Because of the often overlapping sexual and injection risk which occurs in the sexual relationships of young women IDU, there is a greater need for research, as well as a need for interventions, which consider and target IDU in the context of relationships.

Associations between the social influences of gender and substance abuse have not been well studied.³⁰ While much of the research focuses on individual-level risk behavior and the differences of those behaviors by gender, the behaviors may in fact

largely reflect the social and structural differences young women face when compared to young men, and the complicated impact of gender power in the sexual relationships, whether primary or casual, of young women IDU. Because this risk occurs in the context of intimate interactions with others, who often have considerable risk factors for viral infection themselves, the role of partnership- and relationship-level factors, including those related to gender and power imbalances, is understudied.

Condom Usage: Consistency and Partnership Type

The frequency of unprotected vaginal and anal sex is high in a variety of cohorts of young IDU across the US.^{12,28,64,67,68} Kapadia et al. examined the longitudinal influence of relationship-level and social-level factors on condom use by partner type among young IDU, and found that positive attitudes toward condom use, greater self efficacy, and partner norms supporting condom use within young IDU relationships were associated with greater consistent condom use.⁶⁷ Gyarmathy et al. found that young IDU in sexual relationships in which both partners encouraged each other to use condoms were half as likely to engage in unprotected vaginal or anal sex, and that having stronger safer sex attitudes was a highly significant protective factor against unprotected vaginal or anal sex.⁶⁸

Young IDU are regularly engaged in multiple sexual partnerships, and research has shown some variation in condom use by gender, and by partnership type (primary versus casual). In an examination of correlates of condom use among heterosexual young male IDU, Kapadia et al. found that consistent condom use was reported by 12% of young male IDU with a primary female sexual partner who reported no other sexual partners, and by 17% who reported having multiple female sexual partners ($p = 0.009$).⁶⁹ Among young IDU who report multiple casual sexual partnerships, having a smaller number of casual sex partners has been associated with more consistent condom use.⁶⁷ Harvey et al. conducted interviews with young women IDU and young women who were sexual partners of IDU, and found that a high number (75-83%) of their participants reported being involved in sexual decision-making, including decisions about condom use, contraception and when to have sex.⁷⁰ They also found that longer duration of relationships was associated with decreased contraception and condom usage. Despite high levels of both inconsistent condom use and the frequency of multiple sex partnerships, HIV incidence among some IDU populations remains relatively low,^{67,71} while among others it is significantly higher than the general population.^{11,13,24} Given that female IDU are significantly more likely to report any STI history than young male IDU,¹² the degree of condom inconsistency raises concern for the sexual health of young women IDU, as well as concern for their heightened risk for HIV.

Sex Exchange

Participation in sex work, and sex in exchange for money, drugs or a place to stay, have been documented as a risk factor for HIV among young IDU, though much of the research focuses on young MSM IDU.^{72,73} Descriptive studies have found a higher proportion of young IDU who have ever participated in sex work than among the general population: among homeless/street youth in Los Angeles, Montgomery et al. found that one-third of their sample reported a history of ever exchanging sex for money or drugs,²⁸

while more than 40% of the young IDU in Miller et al.'s cohort had ever participated in sex work.¹¹

Sex work and drug-related risk variables are associated with HIV infection. Kapadia et al. found an association between sex risk behavior and intoxication: young IDU reported more frequently engaging in sex exchange and sex while under the influence.⁶⁹ Drug use/intoxication may make participation in sex work easier for young IDU, it may be a requirement of the interaction by the paying client, or it may be the desired method of payment or outcome for young IDU who engage in such work. Bailey et al. found that receptive needle sharing was associated with sharing syringes with a sexual partner, sex exchange, and a history of childhood or recent physical or sexual abuse.⁶¹

However Gyarmathy et al. did not find an association between condom use and sex exchange: in their New York cohort, young IDU in sexual relationships where one of the partners exchanged sex had the same likelihood of reporting unprotected sex as in participants in sexual relationships where neither partner is involved in sex exchange.⁶⁸ Because of the overall low consistency of condom use in heterosexual young IDU relationships, partners of sex workers who may not use condoms consistently for commercial vaginal or anal intercourses are thus at high risk of acquiring HIV and sexually transmitted infections through exposure to infected clients of their partners.

Miller et al. found that HIV positivity among young female IDU was overwhelmingly associated with participation sex exchange or "survival sex."¹¹ This team hypothesized that high rates of daily polysubstance use and elevated HIV-positivity among young women IDU may be mediated by increased sexual activity, including participation in sex exchange. Rondinelli et al. also found that IDUs who exchanged sex for money or drugs were much more likely to be infected with HIV.⁵⁷

What the literature elucidates about young IDU and their risk for HIV and HCV is that injection and sexual risk are not easily separated into distinct silos of risk behavior; rather, they are complicated and often overlapping risk factors in the lives of young IDU. Injection drug use takes place in a social context, within which RSS as well as ancillary equipment frequently occurs. Initiation to injection drug use and the pooling of money with other IDU to purchase drugs also illustrates the highly social character of such behavior, where group interactions may encourage or facilitate greater transmission. Additionally, sexual behaviors increase risk for many young IDU, particularly for young women. Relationship power dynamics and relationship type may strongly influence a young woman's ability to negotiate safer sex. Persuasion or coercion within social and sexual relationships may increase a young woman's risk for syringe and ancillary equipment sharing and other related risk behaviors. Sex work, with or without co-occurring injection drug use, carries a heightened level of risk for a variety of reasons, and economics may confound choices about reducing risk for HIV and HCV. While many important individual-level behaviors have been identified as targets of intervention among young IDU, it is critical to develop the next generation of interventions. A stronger understanding of the role of relationships, and in particular the impact of gender and power within those relationships, is needed in order to prevent HIV and HCV among young women IDU.

III. Partnership and Social Network Studies of Young IDU

HIV risk among young IDU occurs primarily within close relationships, rather than among random encounters or more casual partnerships.⁷⁴⁻⁷⁶ The formation of injecting and sexual partnerships is a ubiquitous practice,²² yet HIV prevention efforts have primarily focused on risk reduction at the individual level (safer sex and injection supplies, health education and one-on-one risk reduction counseling). Such interventions do not address power dynamics in close relationships, which define and guide sexual behavior and risk.³⁴ In order to truly understand the risk that young women IDU face, the social and structural bases of risk must be considered.^{61,77} HIV prevention research among IDU populations is increasingly shifting its focus toward group and structural interventions that address the socio-cultural contexts of risk.^{78,79} Understanding the factors within relationships that are directly and indirectly associated with risk behavior, as well as developing measures of those factors appropriately, are important future directions for this field of research.

There is limited dyadic research on young IDU, with significant overlap of focus on non-sexual injecting partnerships versus combined injecting and sexual relationships. Further exploration of the literature on relationship-level risk factors requires an assessment of the research focused on the social networks of young IDU, which is more substantial than the available dyadic research. The following section will focus first on dyadic research, followed by social network research, with young IDU populations.

A. Dyadic Studies of Young IDU

The following table summarizes the articles used for the dyadic portion of the review:

Table 1: Dyadic studies of young IDU, by year of publication

<i>Author</i>	<i>Year</i>	<i>Journal</i>	<i>Title</i>
Dyadic Studies of Young IDU			
Flom et al.	2001	Sexually Transmitted Diseases	“Stigmatized drug use, sexual partner concurrency, and other sex risk network and behavior characteristics of 18-24 year old youth in a high risk neighborhood.”
Miller et al.	2002	JAIDS	“Females experiencing sexual and drug vulnerabilities are at elevated risk for HIV infection among youth who use injection drugs.”
Harvey et al.	2003	Journal of Sex Research	“Sexual decision making and safe sex behavior among young female injection drug users and female partners of IDUs.”
Lakon et al.	2006	Social Science Medicine	“Mechanisms through which drug, sex partner and friendship network characteristics relate to risky needle use among high risk youth and young adults.”
Bailey et al.	2007	Drug & Alcohol Dependence	“Perceived risk, shared influences and injection partner type predict receptive syringe sharing among young adult injection drug users in 5 U.S. cities.”
Kapadia et al.	2007	Drug & Alcohol Dependence	“Correlates of consistent condom use with main partners by partnership pattern among young adult male injection drug users from five US cities.”

Neaigus et al.	2007	Drug & Alcohol Dependence	“Injecting and sexual risk correlates of HBV and HCV seroprevalence among new drug users.”
Gyarmathy et al.	2009	AIDS and Behavior	“The relationship of sexual dyad and personal network characteristics and individual attributes to unprotected sex among young injection drug users.”
Wagner et al.	2009	AIDS and Behavior	“The effect of intimate partner violence on receptive syringe sharing among young female injection drug users: an analysis of mediation effects.”
Bryant et al.	2010	Drug & Alcohol Dependence	“Needle sharing in regular sexual relationships: An examination of serodiscordance, drug use practices, and the gendered character of injecting.”
Hahn et al.	2010	Addiction	“Hepatitis C virus risk behaviors within the partnerships of young injecting drug users.”
Kapadia et al.	2011	AIDS and Behavior	“Longitudinal determinants of consistent condom use by partner type among young injection drug users: the role of personal and partner characteristics.”

Ethnographic data suggests that dyads and social groups based on obtaining drugs not only provide companionship, safety and facilitate drug purchasing, but may also provide the opportunity and the social context for injecting risk behavior.²² In addition to purchasing drugs together, injecting partners may prepare, divide, and inject drugs together. Sharing of both needles and drug-preparation equipment is likely to occur in partner- and group-injecting settings.⁸⁰ Two studies have provided descriptive data on young IDU injecting partnerships: Hahn et al.⁸⁰ and Bailey et al.⁶¹ Each have revealed relatively short, unstable relationships where HCV status disclosure is not the norm, but where equipment sharing occurs frequently. In describing the nature of injecting partnerships between young IDU, Hahn et al. report that injecting partnerships are typically formed between gender discordant individuals (as opposed to same sex partnerships) who are close to each other in age and who have known each other for a median of 6 months.⁸⁰ In this cohort of young IDU, nearly one-third of the respondents who reported any syringe sharing with an injection partner had known their partners for two months or less, and nearly half of the participants did not know the HCV status of their injecting partners. Encouragingly, Hahn et al. found that when a participant reported knowing that their injecting partner was HCV positive, they were less likely to engage in receptive needle sharing compared to those who thought that their injecting partner was HCV negative.⁸⁰ However, those who did not know the HCV status of their injecting partner reported a similar frequency of receptive needle sharing when compared to those who thought their partners were HCV negative.

While Hahn et al. established that there is a gray area when an injecting partner’s HCV status is unknown, Bailey et al. found that young IDU may in fact knowingly put themselves at risk for HIV and HCV. In Bailey et al.’s investigation of perceived risk, peer influences and partnerships, young IDU overwhelmingly understood that receptive syringe sharing put them at risk for both HIV and HCV. Nevertheless, greater than half had recently engaged in receptive syringe sharing, and nearly one-fifth reported that they did it regularly.⁶¹

Bailey et al. also highlight the difficulty in isolating purely injecting partnerships, and the fact that many young IDU partnerships include both sexual and injecting risk behavior.⁶¹ In their evaluation of injecting risk by partner type, receptive syringe sharing (RSS) was significantly associated with injecting most often with an injecting partner who also a sexual partner ($p < 0.001$), at baseline and at follow-up. That RSS occurs in the context of close or intimate relationships (as opposed to more random encounters) is an element of young IDU behavioral norms previously documented in other cohorts as well.^{75,76,81}

Young women's injection risk behavior in the context of sexual relationships reveals a complicated interplay of gender, relationship and social dynamics. Ethnographic research has shown that young women IDU often enter into sexual relationships with older male IDU.¹² These partnerships provide benefits, including sex, companionship, money, drugs, protection, and stability, in addition to drawbacks, such as increased economic burden and loss of control over the injecting process.^{22,36} These relationships are often predicated on knowledge and power imbalances, with men controlling the injection process for both partners.¹² In this context, young women are less likely to acquire injection equipment on their own, to prepare their own drugs or to inject themselves, due either to issues related to dominance and control in their injecting relationships, and/or to a lack of knowledge about how to inject themselves successfully and safely.^{12,34,37,82,83} As such, young women IDU in sexual relationships with other IDU may face greater risk for HIV or HCV,^{12,17,84} if their partner chooses to or insists on using previously used, or shared, equipment. In combined sexual and injecting partnerships, neither Bryant et al. nor Hahn et al. found any association between the perceived HCV status of a partner, and syringe or ancillary equipment sharing. This may demonstrate a lowered threshold of acceptable risk when both sex and injection co-occur, or perhaps an inability to negotiate about equipment sharing in the context of young women IDU's intimate relationships.^{37,80}

Young IDU may participate in "selective sharing," by identifying acceptable risk behaviors based on trust and love within intimate relationships. Gyarmathy et al., finding that young IDU who reported syringe sharing were also more likely to report unprotected vaginal and anal sex, have hypothesized that syringe sharing within a sexual relationship may represent "fatalism," if the partners are already engaging in unprotected sex, or that it may represent an assumption of exclusivity or monogamy, and thus reduced risk.⁶⁸ Other researchers have reported an association between syringe sharing with a sexual partner and inconsistent condom use,⁶⁷ highlighting the increased risk for HIV, in addition to HCV, when young IDU combine sexual and injecting behaviors in the context of a partnership. Gyarmathy et al. found that almost half of HIV-discordant sexual relationships in their cohort of young IDU in New York reported unprotected vaginal or anal sex, and that all of the heterosexual relationships of young male IDU who also reported MSM behavior reported some unprotected sex.⁶⁸ Thus, MSM IDU who also have sex with young women IDU are an important high risk "bridging" population.⁶⁸

Finally, there is a growing body of literature on the relationship between intimate partner violence (IPV) and injection related risk for young women IDU.^{85,86} Findings suggest that syringe sharing and unprotected sex within young IDU's sexual relationships may be due to control or power imbalances characteristic of relationships with IPV, and may be mediated by the effects of social isolation, depression and self-esteem.⁸⁶ These

findings support the theory that syringe and ancillary equipment sharing are not merely individual-level behaviors, but that they are inseparable from the complex intrapersonal characteristics of intimate relationships, as well as characteristics of the social environment, of young women IDU.

B. Social Networks of Young IDU

In addition to the risks that young women face in their intimate relationships, findings from the review of dyadic literature point to the need for a broader understanding of young women's risk beyond their one-on-one partnerships. As was the case in their sexual relationships (with overlapping sexual and injection risk), young women IDU are more likely to have overlapping social and drug networks than their young male counterparts as well.¹² There are a number of studies that have focused on the social networks of young IDU,^{76,87,88} however there are few which have highlighted the network differences by gender.²⁸

In characterizing the social networks of young IDU, Montgomery et al. found that young IDU networks (comprised of “hang out, drug and sexual sub-networks,”) are relatively small (average total network size was 4.1 persons).²⁸ On average, two-thirds of the networks described by participants in this study were comprised of friends, and one-quarter comprised of a sexual partner, primary partner or spouse. A number of investigators have hypothesized that having smaller “ego-centric” injecting networks (meaning networks with direct ties between an IDU and her/his injecting partners) may increase infection risk, since high-risk injecting behavior is more likely to occur in smaller networks in which strong norms of trust and reciprocity can encourage or reinforce unsafe injecting practices.^{17,84,89,90} Participants reported knowing the majority of their social network members for less than 1 year, a finding which has been highlighted by other investigators as well.^{61,80} The short duration of these relationships highlights the instability of social networks for young IDU, and the resulting increased risk for HIV and HCV due to the regular exposure to new and different contacts at risk for, or already infected with, HIV and HCV. Montgomery et al. also examined gender differences in network composition, and found that females in the study typically had a higher portion of their networks comprised of other IDU than the young men, and that their network members were frequently involved in multiple social networks, potentially bridging young women IDU and their networks to older and more varied populations with higher prevalences of HIV and HCV.²⁸ Young women also tended to have more overlapping networks, meaning that they were significantly more likely than men to report having one or more network members appearing in all three types of networks (hang out, drug, and sex).²⁸

Unger et al. looked at correlates of syringe sharing with social network members and found that injecting risk behavior in this context also varied by gender.⁷⁶ Needle sharing occurred with fewer than half of the study participants' social network members, and was more likely if the participant and their injecting partner injected one another or if the partnership also included sexual behavior. As we have seen in the findings on dyads in the previous section, young IDU are selective about who and/or when they share their injecting equipment.

Lakon et al. have described two potential mechanisms through which IDU social networks (including injecting partnerships and sexual partnerships) might relate to risky

needle use behaviors.⁸⁷ These two mechanisms, which may explain injection risk behavior in the context of social networks, are emotional support and social regulation, and are described as “mediators,” of risk in social environments. Emotional support is defined as a feeling of closeness, connection, or belonging within a friendship or network. Social regulation is defined as social cues, behavioral prompts or internalized norms which promote certain behaviors. In the social networks of young IDU that included sexual behavior, receiving emotional support was a partial mediator of syringe sharing. It was also a full mediator of network closeness and syringe sharing in networks that included sexual behavior. In social networks that included drug use but no sexual behavior, social regulation was a partial mediator of syringe sharing. These results demonstrate that network mechanisms explaining syringe sharing differ for drug user and sex partner networks in ways that highlight the functional nature of each type of network relationship.

IV. Gender, Relationships and Power

Despite the growing body of evidence that the social and cultural context of women’s sexual behaviors needs to be a target of any HIV prevention efforts,^{34,43,91} the bulk of theory and prevention research still targets women in an individual context.⁷⁰ Not only is risk behavior in the context of a sexual relationship impacted by gender and power dynamics, it is also impacted by broader sociocultural inequalities.⁷⁰

Few studies have examined the specific effect of relationship power on HIV and HCV risk in young IDU. El-Bassel et al. have found that psychological male dominance within the relationships of drug users is associated with sexual HIV risk in longer-term, adult relationships.⁹² Harvey et al. examined correlates of condom use in young female IDU, including relationship characteristics, and found that sexual decision making control was an important facet of relationship power, and was independently associated with condom use.⁷⁰ However, other studies have found insufficient evidence of a connection between relationship power and sexual decision-making in relationships.⁹³ Investigation of the intersection of relationship dynamics, injecting and sexual risk and HIV/HCV infection among young female IDU is an area where greater research is needed. Agency in decision making, and control over the components of behavior which place them at risk may be significantly linked to transmission of HIV/HCV. Better understanding of these complex dynamics will help inform future HIV/HCV prevention efforts, at the individual and community level.

V. Conclusion and Next Steps

This chapter has sought to demonstrate the unique risk factors young women IDU face with respect to viral infection. For young IDU, risk behavior occurs in a social context, within social networks and partnerships formed with other IDU. While individual-level injecting risk behaviors, including RSS and equipment sharing, as well as sexual behaviors, including inconsistent condom use and sex work, have been the primary focus of research in the last two decades, it has become increasingly clear that larger social and structural forces define and guide young women’s risk behavior. The theoretical underpinnings of gender and power are critical to understanding and developing

appropriate predictive measures of risk. Further, the growing focus on young women's risk within dyads and networks strongly suggests interventions that also consider the implications of gender and power in the relationships of young IDU.

Within public health research and the interventions they inform, there is much to be gained from placing a greater emphasis on a theoretical understanding of social power.³⁶ For example, the use and analysis of psychosocial measures which incorporate an understanding of gender and power can inform the design of future interventions for work with young women IDU. An example of this is the Sexual Relationship Power Scale (SRPS), developed by Pulerwitz et al.^{41,94} The SRPS incorporates elements of Gender Theory⁹⁵ and Social Exchange Theory,⁹⁶ in order to measure power discordance in the sexual relationships of women. Gender Theory describes the way that economic inequality, male partner control, and gender-based social norms lead to society-wide gender inequalities in power and decision-making. Social Exchange Theory explains that power balances in relationships are dependent on the relative amount of resources each partner has, and whether alternatives to the current relationship are thought to exist for either partner. Increased relationship power, as measured by the SRPS, has previously been associated increased condom use for vaginal and anal sex,⁹⁴ and a decreased likelihood to have unprotected sex⁴⁶ among women in the US. While not previously used with young IDU, nor used to evaluate injecting risk for HCV, the SRPS, or another scale incorporating its strengths, holds promise in characterizing power and risk in this population.

A new context for interventions with young IDU, which incorporates but moves beyond individual risk-reduction counseling, is essential for reducing young women IDU's risk for HIV and HCV. The literature reviewed in this chapter has shown that the integrated social and intimate relationships of this population compound risk for HIV and HCV. For young women in particular, injecting and sexual risk behavior within an intimate relationship with another IDU is a critical target for prevention efforts.

Recent research with young IDU has highlighted the need to incorporate the particular strengths of these individuals, their partnerships and their networks into future research work and interventions.^{28,97} Psychosocial outcomes such as empowerment, self-esteem and self care have also been cited as essential to the success of interventions with young women.⁸⁶ Research and interventions which explore and emphasize how young IDU relationships incorporate love, care and support (the way that non-IDU relationships do) may be critical in reducing risk in the context of young IDU relationships.⁹⁸

High risk behavior among young IDU can be prevented through direct intervention. In a longitudinal analysis of data from a multi-city behavioral intervention trial with young IDU aged 15-30, Bailey et al. demonstrated a large decline in injecting risk behaviors at follow-up among members of both arms of the intervention trial.⁶¹ The next generation of prevention interventions for this population, informed by research incorporating what is known about gender, social power, and the impact of relationships and social dynamics, holds great promise for reducing the disparate rates of HIV and HCV in young IDU.

Chapter 2: Gender, Power and Risk for Viral Infection among Young Women Injection Drug Users in San Francisco

INTRODUCTION

Injection drug use is an important risk factor for human immunodeficiency virus (HIV) and hepatitis C virus (HCV) infections globally. In 2007 there were an estimated 3.7 million injection drug users (IDU) worldwide infected with HIV, while in 2011, there were an estimated 10 million current IDU infected with HCV.^{1,2} In the US, IDU represented 12% of new HIV infections in 2010 and 19% of the total number of persons living with HIV nationally.³ IDU constitute nearly half of new HCV infections (48% in 2007) and injection drug use is considered the primary cause of HCV nationally.⁹⁹

Young IDU (< 30 years of age) comprise an important group at high risk for HIV and HCV infection due to a variety of individual, social and structural factors.^{7-10,13,14} Young IDU report a higher frequency of injecting risk behaviors than their older IDU counterparts, including syringe and ancillary equipment sharing, and are more likely to have a sex partner who is also an IDU.⁶³ Reported HIV prevalence is significantly higher for young IDU (5-8%)⁹ than among the general population of young adults in the US (0.97%),¹⁶ while HCV prevalence among young IDU in the US ranges from 27-45%.^{10,19-21}

Young women IDU in particular face disparities in both HIV and HCV infection relative to their young male counterparts. Previously published data have demonstrated HIV prevalence and HCV incidence rates which are differentially elevated by gender among young IDU.^{11,12,49} While specific behaviors, such as receptive syringe sharing (RSS),^{12,19,59-61} ancillary equipment sharing (AES),^{12,19} and inconsistent condom use,^{12,28,64,67,68} have been associated with viral infection in young IDU cohorts, the impact of relationship- and social-level factors, such as those experienced in injecting partnerships, sexual relationships and social networks, has gained increasing focus in the last decade.^{78,79} Injecting is a highly social activity for young IDU, and for young women in particular, injection risk frequently occurs in the context of a partnership or intimate relationship.⁷⁴⁻⁷⁶

For young women IDU, the role of gender, as it relates to social norms and inequalities, may shape and define risk in the context of relationships.³⁴ HIV prevention research has highlighted gender inequality and the resulting power differential found in relationships between women and men as contributing to heterosexual HIV transmission and disproportionate rates of HIV among women.^{34,35,45} Additionally, power dynamics in the relationships of IDU (referred to as “relationship power” 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) faced by young women IDU.^{41,43,44} Imbalances or deficits in relationship power may hinder women’s ability to negotiate safer sex and injection behavior (*cite*). The impact of gender and relationship power on sexual risk behavior has been previously measured using a tool known as the Sexual Relationship Power Scale, developed by Pulwerwitz et al.^{41,94} Grounded in Gender Theory⁹⁵ and Social Exchange

Theory,^{96,100} this scale has been used with a varied array of populations within the field of HIV prevention research,⁴⁵ and has previously been associated with HIV infection¹⁰¹ and inconsistent condom use.⁹⁴ However, investigation of the intersection of relationship dynamics, injecting and sexual risk, and HIV and HCV infection among young female IDU is an area where greater research is needed. No studies have yet evaluated the impact of gendered relationship power on the additive risk of both injecting and sexual risk behavior in the context young women IDU's primary sexual relationships.

The purpose of this analysis is twofold: (1) to extend the research on gender, relationship power and risk behavior by applying the Pulerwitz scale to a new population of young women at high risk of HIV and HCV; and (2) to examine the associations between relationship power and both sexual and injecting risk behavior for HIV and HCV among young women IDU. We hypothesized that young women IDU with low relationship power, as measured by the SRPS, would report increased frequency of both sexual and injecting risk behaviors. We examined sexual behaviors such as inconsistent condom use⁹⁴, participation in sex work,⁵⁷ and sexual partner concurrency,¹⁰²⁻¹⁰⁴ previously found to be risk factors for HIV infection among women. We also examined injecting behaviors, such as receptive needle sharing,⁶¹ ancillary equipment sharing,¹⁹ and injecting the residue from someone's previously used injecting equipment,¹⁰⁵ previously found to be risk factors for HIV and/or HCV infection among young IDU.

METHODS

Study Participants

The UFO Study is a multidisciplinary epidemiologic study of young (under 30 years of age) injection drug users (IDU) in San Francisco, begun in 1997. The UFO Study has focused on examining young IDU's risk for HIV and HCV.^{12,22,80,106} Since 2003, the UFO Study has conducted a prospective cohort study of young IDU in order to identify acute/incident HCV infection, assess candidacy for acute HCV treatment, examine immunological correlates of viral clearance, and study HCV transmission dynamics within HCV serodiscordant injecting partners.

UFO Study Participants were recruited from a community-based study site in the downtown/Market Street neighborhood of San Francisco. Participants were also recruited by street outreach methods in areas where young IDU were known to congregate, through distribution of study invitations and fliers, and by participant and community-based organization word of mouth. Individuals were eligible for participation in a cross-sectional screening study to determine eligibility for enrollment in a prospective cohort if they were: (1) under 30 years of age; (2) reported current injection drug use (at least one event in the prior 30 days); and (3) were of HCV negative or unknown serostatus (by self-report). UFO Study screening procedures have been described in detail elsewhere.^{80,107} In this analysis we included only the female screening study participants who reported a main male sexual partner in the three months prior to baseline and who completed the SRPS questions as part of their baseline interview.

Study Procedures

After informed consent, participants completed a structured baseline interview and pre-test counseling for HCV-antibody and RNA testing, followed by phlebotomy. Post-test counseling, results disclosure and enrollment in the prospective cohort (if eligible) occurred as soon as one week following the initial baseline interview. Participants were compensated with \$20 for the baseline interview and blood draw, and \$40 upon returning for results disclosure. All study protocols were approved by the Institutional Review Board of the University of California, San Francisco.

Study Measures

Interview domains included: participant sociodemographics; overall injecting and sexual risk in the prior 30 days (e.g., frequency of needle sharing, ancillary equipment sharing, number of injecting/sexual partners, frequency of unprotected sex); injecting and/or sexual partner and partnership characteristics (e.g., age of partner, duration and type of relationship, cohabitation); injecting behaviors with partner in the prior 30 days; and sexual behaviors with partner in the prior 30 days.

In 2010, a self-administered component, known as the Sexual Relationship Power Scale (SRPS),⁴¹ was added to the baseline interview for young women within the study who identified a “primary” or “main” male sexual partner in the three months prior to the interview. The SRPS component contains questions about decision-making and relationship control, condom use and fidelity.

Independent Variable: Sexual Relationship Power Scale (SRPS)

Our independent variable is based on the SRPS methodology previously described by Pulerwitz et al.^{41,94} The SRPS is a two-part, 23-question psychosocial scale used to assess gender-based power differences and decision-making control within a primary sexual partnership. The overall scale is comprised of a relationship control (RC) subscale (questions 1-15) and a decision-making dominance (DMD) subscale (questions 16-23). Examples of RC items include “If I asked my partner to use a condom, he would get violent,” and “My partner has more say than I do about important decisions that affect us.” Possible responses for this subscale are based on a 4-point Likert Scale (from strongly agree to strongly disagree). Examples of DMD items include “Who usually has more say about whether we have sex?” and “Who usually has more power in our relationship?” Possible responses here are based on a 3-point scale (your partner, both of you equally, or you). RC and DMD subscale scores are each calculated separately, and the DMD subscale scores are rescaled mathematically to match the 4-point scale of the RC subscale (see Pulwerwitz et al., 2000, for further detail). Then, each participant’s subscale scores are added together, and rescaled back to a 4-point scale, to create an overall SRPS score for each participant, in addition to the RC and DMD subscale scores.

We also created modified subscale scores (RC-M and DMD-M), and a modified overall score (SRPS-M), in order to better assess the impact of relationship and decision-making control on one of our dependent variables, inconsistent condom usage, as was done by Campbell et al. in another analysis of SRPS data.⁴⁵ For the SRPS-M calculations, we removed all condom-related questions from each of the subscales (RC: #1, 2, 8; DMD: #22), leaving 19 of the original 23 questions in the overall scale.

Internal consistency testing for the overall scale and two subscales using Cronbach’s alpha indicated “excellent” internal consistency (defined as $\alpha \geq 0.90$) for the

Overall SRPS ($\alpha = 0.92$) and RC subscale scores ($\alpha = 0.93$), and “acceptable” internal consistency (defined as $0.8 \geq \alpha \geq 0.7$) for the DMD subscale ($\alpha = 0.78$).

Dependent Variables

For this analysis, dependent variables included both injecting and sexual risk behaviors. Injecting-specific dependent variables included whether participants reported engaging in the following behaviors: receptive needle sharing (RNS); ancillary injection equipment sharing (AES—measured by sharing cookers or baggies used to dilute, prepare and divide drug solutions with another injector); and injecting the residue from someone else’s previously used injection equipment. Sexual behavior variables included whether participants reported engaging in the following behaviors: having 2 or more concurrent sexual partners; inconsistent condom use for vaginal or anal sex; and engaging in sex in exchange for money/food/clothing/place to stay.

Covariates

We examined other variables as possible confounders of the relationship between gender-power and injecting and sexual risk behavior, including age, race/ethnicity, educational background, self-reported mental health diagnoses, duration of injecting history, and history of incarceration. The age variable was categorized for ease of presentation. For the race/ethnicity variable, because our population identified predominantly as white, we created a general “nonwhite” category ($n = 9$) for comparison. For the years injecting variable, we broke the group into three even levels, based on the distribution of the participants’ injection histories. For the education variable, we stratified highest school year completed using traditional middle school and high school cutoffs.

Statistical Analyses

We calculated frequency distributions for categorical variables, and medians and interquartile ranges (IQRs) for continuous variables to describe our study sample. We conducted internal consistency testing with the two subscales and the overall scale using Cronbach’s alpha. Finally, the SRPS and subscale scores were grouped into a three-level predictor variable (low, moderate and high power), based on the distribution of scores within the study sample.

We calculated odds ratios for the association between independent variables and other covariates of interest with the dependent variables previously listed, in both bivariate and multivariate analyses, utilizing $p < 0.10$ as a cutoff for statistical significance given the smaller sample size. We developed a multivariate model for adjusted odds ratios of the association between SRPS score tertile, RC and DMD subscale score tertiles, and our outcome variables of interest, based on a priori assumptions identified in the literature on gender and power, as well as our own previous research findings. Our final model adjusted for age, race/ethnicity, and duration of injection history.

RESULTS

Out of 247 UFO Study baseline interviews completed between April 28, 2010 and May 23, 2012, 70 (28.3 %) were among females, 68 (97.1 %) of whom reported any sexual

activity in the three months prior to interview. Of the 68 currently sexually active female participants, 56 (82.3 %) reported 1 or more male sex partner in the prior three months, and 54 female participants (79.4 %) said that they had a male sexual partner who they considered their main or primary sexual partner during that time. These 54 female participants with main sexual partners were eligible to complete the Sexual Relationship Power Scale (SRPS) questions as part of their baseline interview.

Of the 54 participants who were eligible to complete the SRPS section of the UFO Study baseline interview, 11 (20.4 %) were missing all or a significant portion of the power scale questions due to a skip pattern error in the custom interviewing software, leaving 43 (79.6 %) women with complete power scale questions for preliminary analyses.

Participant Characteristics

The female participants reporting a main male sexual partner in the three months prior to baseline (n = 43) had a median age of 24.7 [Interquartile Range (IQR): 21.9-26.3] and largely self-identified as white or Caucasian (79.1 %) (Table 1). Sixteen (37.0 %) had not completed a high school education, 30 (69.8 %) did not have a permanent home or place to live, and 32 (74.4 %) had a history of incarceration, either as a juvenile or an adult. These women had a median length of injecting history of 4.2 years [IQR: 2.3-8.5 years].

Regarding recent injection behavior, 17 (39.5 %) reported receptive syringe sharing, and 27 (n = 41; 65.9 %) reported receptive ancillary equipment sharing, in the three months prior to the baseline interview. Sixteen (37.2 %) had injected the residue from someone's previously used injection equipment in the prior three months.

Regarding recent sexual behavior, 4 (9.3 %) reported consistent condom use with their male sexual partners for any vaginal or anal sex in the prior three months. More than half of the women (n = 34; 53.5 %) reported having two or more sexual partners in the prior three months. Thirty-four (79.1 %) had injected drugs with a sexual partner in the prior three months. In addition, 7 (16.3 %) women reported participating in sex work in the three months prior to interview.

Sexual Relationship Power Scale Analysis

Individual overall SRPS scores, in addition to RC and DMD subscale scores, were calculated for each participant. The median SRPS overall score was 2.38 [IQR 1.87-2.83] (out of 4 points possible, with 4 indicating highest relationship power), with a median RC subscale score of 2.84 [IQR 2.10-3.47] and a median DMD subscale score of 2.13 [IQR 1.60-2.13].

Scores were also calculated for the modified scale and subscales: the median modified SRPS overall score (SRPS-M) was 2.29 [IQR 1.85 – 2.88], with a median modified RC (RC-M) subscale score of 2.79 [IQR 2.06 – 3.39] and a median modified DMD (DMD-M) subscale score of 1.85 [1.54 – 2.16].

Bivariate Analyses

We completed chi-squared testing with Fisher p-values with the SRPS overall score tertiles, the RC and DMD subscale tertiles, and our outcome variables of interest. Outcome variables included specific injection risk behavior and sexual risk behavior previously discussed.

Utilizing the SRPS overall score tertiles as our predictor variables, there were no significant bivariate associations between SRPS tertile and any of the outcome variables of interest. See Table 2 for more detail.

Crude Odds Ratios

We calculated crude odds ratios (ORs) using the SRPS score tertiles, the RC and DMD subscale tertiles and our outcome variables of interest (Table 3). One of our effect estimates was statistically significant ($p < 0.10$) utilizing the SRPS overall score tertiles: participants with “low” relationship power had a 4.9-fold increased odds of having done someone else’s rinse ever (95% CI: 0.784-30.3, $p = 0.089$) compared to participants with “high” relationship power. This association persisted when examining only the RC subscale, achieving statistical significance, albeit with wide variability (95% CI: 1.08-45.1, $p = 0.041$).

Another effect estimate based on an injecting risk behavior variable was not statistically significant using the SRPS overall score tertiles, but came close to significance when examining the DMD subscale only: participants with “low” relationship power had a 3.7-fold decreased odds of having used someone else’s previously used cooker in the prior three months (OR = 0.27; 95% CI: 0.051-1.4, $p = 0.118$) compared to participants with “high” relationship power.

While our effect estimate on multiple concurrent sexual partners was not significant using the SRPS overall scale tertiles, we did see significance using the RC subscale. Participants with “moderate” relationship power had a 4.5-fold decreased odds of having 2 or more concurrent sexual partners in the prior three months (OR = 0.22; 95% CI: 0.045-1.1, $p = 0.064$) compared to participants with “high” relationship power.

Utilizing the DMD subscale only, our sex work variable reached statistical significance. Participants with “low” power had a 7.6-fold decreased odds of reporting sex work in the prior three months (OR = 0.13; 95% CI: 0.018-0.96, $p = 0.043$) than those within the “high” power group.

Adjusted Odds Ratios

Lastly, our multivariate model for adjusted odds ratios (AORs) of the association between SRPS score tertile, RC and DMD subscale score tertiles, and our outcome variables of interest adjusted for age, race/ethnicity, and duration of injection history, based on a priori assumptions identified in the literature on gender and power, as well as our own previous research findings (Table 3).

Utilizing the SRPS overall score tertiles, our effect estimate for the rinse variable reached statistical significance. Women in the “low” power group had a 7.5-fold increased odds of having done someone else’s rinse ever than the women in the “high” power group (95% CI: 1.0-58.6; $p = 0.056$).

Utilizing the RC subscale score tertiles, women in the “low” power group had a 12.2-fold increase in the odds of having done someone else’s rinse (ever) when compared with their “high-power” counterparts (95% CI: 1.3-115; $p = 0.028$). Women in the “low” RC subscale tertile also had a 7.6-fold increase in the odds of reporting receptive syringe sharing ever when compared to the women in the “high” power tertile (95% CI: 0.9-64.6; $p = 0.062$). As in the crude odds ratio results section, women in the “moderate” power group had a 4.7-fold decrease in the odds of reporting 2 or more sexual partners in the

prior three months than the women in the “high” power group (AOR = 0.2; 95% CI: 0.04-1.2; $p = 0.078$).

Finally, utilizing the DMD subscale score tertiles, women in the “low” power tertile had 10.4-fold decreased odds of reporting receptive cooker sharing in the prior three months (AOR = 0.1; 95% CI: 0.008-1.1; $p = 0.059$) when compared to women in the “high” power group. Women in the “low” power group also had an 8.0-fold decreased odds of participating in sex work in the prior three months when compared to the women in the “high” power group (AOR = 0.1; 95% CI: 0.01-1.2; $p = 0.069$). Lastly, women in the “low” power group had a 5.6-fold decrease in odds of reporting two or more sexual partners in the prior three months when compared to the women in the “high” power group (AOR = 0.178; 95% CI: 0.0238-1.34; $p = 0.094$).

DISCUSSION

Injection risk behaviors play an important role in the evaluation of risk for HIV and HCV within the primary sexual relationships of young IDU. In this study, low relationship power as measured by the SRPS overall scale, as well as the RC subscale, was associated with increased odds of having done someone else’s rinse ever, when compared to high relationship power ($p = 0.056$, and $p = 0.028$, respectively). Additionally, low relationship power as measured by the RC subscale was associated with increased odds (AOR only) of receptive syringe sharing ever ($p = 0.062$), and low relationship power as measured by the DMD subscale was associated with decreased odds (AOR) of receptive cooker sharing in the prior three months ($p = 0.059$).

This study also showed that sexual risk behaviors play an important role in the evaluation of risk for viral infection for young women IDU who have a primary sexual partner. Moderate relationship power as measured by the RC subscale was associated with decreased odds of sexual partner concurrency (2 or more sexual partners) in the prior three months ($p = 0.078$), while low relationship power as measured by the DMD subscale was associated with decreased odds (AOR only) of sexual partner concurrency in the prior three months ($p = 0.094$), both compared against high relationship power. Finally, low relationship power as measured by the DMD subscale was also associated with decreased odds of sex work participation in the prior three months ($p = 0.069$).

Limitations

The findings of this study are subject to several limitations. First, the modest sample size limits the power of the analysis and statistical significance of the results. A larger sample size would allow us to make more precise inferences about the impact of power on risk behaviors in the context of intimate relationships. While we may only suggest trends and effects using the current data, the p -values we generated suggest that this type of analysis holds future promise in evaluating the impact of gender-based relationship dynamics in the sexual and injecting partnerships of young women IDU.

Next, the use of self-reported relationship and behavioral information, especially that which relates to stigmatized and/or illegal activities, is subject to a range of cognitive and situational factors which may limit the validity of findings.¹⁰⁸ The SRPS portion of the interview was self-administered on tablet computer (or paper when preferred by the

study participant), in order to improve self-report and provide a more accurate assessment of this type of information. Previous researcher has shown that information bias for sexual behavior variables may be mitigated through the use of such techniques.¹⁰⁸ Additionally, research has shown that self-reported drug use data is reliable when it is gathered in non-clinical settings.¹⁰⁹

Finally, the SRPS questionnaire has not previously been used to evaluate power in the context of young women's relationships, and further, young IDU relationships. While our internal consistency ($\alpha = 0.73-0.93$) was adequate-excellent, there may be essential relationship components within IDU partnerships which contribute to, or protect against, sexual and injecting risk that are not sufficiently captured using this tool. Because the SRPS was designed to specifically evaluate sexual risk behavior among adult women, it may not be the best approach to also evaluate injecting risk behavior. Both age-related and injection-related factors may require the development of a young IDU culture-specific tool that takes into account the unique social and cultural factors associated with this population. However our results do suggest that we are capturing meaningful data about young IDU relationships utilizing the SRPS tool as is.

Implications

That young women IDU with low relationship power have disproportionate experience doing someone else's rinse throughout their history of injection suggests a temporal relationship with risk which may extend beyond the borders of their current primary partnership. It may be that current relationship power serves as a proxy of historical power within relationships, and that current SRPS scores reflect a history of risk behavior and exposures in the context of other relationships as well. While the association between current and past relationship power has yet to be explored in young IDU cohorts, doing someone else's rinse has previously been associated with risk of HCV infection among young IDU.¹¹⁰ Roy et al. recently published the first prospective cohort study showing that injecting someone else's drug residue could play a significant role in HCV transmission among IDU.¹⁰⁵ The disproportionately high frequency of this risk behavior within the lowest power tertile in our sample may signal the day-to-day dependence young women in low power relationship situations experience for their physical and economic well being, since injecting residue is considered a "last resort" behavior that reflects a lack of economic resources or acute drug withdrawal.^{36,111} It may also indicate an inability to negotiate lower-risk injecting behaviors due to control or violence within the relationship itself, factors which Wagner et al. have shown to be mediated by low self-esteem and depression.⁸⁶

Young women IDU have previously been shown to have increased sexual risk behavior as compared to their young male counterparts,⁶⁴ and having multiple sexual partnerships including a main partner (sexual partner concurrency) has been previously associated with sex work among women IDU.¹¹² However our results showed a decreased odds of both sexual partner concurrency and sex work participation among moderate and low power subjects. This lack of multiple sexual partners and decreased frequency of sex work participation may reflect a level of control or dominance within the primary relationships of young women that prevents them from sexual partnerships outside of this relationship. This may in fact function to lower their external risk for HIV and HCV (limiting the number of different sexual and injecting partners), though it may

also heighten risk in the context of their primary intimate relationship (expectation of shared equipment and unprotected sex based on “trust”). Kral et al. have previously shown that while women IDU who participated in sex work had increased risk of HIV infection, women IDU who had a main sexual partner who was also an IDU had significantly decreased risk of HIV infection.¹¹³ We may be seeing the effects of this dynamic in our own data as well.

In general, the overall SRPS scores were not associated with any particular injecting or sexual outcome, however both the Relationship Control and the Decision Making Dominance subscales individually elucidated some interesting trends in the data. The RC subscale is explained by Campbell et al. to encompass the ability to “act as one desires,” in the context of a relationship, while the DMD subscale encompasses the freedom to “assert one’s desires or goals,” within a relationship.⁴⁵ Both the RC and DMD subscales were each able to capture associations with both injecting and sexual behavior (doing someone else’s rinse, and receptive syringe sharing, sexual partner concurrency for the RC subscale; receptive cooker sharing, sex work participation and sexual partner concurrency for the DMD subscale) that did not hold when evaluating the SRPS questions as a whole. The RC subscale in particular had an excellent Cronbach’s alpha ($\alpha = 0.93$), and it may be that the subscales, treated separately, offer a new direction for the evaluation of HIV risk with a tool previously used only to evaluate sexual risk behavior. While not previously used with young IDU, nor used to evaluate injecting risk for HCV, these tools, or other scales incorporating their strengths, hold promise in characterizing power and risk in this population.

Conclusion

For young women IDU, injecting and sexual risk behavior within an intimate relationship with another IDU is a critical target for the future of prevention efforts with this population. Research and interventions which explore and emphasize the individual, partnership and network strengths of young IDU, and how young IDU relationships incorporate love, care and support (the way that non-IDU relationships do), are critical in reducing risk the injecting and sexual risk young women IDU face in the context of their relationships.^{28,97,98} In addition to these positive aspects, psychosocial outcomes such as empowerment, self-esteem and self care have also been cited as essential to the success of interventions with young women in order to reduce their risk for viral infection.⁸⁶ The next generation of prevention interventions for this population, informed by research incorporating what is known about gender, social power, and the impact of relationships and social dynamics, holds great promise for reducing the disparate rates of HIV and HCV in young women IDU.

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Table 1: Baseline Characteristics of Females who report a Main Sexual Partner in the Prior Three Months (n = 43)

Participant Characteristics	Total n (%)
All	43 (100.0)
Age (Median, IQR)	24.7 [IQR 21.9-26.3]
Race/Ethnicity	
<i>Caucasian/White</i>	34 (79.1)
<i>African American</i>	2 (4.7)
<i>Latino/Hispanic</i>	1 (2.3)
<i>Mixed</i>	2 (4.7)
<i>Other</i>	4 (9.3)
Education (Highest Year Completed)	
<i>High School Graduate and beyond</i>	27 (62.8)
<i>Some High School (9th -11th)</i>	13 (30.2)
<i>Middle School (7th -8th)</i>	3 (7.0)
Has a Permanent Home	13 (30.2)
History of Incarceration (Ever)	32 (74.4)
Years Since First Began Injecting (Median, IQR)	4.2 [IQR 2.3-8.5]
Injecting Behavior (Prior 3 Months)	
Receptive Syringe Sharing	17 (39.5)
Receptive Ancillary Equipment Sharing	<i>n = 41</i> 27 (65.9)
Did Someone Else's Rinse	16 (37.2)
Sexual Behavior (Prior 3 Months)	
Consistent Condom Use with Male Partners for Vaginal or Anal Sex	4 (9.3)
Participated in Sex Work	7 (16.3)
≥2 Sexual Partners	23 (53.5)
Injected Drugs with a Sex Partner	34 (79.1)

Sexual Relationship Power Scale

SRPS Overall Score (Median, IQR)	2.38 [IQR 1.87 - 2.83]
Relationship Control Subscale Score (Median, IQR)	2.84 [IQR 2.10 – 3.47]
Decision-Making Dominance Subscale Score (Median, IQR)	2.13 [IQR 1.60 – 2.13]

Table 2: Sociodemographic Characteristics and Associations With SRPS Tertiles and Scores (n = 43)

Variable of Interest	Prevalence N (%) 43 (100)	SRPS Score Tertile		
		<i>High</i> N (%) 14 (100)	<i>Moderate</i> N (%) 14 (100)	<i>Low</i> N (%) 15 (100)
Age				
18-22	16 (37.2)	5 (35.7)	8 (57.1)	3 (20.0)
23-25	14 (32.6)	2 (14.3)	5 (35.7)	7 (46.7)
26-30	13 (30.2)	7 (50.0)	1 (7.2)	5 (33.3)
			p = 0.419	
Race/Ethnicity				
White	34 (79.1)	12 (85.7)	11 (78.6)	11 (73.3)
Nonwhite	9 (20.9)	2 (14.3)	3 (21.4)	4 (26.7)
			p = 0.439	
Years Injecting				
<3 years	18 (41.9)	6 (42.9)	7 (50.0)	5 (33.3)
3-8 years	14 (32.5)	6 (42.9)	4 (28.6)	4 (26.7)
>8 years	11 (25.6)	2 (14.3)	3 (21.4)	6 (40.0)
			p = 0.419	
Permanent Home				
Yes	13 (30.2)	3 (21.4)	7 (50.0)	3 (20.0)
No	30 (69.8)	11 (78.6)	7 (50.0)	12 (80.0)
			p = 0.454	
Education				
High School	27 (62.8)	12 (85.7)	6 (42.9)	9 (60.0)
Graduate or beyond				
Some High School (9 th -11 th)	13 (30.2)	2 (14.3)	7 (50.0)	4 (26.7)
Middle School (7 th -8 th)	3 (7.0)	0 (0)	1 (7.1)	2 (13.3)
			p = 0.398	
Ever Incarcerated				
Yes	32 (74.4)	12 (85.7)	9 (64.3)	11 (73.3)
No	11 (25.6)	2 (14.3)	5 (35.7)	4 (26.7)
			p = 0.593	
Ever Mental Health Diagnosis				
Yes	37 (86.0)	13 (92.9)	13 (92.9)	11 (73.3)
No	6 (14.0)	1 (7.1)	1 (7.1)	4 (26.7)
			p = 0.274	
Ever Drug Treatment				
Yes	25 (58.1)	9 (64.3)	9 (64.3)	7 (46.7)
No	18 (41.9)	5 (35.7)	5 (35.7)	8 (53.3)
			p = 0.295	
Self Reported HCV Status				
Positive	n = 36 5 (13.9)	n = 13 0 (0)	n = 10 1 (10.0)	n = 13 4 (30.8)
Negative	22 (61.1)	10 (76.9)	6 (60.0)	6 (46.1)

	<i>Don't Know</i>	9 (25.0)	3 (23.1)	3 (30.0)	3 (23.1)
				p = 0.265	
HCV Antibody					
Status		<i>n</i> = 42	<i>n</i> = 14	<i>n</i> = 14	<i>n</i> = 14
	<i>Positive</i>	15 (35.7)	4 (28.6)	5 (35.7)	6 (42.9)
	<i>Negative</i>	27 (64.3)	10 (71.4)	9 (64.3)	8 (57.1)
				p = 0.879	
TMA					
Interpretation		<i>n</i> = 41	<i>n</i> = 13	<i>n</i> = 13	<i>n</i> = 15
	<i>Positive</i>	9 (12.0)	2 (15.4)	4 (30.8)	3 (20.0)
	<i>Negative</i>	32 (78.0)	11 (84.6)	9 (69.2)	12 (80.0)
				p = 0.644	

Table 3. Crude and Adjusted Odds Ratios and 95% confidence intervals for injecting risk behaviors in the context of Sexual Relationship Power Scale (SRPS) score tertiles, and Relationship Control (RC) and Decision Making Dominance (DMD) subscale score tertiles (n = 43). AOR adjusted for: age, race/ethnicity/11, years injecting.
* Used Modified SRPS, RC or DMD Subscale Tertiles

	SRPS Score Tertile					
	High (n = 14)	Moderate (n = 14)		Low (n = 15)		
		Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
Receptive Syringe Sharing (Ever)						
Odds Ratio	1.0	1.13	0.517	0.94	1.96	
95% Confidence Interval		[0.236-5.37]	[0.0674-3.97]	[0.205-4.29]	[0.310-12.4]	
p-value		0.883	0.526	0.934	0.310	
Receptive Syringe Sharing (Prior 3 Months)						
Odds Ratio	1.0	1.80	1.44	0.90	1.10	
95% Confidence Interval		[0.396-8.18]	[0.274-7.60]	[0.194-4.16]	[0.212-5.68]	
p-value		0.447	0.664	0.893	0.911	
Ancillary Equipment Sharing, Receptive or Distributive (Ever)						
Odds Ratio	1.0	1.63	0.548	1.09	1.36	
95% Confidence Interval		[0.229-11.7]	[0.0435-6.91]	[0.181-6.58]	[0.180-10.3]	
p-value		0.624	0.642	0.924	0.764	
Ancillary Equipment Sharing, Receptive or Distributive (Prior 3 Months)						
Odds Ratio	1.0	0.88	0.371	0.83	0.831	

SRPS Score Tertile						
	High (n = 14)	Moderate (n = 14)		Crude OR	Adjusted OR	Low (n = 15) <i>Adjusted OR</i>
		Crude OR	Adjusted OR			
<i>Injection Risk Behavior</i>						
95% Confidence Interval		[0.186-4.24]	[0.0502-2.75]	[0.185-3.75]		[0.139-4.95]
p-value		0.883	0.332	0.812		0.839
Receptive Cooker Sharing (Prior 3 Months)						
Odds Ratio	1.0	0.593	0.251	0.800		0.674
95% Confidence Interval		[0.121-2.88]	[0.0343-1.83]	[0.111-2.56]		[0.0984-4.62]
p-value		0.517	0.173	0.433		0.688
Receptive Backloading (Ever)						
Odds Ratio	1.0	1.0	0.884	1.6		1.33
95% Confidence Interval		[0.141-7.10]	[0.159-4.91]	[0.237-10.8]		[0.257-6.86]
p-value		1.0	0.888	0.630		0.735
Receptive Backloading (Prior 3 Months)						
Odds Ratio	1.0	1.0	0.531	1.11		2.83
95% Confidence Interval		[0.213-4.69]	[0.0556-5.06]	[0.240-5.14]		[0.271-29.7]
p-value		1.0	0.582	0.893		0.384
Done Someone Else's Rinse (Ever)						
Odds Ratio	1.0	1.88	1.06	4.87		7.47

SRPS Score Tertile						
	High (n = 14)	Moderate (n = 14)		Low (n = 15)		
		Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
95% Confidence Interval		[0.390-9.01]	[0.163-6.84]	[0.784-30.3]	[0.952-58.6]	
p-value		0.433	0.953	0.089	0.056	
Done Someone Else's Rinse (Prior 3 Months)						
Odds Ratio	1.0	1.87	1.47	1.67	2.76	
95% Confidence Interval		[0.390-9.01]	[0.232-9.38]	[0.352-7.87]	[0.444-17.1]	
p-value		0.433	0.681	0.519	0.276	
Overdosed (Ever)						
Odds Ratio	1.0	1.35	0.816	2.06	2.65	
95% Confidence Interval		[0.294-6.18]	[0.152-4.38]	[0.463-9.14]	[0.502-13.9]	
p-value		0.699	0.813	0.343	0.251	
Overdosed (Prior 3 Months)						
Odds Ratio	1.0	0.461	0.300	0.923	0.846	
95% Confidence Interval		[0.0369-5.76]	[0.0202-4.44]	[0.111-7.62]	[0.0785-9.11]	
p-value		0.548	0.381	0.941	0.890	
Pooling with Others to Buy Drugs (Prior 3 Months)						
Odds Ratio	1.0	3.6	0.667	3.6	9.55	
95% Confidence Interval		[0.322-40.2]	[0.0142-31.2]	[0.322-40.2]	[0.478-191]	

		SRPS Score Tertile					
		High (n = 14)	Moderate (n = 14)		Low (n = 15)		
			Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>							
	p-value		0.298	0.837	0.298	0.140	
<i>Sexual Risk Behavior</i>							
Inconsistent Condom Use*							
	Odds Ratio	1.0	0.46	1.15	1.08	0.78	
	95% Confidence Interval		[0.0369-5.76]	[0.0535-24.7]	[0.0609-19.04]	[0.0397-16.0]	
	p-value		0.548	0.929	0.960	0.883	
Participated in Sex Work (Prior 3 Months)*							
	Odds Ratio	1.0	1.0	1.08	1.50	1.59	
	95% Confidence Interval		[0.120-8.3]	[0.121-9.66]	[0.211-10.6]	[0.207-12.2]	
	p-value		1.00	0.943	0.685	0.656	
≥2 Sexual Partners (Prior 3 Months)*							
	Odds Ratio	1.0	0.560	0.570	1.12	1.18	
	95% Confidence Interval		[0.126-2.5]	[0.115-2.81]	[0.256-4.94]	[0.245-5.71]	
	p-value		0.451	0.490	0.876	0.832	

		SRPS Score Tertile					
		High (n = 14)	Moderate (n = 14)		Low (n = 15)		
			Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>							
Relationship Control Subscale Score Tertiles							
		High (n = 12)	Moderate (n = 15)		Low (n = 16)		
			Unadjusted OR	Adjusted OR	Unadjusted OR	Adjusted OR	
<i>Injection Risk Behavior</i>							
Receptive Syringe Sharing (Ever)							
	Odds Ratio	1.0	2.4	1.14	2.64	7.62	
	95% Confidence Interval		[0.484-11.9]	[0.153-8.43]	[0.539-12.9]	[0.900-64.6]	
	p-value		0.284	0.900	0.231	0.062	
Receptive Syringe Sharing (Prior 3 Months)							
	Odds Ratio	1.0	2.0	1.44	3.0	4.14	
	95% Confidence Interval		[0.378-10.6]	[0.227-9.15]	[0.585-15.3]	[0.678-25.3]	
	p-value		0.415	0.698	0.187	0.124	
Ancillary Equipment Sharing, Receptive or Distributive (Ever)							
	Odds Ratio	1.0	2.17	0.955	1.44	1.85	
	95% Confidence Interval		[0.299-15.7]	[0.0968-9.42]	[0.235-8.84]	[0.240-14.3]	
	p-value		0.444	0.969	0.691	0.555	

SRPS Score Tertile						
	High (n = 14)	Moderate (n = 14)		Low (n = 15)		
		Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
Ancillary Equipment Sharing, Receptive or Distributive (Prior 3 Months)						
Odds Ratio	1.0	1.29	0.890	1.19		0.125
95% Confidence Interval		[0.263-6.27]	[0.137-5.77]	[0.258-5.50]		[0.217-7.22]
p-value		0.756	0.903	0.823		0.801
Receptive Cooker Sharing (Prior 3 Months)						
Odds Ratio	1.0	0.560	0.265	0.700		0.824
95% Confidence Interval		[0.109-2.86]	[0.0345-2.05]	[0.145-3.37]		[0.122-5.55]
p-value		0.486	0.204	0.656		0.843
Receptive Backloading (Ever)						
Odds Ratio	1.0	2.0	0.914	2.4		0.998
95% Confidence Interval		[0.260-15.4]	[0.157-5.31]	[0.302-19.0]		[0.190-5.23]
p-value		0.505	0.920	0.407		0.998
Receptive Backloading (Prior 3 Months)						
Odds Ratio	1.0	1.0	1.87	0.833		4.47
95% Confidence Interval		[0.199-5.00]	[0.196-17.9]	[0.173-4.00]		[0.371-53.9]
p-value		1.0	0.586	0.820		0.239

SRPS Score Tertile						
	High (n = 14)	Moderate (n = 14)		Low (n = 15)		
		Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
Done Someone Else's Rinse (Ever)						
Odds Ratio	1.0	2.75	1.68	7.0		12.2
95% Confidence Interval		[0.550-13.7]	[0.271-10.5]	[1.08-45.1]		[1.30-115]
p-value		0.218	0.576	0.041		0.028
Done Someone Else's Rinse (Prior 3 Months)						
Odds Ratio	1.0	2.0	1.69	2.3		3.63
95% Confidence Interval		[0.378-10.6]	[0.222-13.0]	[0.453-12.0]		[0.515-25.6]
p-value		0.415	0.611	0.311		0.196
Overdosed (Ever)						
Odds Ratio	1.0	0.70	0.375	1.8		0.342
95% Confidence Interval		[0.145-3.37]	[0.0624-2.25]	[0.396-8.18]		[0.416-12.6]
p-value		0.656	0.283	0.447		0.342
Overdosed (Prior 3 Months)						
Odds Ratio	1.0	0.357	0.199	0.714		0.481
95% Confidence Interval		[0.0283-4.50]	[0.0119-3.32]	[0.0856-5.96]		[0.0414-5.58]
p-value		0.426	0.261	0.756		0.558

		SRPS Score Tertile					
		High (n = 14)	Moderate (n = 14)		Low (n = 15)		
			Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>							
Pooling with Others to Buy Drugs (Prior 3 Months)							
	Odds Ratio	1.0	4.7	2.71	5.0	11.6	
	95% Confidence Interval		[0.418-52.1]	[0.116-63.4]	[0.449-55.6]	[0.533-251]	
	p-value		0.211	0.535	0.190	0.119	
<i>Sexual Risk Behavior</i>							
Inconsistent Condom Use (Prior 3 Months)*							
	Odds Ratio	1.0	2.17	2.68	2.33	N/A	
	95% Confidence Interval		[0.173-27.1]	[0.138-51.6]	[0.187-29.0]		
	p-value		0.548	0.514	0.510		
Participated in Sex Work (Prior 3 Months)*							
	Odds Ratio	1.0	2.17	2.02	4.73	5.04	
	95% Confidence Interval		[0.174-27.1]	[0.150-27.1]	[0.458-48.8]	[0.461-55.1]	
	p-value		0.548	0.595	0.192	0.185	
≥2 Sexual Partners (Prior 3 Months)*							
	Odds Ratio	1.0	0.222	0.213	1.11	1.15	

SRPS Score Tertile						
	High (n = 14)	Moderate (n = 14)		Low (n = 15)		
		Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
95% Confidence Interval		[0.0451-1.09]	[0.0380-1.19]	[0.240-5.14]	[0.227-5.86]	
p-value		0.064	0.078	0.893	0.863	
Decision Making Dominance Subscale Score Tertiles						
	High (n = 8)	Moderate (n = 10)		Low (n = 25)		
		Unadjusted OR	Adjusted OR	Unadjusted OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
Receptive Syringe Sharing (Ever)						
Odds Ratio	1.0	0.53	0.363	0.44	0.500	
95% Confidence Interval		[0.0757-3.75]	[0.0383-3.44]	[0.0721-2.74]	[0.0599-4.17]	
p-value		0.528	0.377	0.382	0.521	
Receptive Syringe Sharing (Prior 3 Months)						
Odds Ratio	1.0	0.50	0.353	0.40	0.277	
95% Confidence Interval		[0.0890-2.80]	[0.0535-2.33]	[0.0810-1.97]	[0.425-1.80]	
p-value		0.431	0.280	0.261	0.179	
Ancillary Equipment Sharing, Receptive or Distributive (Ever)						

SRPS Score Tertile						
	High (n = 14)	Moderate (n = 14)		Low (n = 15)		
		Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
Odds Ratio	1.0	0.95	0.558	1.71	1.43	
95% Confidence Interval		[0.125-7.27]	[0.0496-6.28]	[0.234-12.5]	[0.149-13.7]	
p-value		0.962	0.637	0.596	0.758	
Ancillary Equipment Sharing, Receptive or Distributive (Prior 3 Months)						
Odds Ratio	1.0	0.70	0.312	0.812	0.421	
95% Confidence Interval		[0.116-4.23]	[0.0367-2.65]	[0.157-4.20]	[0.0565-3.14]	
p-value		0.698	0.286	0.804	0.399	
Receptive Cooker Sharing (Prior 3 Months)						
Odds Ratio	1.0	0.40	0.197	0.267	0.096	
95% Confidence Interval		[0.0674-2.37]	[0.025-1.90]	[0.0507-1.40]	[0.00849-1.09]	
p-value		0.313	0.160	0.118	0.059	
Receptive Backloading (Ever)						
Odds Ratio	1.0	1.6	0.709	1.0	0.371	
95% Confidence Interval		[0.187-13.7]	[0.0896-5.60]	[0.125-7.99]	[0.0546-2.53]	
p-value		0.668	0.744	1.00	0.312	
Receptive Backloading (Prior 3 Months)						

SRPS Score Tertile						
	High (n = 14)	Moderate (n = 14)		Low (n = 15)		
		Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
Odds Ratio	1.0	0.643	1.20	0.381	0.628	
95% Confidence Interval		[0.0902-4.58]	[0.123-11.7]	[0.0634-2.29]	[0.453-8.70]	
p-value		0.659	0.873	0.292	0.729	
Done Someone Else's Rinse (Ever)						
Odds Ratio	1.0	1.12	0.880	1.60	1.32	
95% Confidence Interval		[0.182-6.93]	[0.121-6.40]	[0.290-8.86]	[0.202-8.69]	
p-value		0.899	0.900	0.590	0.769	
Done Someone Else's Rinse (Prior 3 Months)						
Odds Ratio	1.0	0.55	0.363	0.769	0.620	
95% Confidence Interval		[0.0951-3.24]	[0.0494-2.67]	[0.158-3.74]	[0.0930-4.14]	
p-value		0.514	0.319	0.745	0.622	
Overdosed (Ever)						
Odds Ratio	1.0	0.55	0.384	1.38	1.13	
95% Confidence Interval		[0.0950-3.24]	[0.0567-2.60]	[0.286-6.60]	[0.198-6.41]	
p-value		0.514	0.327	0.691	0.893	
Overdosed (Prior 3 Months)						
Odds Ratio	1.0	1.45	1.04	0.84	0.577	

SRPS Score Tertile						
	High (n = 14)	Moderate (n = 14)		Low (n = 15)		
		Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
95% Confidence Interval		[0.111-18.9]	[0.672-16.0]	[0.0665-10.7]	[0.0315-10.6]	
p-value		0.775	0.979	0.894	0.711	
Pooling with Others to Buy Drugs (Prior 3 Months)						
Odds Ratio	1.0	0.69	0.260	1.19	1.50	
95% Confidence Interval		[0.0527-8.96]	[0.0132-5.11]	[0.0938-15.0]	[0.0703-32.1]	
p-value		0.775	0.375	0.894	0.794	
<i>Sexual Risk Behavior</i>						
Inconsistent Condom Use (Prior 3 Months)*						
Odds Ratio	1.0	1.28	2.82 x 10 ⁻⁸	1.64	3.87 x 10 ⁻⁸	
95% Confidence Interval		[0.0678-24.4]	.	[0.129-20.9]		
p-value		0.867	.	0.702	0.000	
Participated in Sex Work (Prior 3 Months)*						
Odds Ratio	1.0	0.417	0.410	0.145	0.124	
95% Confidence Interval		[0.0505-3.43]	[0.0451-3.72]	[0.0190-1.11]	[0.0130-1.18]	
p-value		0.416	0.428	0.063	0.069	

	SRPS Score Tertile					
	High (n = 14)	Moderate (n = 14)		Low (n = 15)		
		Crude OR	Adjusted OR	Crude OR	Adjusted OR	
<i>Injection Risk Behavior</i>						
≥2 Sexual Partners (Prior 3 Months)*						
Odds Ratio	1.0	0.500	0.346	0.262	0.178	
95% Confidence Interval		[0.0650-3.84]	[0.0346-3.29]	[0.0440-1.56]	[0.0238-1.34]	
p-value		0.505	0.356	0.141	0.094	