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The moderating role of love in the relationship between partner type and condom use among women engaging in paid vaginal sex

Alexis M. Roth¹, Joshua G. Rosenberger², Devon J. Hensel³, Sarah E. Wiehe³, J. Dennis Fortenberry³, and Karla D. Wagner⁴

¹Drexel University, Philadelphia, PA, USA

²Pennsylvania State University, University Park, PA, USA

³Indiana University, Bloomington, IN, USA

⁴University of Nevada, Reno, NV, USA

Abstract

Background—Relationship characteristics and day-to-day variation in affective state have been associated with HIV risk behavior. However, no research has assessed the impact of these factors on event-level condom use among women engaging in transactional sex.

Methods—We enrolled twenty-six women engaging in transactional sex in a prospective study and collected information about their paid/traded sexual experiences twice daily on cell phones.

Results—Over 4-weeks, 18 participants reported 87 paid/traded vaginal intercourse events. Of these, 51.7% were condom protected. The majority of paid/traded events (81.5%) occurred with a non-romantic partner. After controlling for partner type, feeling in love on a given day was associated with higher odds of condom use during paid/traded sexual events, while having sex and on the weekend were associated with lower odds of condom use (all $p < .05$). There was a significant interaction between being in love and using condoms during transactional sex ($p < 0.01$). In paid/traded sexual events with romantic partners, the frequency of condom use was 71.4% (5/7) when women did not report love and 40% (4/10) when love was reported. In sexual events with non-romantic partners, the frequency of condom use was 43.8% (14/32) when women did not report love and 59.5% (22/37) when love was reported.

Conclusions—Women were less likely to reported protected sex with romantic partners and more likely to report protected sex with non-romantic partners when they are in love. Interventions focusing on the link between day-to-day variation in affective state on condom use may help women with risk management across partner types.

Corresponding Author: Alexis M. Roth, Assistant Professor, Department of Community Health and Prevention, School of Public Health, Drexel University, Nesbitt Hall, 3215 Market Street, Philadelphia, Pennsylvania 19104, (267)-359-6123 FAX (267)-359-6009, amr395@drexel.edu.

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Keywords

condoms; transactional sex; love; event-analysis; diary

INTRODUCTION

Transactional sex is the exchange of sex for money, drugs, food, shelter, or other goods and services.[1] Across settings, women engaging in transactional sex have higher rates of sexually transmitted infections (STI) and human immunodeficiency virus (HIV) compared to peers.[2–5] Risk for STI/HIV for these women is configured at multiple levels. At the individual-level, sexual behavior as well as drug use, poor mental health, and homelessness are linked to increased risk of STI/HIV.[6–10] At the structural-level, which incorporates aspects of the built and social environment, clustering of STI/HIV in urban cores where women tend to engage in sex work may exacerbate STI/HIV risk.[11–13] Further, STI/HIV is linked to drug using and sex partner networks that also mirror urban geography.[14–16]

Beyond individual and structural factors, characteristics of the sexual relationship also impact HIV/STI risk. For women engaging in transactional sex, characteristics of the sexual relationship may justify condom use with non-romantic partners – associated with terms such as ‘john,’ ‘client,’ or ‘trick’ - and condom non-use with romantic partners – associated with terms such as ‘boyfriend’ or ‘spouse’. Romantic partners may be the primary source of sexual satisfaction for women engaging in transaction sex.[17–18] Condom non-use with romantic partners may distinguish sex for pleasure from sex as work; it may also be a symbol of trust, fidelity and emotional closeness.[17–19, 21] For these reasons, rates of condom use with romantic partners are low compared to condom use with other transactional partners.[21–23]

However, non-romantic partnerships may also contain important emotional elements between a woman and a “client.” Robertson and colleagues described four types of clients among sex workers in Tijuana, Baja California, Mexico. Each client type (one-time, non-regular clients; regular clients and “friends;” clients who fell in love; and long-term financial providers) was associated with different levels of condom use.[24] The likelihood of condom use decreased with increasing emotional closeness with transactional sex partners. Similar findings were reported among sex workers in Madagascar: emotional connectedness with different types of transactional partners was fluid and more connectedness was associated with decreased condom use.[25]

Like other affective states, love is subject to day-to-day variation but is often measured at intervals of much longer duration.[26–28] Recent event-level studies demonstrate that capturing within-person patterns of mood and affect may elucidate mechanisms underlying HIV/STI risk. For example, love is significantly associated with different sexual repertoires. Among gay and bisexual men, love for a partner and feeling loved by the partner was associated with the highest rates of cuddling, kissing, and anal intercourse (both receptive or insertive) at the last sexual event.[29] In regards to anal sex, participants who loved a sexual partner but were unsure if the partner’s love were most likely to report being the receptive partner at their last event (46.0 %). In contrast, being the receptive partner was least likely to

occur when neither partner loved the other (34.3 %). Among a sample of urban adolescent women, feelings of love and sexual interest varied within-persons on the days proceeding, day of and days following first coitus, and feeling in love was significantly higher at subsequent events compared to first coitus.[26] Among these young women, feeling more in love was also associated with condomless sex during anal sex events.[30] Taken together, these findings support the notion that feelings of love vary both within women across time, and across partner type. A more micro-level assessment of feelings of love at the time of a sexual event would explore the complex relationships of affective states (feeling in love vs. not), partner type (romantic vs. non-romantic), and condom use during transactional sexual events.

In this paper, we explore within-person, within-day, and event-level predictors of condom use during paid/traded vaginal sexual events. We expected condom-use would be less common with romantic partners than ‘non-romantic’ (e.g. stranger, regular trick, drug dealer, or friend) partners and hypothesized that love would moderate the effect of partner type on event-specific condom use.

METHODS

Setting

The study was conducted in Indianapolis, Indiana, a midsize city (population 934,243) in the Midwestern United States.[31] In the past two decades, Indianapolis has had some of the highest rates of STI in the US including the highest number of primary and secondary syphilis cases in 1999.[32] In 2005, the incidence rate of gonorrhea per 100,000 persons in Indianapolis was four-fold greater than the U.S. case rate in that same year.[33] While STI have been predominately localized to a few high-prevalence populations and geographic areas in the city, increasing rates of syphilis in 2008 spurred local interest in better understanding the context of disease acquisition among high-risk populations including women engaging in transactional sex.[34]

Participants and recruitment

Eligible women were English-speaking and at least 18 years of age who reported: 1) exchanging sex for drugs, money, or items of daily living within the preceding 90 days; 2) a likelihood that they would engage in sex exchange again within the next 30 days; and 3) being able to safely store and charge a cellular phone. Women incapable of providing informed consent because of acute intoxication or an apparent cognitive impairment were excluded. Participants (N=26) were recruited via a local community-based organization operating a sex worker outreach and HIV testing program (n=2), venue-based recruitment by attending educational sessions operated by the Indianapolis Community Court for women arrested on prostitution charges and hanging study fliers in the women’s restroom (n=5), and incentivized peer referral of up to three women from their social circle who also engaged in transactional sex (n=19). The study protocol was approved by the Indiana University Institutional Review Board and all participants provided written informed consent.

Study design

Participants were asked to complete a digital diary on a study-provided smartphone twice daily (approximately every 12 hours) for a period of 4-weeks.[35] Diaries assessed within-day mood and event-level contextual factors thought to impact HIV/STI risk. To standardize data entry, participants were allowed 4 hours to complete each diary and no retrospective data entry was allowed. For women who reported more than one sexual event during a diary period (12 hours), we used an algorithm to identify the highest risk event based on partner type, type of sexual behavior, and condom use. These three factors were weighted such that the algorithm selected the highest risk event and participants were asked to provide contextual information for only the highest risk event. In this way, we maximized our ability to collect data about the highest risk sexual events, while also minimizing participant burden by asking detailed questions about only one sexual event per diary period.

Independent Variables

Person-level—Individual predictors were socio-demographic characteristics and behavioral risk factors assessed using a 90-day recall period. These included participant age; self-reported race/ethnicity (Black versus other); relationship status (single versus partnered); education (< high school versus high school equivalent or greater); income (< \$10,000 versus >\$10,001 USD annually); housing status (homeless versus housed); other employment (yes/no); frequency of sex work (at least weekly versus less frequent); sexual abuse before the age of 13 years (yes/no; assessed by a single item “I believe I was sexually abused by someone”); daily binge drinking (yes/no; consumption of four or more alcoholic drinks per day); weekly illicit drug use (yes/no; any weekly or more frequent cocaine, prescription stimulant, methamphetamine, sedatives, or opioid use; lifetime arrests for drug/alcohol charges (yes/no) and for prostitution (yes/no); and being infected with an STI (yes/no) including gonorrhea, chlamydia, and/or trichomoniasis detected from self-obtained vaginal specimens and nucleic acid amplification testing.

Day and event-level—Mood and love were assessed for each 12-hour diary period using a previously published 10-items scale measured using a 5-point semantic differential.[35, 36] The stem for these items was, “since your last diary prompt how “X” have you felt?” Three adjectives comprised the positive mood scale including happy, friendly, and cheerful (range 3–15; $\alpha=0.85$). Six negative adjectives (e.g. angry, unhappy, irritable, stressed, tired, and bored) comprised the negative mood scale (range 6–30; $\alpha=0.88$). We report mean positive and negative mood scales. Feeling in love was a standalone item on the same 5-point scale “very in love” to “not at all in love.” We recoded this item (0/1) as “not at all in love” versus “any degree of feeling in love.”

Event-level predictors included time of day (night [20:01 to 6:00] versus day [6:01 to 20:00] based approximately on local sunrise and sunset during May and June) and day of week (Friday – Sunday versus Monday – Thursday). Sexual venues were measured across five categories and then dichotomized as occurring in public (e.g. car, park, abandoned building) versus private (e.g., own/partner’s home or a hotel/motel) space. Partner type was measured across six categories and dichotomized into “romantic” (e.g., boyfriend or spouse) versus “non-romantic” partner (e.g. stranger, regular trick, drug dealer, or friend); and payment

(yes/no). When payment was reported, type (e.g., money or drugs) and amount (e.g., street value for drugs) were queried. Event-level sexual behaviors included whether participants reported kissing, receiving oral sex, or giving oral sex during the sexual event (yes/no).

Outcome—We assessed condom use during paid vaginal sex as a binary variable (yes/no) at each reported sexual event.

Analysis

We dropped observations when data was missing for the dependent variable ($N=1$). Descriptive statistics were used to characterize the sample and sexual events. To identify contextual factors associated with condom use during paid sexual events we constructed a series of univariate generalized estimating equation (GEE) binary logistic regression models to assess the relationship between each predictor variable and the outcome variable (condom use during paid/traded intercourse). The GEE procedure adjusts model estimates for the correlation of repeated within-subjects observations and for the varying number of observations contributed by each subject.[37] Standard errors in this framework are adjusted for clustering within individuals over time. Thus, GEE approaches are robust to violations of nonnormality. We specified an exchangeable working correlation matrix for the outcome variable. All predictors significant in univariate models at $p < 0.10$ were entered simultaneously into a multivariate GEE model to identify independent predictors of condom use during paid/traded intercourse. We hypothesized that love would moderate the relationship between partner type and condom use. We tested this hypothesis by entering an interaction term into our model (love by partner type). Backward stepwise logistic regression was conducted starting with a saturated model and eliminating variables to reach our final model. All variables retained in the final reduced model were significant at $p < 0.05$. Due to the limitations introduced by diminished cell sizes, we did not conduct separate regressions to calculate odds ratios for the relationship between partner type and condom use based on levels of the moderator (love: yes/no). Instead, we calculated frequencies of condom use for each subgroup and display the interaction graphically in Figure 1. All analyses were performed using SPSS 22.[38]

RESULTS

The 26 women enrolled reported 175 vaginal sex events. Eighteen women reported 87 paid/traded vaginal sex events (range 1 to 25 events, median = 5). There were no statistically significant differences in demographic characteristics between the 18 women who reported being paid for intercourse and the 8 women who did not. The demographic characteristics of the 18 women engaging in paid/traded sex are described in Table 1.

Condoms were used in slightly more than half of paid/traded vaginal sex events ($n=45$, 52%). No person-level factors were associated with condom use (data not shown). Factors associated with condom use are described in Table 2. Feeling in love was associated with an increased odds of condom use (OR 1.59; 95% CI 1.04, 2.42). Having sex on a weekend (Fri–Sun versus Mon–Thurs; OR 0.77, 95% CI= 0.64, 0.93) and at night (versus day; OR 0.73, 95% CI= 0.53, 0.99) were associated with lower odds of condom use. Mood, partner type,

and event-level sexual behaviors were not statistically associated with condom use in bivariate models.

Results of the multivariable logistic regression model including the love by partner type interaction term are depicted in Table 3. After controlling for partner type (romantic vs. non-romantic), feeling in love (as a general affective state, not associated with a particular partner) on a given day was associated with higher odds of condom use (adjusted odds ratio [AOR] 1.56, 95% CI= 1.06, 2.31), while reporting sex on a weekend (vs. weekday) was associated with lower odds of condom use (AOR 0.78, 95% CI= 0.60, 0.97) as was reporting sex occurred on a weekend (AOR 0.73, 95% CI= 0.57, 0.93). The love by partner type interaction term was significant (AOR 0.55, 95% CI=0.36, 0.82), indicating that the effect of love on condom use differed based on type of partner (romantic vs. non-romantic). Figure 1 depicts the nature of this interaction. In paid/traded sexual events with romantic partners, the frequency of condom use was 71.4% (5/7) when women did not report love and 40% (4/10) when love was reported. In sexual events with non-romantic partners, the frequency of condom use was 43.8% (14/32) when women did not report love and 59.5% (22/37) when love was reported.

DISCUSSION

We used twice-daily diaries, delivered via cell phones, to collect information about multi-level predictors of condom use during paid/traded vaginal sex. Inconsistent condom use was observed; approximately half of events were condom protected. Given individuals engaging in multiple sexual relationships may be at heightened risk for HIV/STI, this is a population who warrants public health intervention to encourage condom use. In this sample, no individual-level predictors (e.g. age, race, mental health, frequency of drug use prior to enrollment) were associated with condom use. Rather, only within-day and event-level contextual variables predicted condom use. This finding suggests that tailoring interventions for specific categories of women (e.g., those who are older, of a particular racial/ethnic group, or substance using) may be less effective than those targeting specific contexts that may be common across women.

In our sample, no main effect of partner type on condom use was observed; however, a significant interaction between love and partner type was detected. Reporting love on the day of a given sexual event was associated with condom use during vaginal sex with non-romantic partners and less frequent condom use with romantic partners. This indicates that love may be a protective factor during paid/traded sex events with non-romantic partners. Conversely, love may be a risk factor with romantic partners because it increases the likelihood that condoms will not be used when sex is paid/traded. This finding is consistent with evidence from other research among women involved in transactional sex,[17, 19–25] but extends earlier findings by analyzing the role of love as a moderator of condom use during specific sexual events. This study provides additional evidence that it is not just partner type but also the woman's affective state at the time of the event that may confer risk. Helping women identify and manage affective states that influence condom use associated with a particular partner could enhance existing interventions focused on condom negotiation skills. Additionally, public health practitioners should consider incorporating

direct measures of love when conducting needs assessments and calculating individual risk behavior profiles in an effort to differentiate sexual interactions that pose the most risk for disease transmission compared to those that may be of lower risk. While this study focused on love as an affective state, subsequent studies could include this measure and specific partner-level measures in order to understand the contribution of each to event-level HIV/STI risk behaviors.

Our findings suggest that beyond targeting condom use, interventions should attend to subjective understandings of risk and how love impacts the ways women conceptualize and interact with their partners. Scholars have suggested “negotiated safety,” wherein a couple makes a commitment to condom use with all outside partners.[39,40] It is unclear whether this strategy can work in a transactional paradigm if women’s agency to negotiate condoms with paying partners is limited by economic necessity, client-perpetrated violence or other power imbalances. However, risk-reducing alternatives to consistent condom use with romantic partners merit additional exploration as does unpacking the meaning of love and risk behaviors with both members of a sexual dyad. Recognizing that sex meets survival as well as emotional needs across a variety of relationships is critical.[24, 25]

Our findings should be considered in light of the limitations of the study design. Foremost, this analysis included 18 women engaging in 87 transactional intercourse events for which we have data on condom use. Second, most women (73%) were recruited by a peer via incentivized snowball sampling. This technique may introduce bias such as homophily (e.g. participants may share common traits within a peer network), which could limit generalizability of our findings. To limit these effects, seeds were recruited from a variety of agencies (e.g. a judicial setting, an addictions recovery program, and a mobile HIV outreach program targeting FSWs) and three distinct geographic areas of Indianapolis. Third, some (but not all) of the event-level variables were significantly associated with condom use and no personal-level variables were associated with condom use. This small pilot study may not have had sufficient power to detect some effects, particularly individual-level effects. Fourth, the algorithm we used to select highest risk events when multiple sexual events were reported might have caused the prevalence of unprotected events included in this analysis to be higher than it would have been had we collected detailed contextual information on all events. Fifth, given the short duration [4 weeks], we were limited in the number of events that could be reported. Future studies including larger samples with data collection of longer duration will be needed to provide a more comprehensive assessment of the individual, relational, and contextual factors influencing condom use women engaging in transactional sex. Finally, our measure of love was not partner specific, but rather an assessment of the participant’s overall feeling for the day. As such, the fact that a woman reported that she was “in love” on a given day does not necessarily mean that she was in love with the individual with whom she engaged in a sexual act. Future research should simultaneously examine love as an affective state and love towards a dyadic partner in a specific sexual event to better tease apart the independent contribution of each factor to HIV risk behaviors such as condom use.

CONCLUSION

The current study provides some of the first evidence that affective state (i.e., being in love on the day of a sexual event) and partner type interact, in specific sexual events, to influence condom use. Finding love is protective with certain partners, but not others, contributes to the growing body of research arguing for the need for HIV/STI, and more broadly sexual health, interventions to address love, emotional closeness and intimacy.[41, 42] Given condom non-use is associated with love, which is a desired element of romantic relationships, it may be unlikely that suggesting condom use within these relationships will result in consistent risk management. Instead, strategies that respond to the context of women's lives may be more appropriate. In this regard, additional research examining a variety of risk reduction strategies, including biomedical approaches to HIV prevention (e.g. pre-exposure prophylaxis [PrEP]), among this population is warranted.

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REFERENCES

1. Bobashev GV, Zule WA, Osilla KC, et al. Transactional sex among men and women in the south at high risk for HIV and other STIs. *J Urban Health*. 2009; 86(Suppl 1):32–47. [PubMed: 19513853]
2. Overs, C. The Tide Cannot Be Turned Without Us: HIV Epidemics Amongst Key Affected Populations. Paper presented at: 19th International AIDS Conference; 2012; District of Columbia, USA.
3. Mc Grath-Lone L, Marsh K, Hughes G, et al. The sexual health of female sex workers compared with other women in England: analysis of cross-sectional data from genitourinary medicine clinics. *Sex Transm Infect*. 2014 Jun 1; 90(4):344–350. [PubMed: 24493858]
4. Linhart Y, Shohat T, Amitai Z, et al. Sexually transmitted infections among brothel-based sex workers in Tel-Aviv area, Israel: high prevalence of pharyngeal gonorrhoea. *Int J STD AIDS*. 2008 Oct 1; 19(10):656–659. [PubMed: 18824615]
5. Campos PE, Buffardi AL, Cárcamo CP, et al. Reaching the Unreachable: Providing STI Control Services to Female Sex Workers via Mobile Team Outreach. *PLoS ONE*. 2013; 8(11):e81041. [PubMed: 24282565]
6. Jones DL, Irwin KL, Inciardi J, et al. The high-risk sexual practices of crack-smoking sex workers recruited from the streets of three American cities. *Sex Transm Dis*. 1998; 25(4):187. [PubMed: 9564720]
7. McMahon JM, Tortu S, Pouget ER, et al. Contextual determinants of condom use among female sex exchangers in East Harlem, NYC: an event analysis. *AIDS Behav*. 2006; 10(6):731–741. [PubMed: 16779657]
8. Surratt HL, Kurtz SP, Weaver JC, et al. The Connections of Mental Health Problems, Violent Life Experiences, and the Social Milieu of the "Stroll" with the HIV Risk Behaviors of Female Street Sex Workers. *J Psychol Human Sex*. 2005; 17(1–2):23–44.
9. Surratt HL, Inciardi JA, Kurtz SP, et al. Sex Work and Drug Use in a Subculture of Violence. *Crime Delinq*. 2004; 50(1):43–59.
10. May J, Cloke P, Johnsen S. Alternative cartographies of homelessness: rendering visible British women's experience of 'visible' homelessness. *Gend Place Cult*. 2007; 12:121–140.

11. Thomas JC, Tucker MJ. The Development And Use Of The Concept Of A Sexually Transmitted Disease Core. *J Infect Dis.* 1996; 174(Supplement 2):S134–S143. [PubMed: 8843243]
12. Jennings JM, Curriero FC, Celentano D, et al. Geographic Identification of High Gonorrhea Transmission Areas in Baltimore, Maryland. *Am J Epidemiol.* 2005; 161(1):73–80. [PubMed: 15615917]
13. Shahmanesh M, Gayed S, Ashcroft M, et al. Geomapping of chlamydia and gonorrhoea in Birmingham. *Sex Trans Infect.* 2000; 76(4):268–272.
14. Shannon K, Kerr T, Bright V, et al. Drug sharing with clients as a risk marker for increased violence and sexual and drug-related harms among survival sex workers. *AIDS Care.* 2008; 20(2): 228–234. [PubMed: 18293134]
15. Fichtenberg CM, Jennings JM, Glass TA, et al. Neighborhood socioeconomic environment and sexual network position. *J Urban Health.* 2010; 87(2):225–235. [PubMed: 20140533]
16. Fichtenberg CM, Muth SQ, Brown B, et al. Sexual Network Structure Among a Household Sample of Urban African American Adolescents in an Endemic Sexually Transmitted Infection Setting. *Sex Trans Dis.* 2009; 36(1):41–48.
17. Syvertsen JL, Robertson AM, Palinkas LA, et al. Where Sex Ends and Emotions Begin: Love and HIV Risk among Female Sex Workers and their Intimate, Non-Commercial Partners along the Mexico-U.S. Border. *Cult Health Sex.* 2013; 15(5):540–554. [PubMed: 23473586]
18. Jackson LA, Augusta-Scott T, Burwash-Brennan M, et al. Intimate relationships and women involved in the sex trade: perceptions and experiences of inclusion and exclusion. *Health.* 2009; 13(1):25–46. 2009. [PubMed: 19103714]
19. Varga CA. The condom conundrum: barriers to condom use among commercial sex workers in Durban, South Africa. *Afr J Reprod Health.* 1997; 1(1):74–88. [PubMed: 10214405]
20. Sanders T. The condom as psychological barrier: Female sex workers and emotional management. *Fem Psychol.* 2002; 12(4):561–566.
21. Luchters S, Richter ML, Bosire W, et al. The Contribution of Emotional Partners to Sexual Risk Taking and Violence among Female Sex Workers in Mombasa, Kenya: A Cohort Study. *PLoS ONE.* 2013; 8(8):e68855. [PubMed: 23950879]
22. Wang C, Hawes SE, Gaye A, et al. HIV prevalence, previous HIV testing, and condom use with clients and regular partners among Senegalese commercial sex workers. *Sex Trans Infect.* 2007; 83(7):534–540.
23. Maher L, Mooney-Somers J, Phlong P, et al. Condom negotiation across different relationship types by young women engaged in sex work in Phnom Penh, Cambodia. *Glob Public Health.* 2013; 8(3):270–283. [PubMed: 23432108]
24. Robertson AM, Syvertsen JL, Amaro H, et al. Can't Buy My Love: A Typology of Female Sex Workers' Commercial Relationships in the Mexico-U.S. Border Region. *J Sex Res.* 2013:1–10.
25. Stoebenau K, Hindin MJ, Nathanson CA, et al. "... But Then He Became My Sipa": The Implications of Relationship Fluidity for Condom Use Among Women Sex Workers in Antananarivo, Madagascar. *Am J Public Health.* 2009; 99(5):811–819. [PubMed: 19299685]
26. Hensel DJ, Fortenberry JD, Orr DP. Factors Associated with Event Level Anal Sex and Condom Use during Anal Sex among Adolescent Women. *J Adolesc Health.* 2010; 46(3):232–237. [PubMed: 20159499]
27. Sprecher S. Sexual satisfaction in premarital relationships: Associations with satisfaction, love, commitment, and stability. *J Sex Res.* 2002; 39(3):190–196. [PubMed: 12476266]
28. Morrison C-A. Solicited diaries and the everyday geographies of heterosexual love and home: reflections on methodological process and practice. *Area.* 2012; 44(1):68–75.
29. Rosenberger J, Herbenick D, Novak D, et al. What's Love Got To Do With It? Examinations of Emotional Perceptions and Sexual Behaviors Among Gay and Bisexual Men in the United States. *Arch Sex Behav.* 2014; 43(1):119–128. [PubMed: 24287965]
30. Tanner AE, Hensel DJ, Fortenberry JD. A Prospective Study of the Sexual, Emotional, and Behavioral Correlates Associated With Young Women's First and Usual Coital Events. *J Adolesc Health.* 2010; 47(1):20–25. [PubMed: 20547288]
31. U.S. Census Bureau. [Accessed October 10, 2015] State & County Quickfacts: Marion County, Indiana. <http://quickfacts.census.gov/qfd/states/18/18097.html>

32. Marion County Health Department. Marion County Syphilis Elimination Plan for 2000. [Accessed October 10, 2015] <http://www.mchd.com/Syphilis/MCHDSE/MCSEP.html>.
33. Marion County Health Department. Communicable Diseases Report 2002–2005. [Accessed October 10, 2015] http://www.mchd.com/data_reports/mccha/09_Communicable_Diseases.html.
34. Marion County Health Department. Syphilis Outbreak Confirmed in Marion County. 2008 [Accessed October 10, 2015] http://www.mchd.com/Syphilis/2008/pdf/pr_040408.pdf.
35. Roth A, Hensel D, Fortenberry JD, Garfein R, Gunn JL, Wiehe S. Feasibility and Acceptability of Cell Phone Diaries to Measure HIV Risk Behavior Among Female Sex Workers. *AIDS and Behavior*. 2014;1–11. [2014/03/19] [PubMed: 23321946]
36. Hensel DJ, Fortenberry JD, Harezlak J, Craig D. The feasibility of cell phone based electronic diaries for STI/HIV research. *BMC Medical Research Methodology*. 2012; 12(1):75–86. [PubMed: 22691189]
37. Zeger SL, Liang K-Y, Albert PS. Models for Longitudinal Data: A Generalized Estimating Equation Approach. *Biometrics*. 1988; 44(4):1049–1060. [PubMed: 3233245]
38. IBM Corp. Released 2013. IBM SPSS Statistics for Windows VA. NY: IBM Corp.;
39. Kippax S, Noble J, Prestage G, Crawford JM, Campbell D, Baxter D, et al. Sexual negotiation in the AIDS era: negotiated safety revisited. *AIDS*. 1997; 11(2):191–197. [PubMed: 9030366]
40. Corbett AM, Dickson-Gómez J, Hilario H, Weeks MR. A Little Thing Called Love: Condom Use in High-Risk Primary Heterosexual Relationships. *Perspectives on Sexual and Reproductive Health*. 2009; 41(4):218–224. [PubMed: 20444176]
41. Rhodes T, Cusick L. Love and intimacy in relationship risk management: HIV positive people and their sexual partners. *Sociol Health Ill*. 2000; 22(1):1–26.
42. Bluthenthal RN, Fehringer JA. Commentary on Li et al. (2011): A call for comprehensive approaches to sex-related human immunodeficiency virus risk among drug users. *Addiction*. 2011; 106(10):1788–1789.

Figure 1.
Interaction of love and partner type on condom use during 87 paid/traded vaginal sex events

Table 1

Description of Women Reporting Paid/Traded Vaginal Sex (N=18 women reporting 87 sexual events)

Factors*	N=18	%
Mean age (SD); IQR 37–50	40.78	(12.8)
Race/Ethnicity		
Black	14	77.8%
Relationship status		
Single	8	44.4%
Highest level of education		
< High school	8	44.4%
Homeless	4	22.2%
Household income < \$10,000	14	77.8%
Non-sex work employment in last 90 days	8	44.4%
Frequency of sex work in last 90 days		
Daily	4	22.3%
Weekly	9	50.0%
Monthly or less frequently	5	27.7%
Experienced sexual abuse age 13 years	7	38.9%
Substance abuse within 90 days		
Weekly binge drinking	5	27.8%
Weekly or more frequent illicit drug use	10	55.6%
Criminal history		
History of prostitution arrest	11	61.1%
History of drug/alcohol arrest	12	66.7%
Self-reported health status		
Excellent to Good [†]	12	66.7%
Sexually transmitted infection at baseline	5	27.8%

* No statistical differences between 18 FSW reporting paid vaginal sex and 8 who did not.

[†] Versus fair or poor health status.

Table 2

Description of 87 paid/traded intercourse events reported by 18 women engaging in sex work

	Condom used (n=45; 51.7%)		Condom not used (n=42; 48.3%)		Odds Ratio	95% CI
Within-day intrapersonal-factors						
Feeling in love (versus not at all)	26	57.8%	21	51.2%	1.59**	1.04, 2.42
Positive mood (SD; range 1–5)	3.50	(1.14)	4.22	(0.96)	0.87	0.71, 1.07
Negative mood (SD; range 1–5)	2.82	(0.95)	2.03	(1.20)	1.01	0.90, 1.13
Event-level contextual factors						
Partner Type	N=45		N=42			
Romantic (versus Non-romantic)	9	20%	8	19%	0.91	0.82, 1.02
Location	N=44		N=40			
Public (versus Private)	12	27.3%	4	10%	1.37	0.50, 3.73
Day of week	N=44		N=41			
Fri – Sun (versus Mon – Thurs)	18	40.9%	18	43.9%	0.77***	0.64, 0.93
Time of day	N=43		N=41			
Night (versus Day)	24	55.8%	24	58.5%	0.73**	0.53, 0.99
Event-level sexual behaviors						
Kissing	N=45		N=42			
Kissed (versus No)	17	37.8%	35	83.3%	0.74	0.36, 1.53
Giving oral sex	N=44		N=41			
Gave oral sex (versus No)	31	70.5%	30	71.4%	0.63	0.28, 1.44
Receiving oral sex	N=44		N=41			
Received (versus No)	21	47.7%	33	80.5%	0.69	0.31, 1.52

In 2 events (4.9%) in which condoms were not used, participants did not disclose location. These events are not included in these analyses.

^a Public (e.g. hotel/motel versus car, park, abandoned building) versus private venue (own/partner's home);

^b Romantic (boyfriend/spouse) versus non-romantic partner (stranger, regular trick, drug dealer, or friend);

* p <0.10;

** p <0.05;

100> d

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Table 3

Factors independently associated with condom use during 84 paid vaginal sex events reported by 17 FSWs

	Adjusted Odds Ratio	95% Confidence Interval	P-value
Within day-level factors			
Feeling very in love (versus other or not at all)	2.10	1.17, 3.79	0.01
Event-level factors			
Day of week			
Fri – Sun (versus Mon – Thurs)	0.78	0.62, 0.97	0.02
Time of day			
Night (versus Day)	0.80	0.62, 1.02	0.08
Partner Type			
Romantic partner (versus all others) [‡]	0.98	0.81, 1.18	0.82
Feeling very in love × Romantic partner	0.50	0.29, 0.86	0.01

[‡] (e.g. Boy/friend/Spouse vs Stranger, regular trick, drug dealer, or friend)