HHS Public Access

Author manuscript

Arch Sex Behav. Author manuscript; available in PMC 2022 April 01.

Published in final edited form as:

Arch Sex Behav. 2021 April ; 50(3): 1087–1105. doi:10.1007/s10508-020-01783-y.

Sexual agreements and intimate partner violence among male couples in the United States: An analysis of dyadic data

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Abstract

Prior research with male couples has focused on how sexual agreements can influence relationship dynamics, sexual risk taking, and health promoting behaviors. Little is known about the association between sexual agreements and the experience or perpetration of intimate partner violence (IPV) in this population. Our study sought to evaluate these associations using dyadic data from a sample of 386 male couples residing in the United States. Both partners independently reported on their relationship characteristics, sexual agreements, and specific acts reflecting physical, emotional, controlling, and monitoring IPV in separate surveys. Participants were more likely to have experienced IPV in the past year if they were in a relationship for ≥3 years versus <3 years (aOR=1.62, 95% CI=1.03-2.53). Among 278 couples who had formulated sexual agreements, men who concurred with their partners on being in an "open" relationship were less likely to have experienced IPV versus those in a "closed" relationship (aOR=0.47, 95% CI=0.25-0.89). However, participants were more likely to have experienced IPV if their partners believed they had previously broken their sexual agreement (aOR=2.79, 95% CI=1.03-7.52). The verbal explicitness and duration of sexual agreements were not associated with either experiencing or perpetrating IPV in the past year. However, increasing levels of depressive symptomatology were associated with a greater likelihood of both experiencing and perpetrating IPV. Our findings highlight the need to prioritize dyadic interventions for male couples that focus on skills building around enhancing mutual communication and negotiating sexual agreements to reduce IPV.

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Keywords

Sexual and gender minorities; Men who have sex with men; Sexual behavior; Intimate partner violence; Sexual partners

Introduction

Intimate partner violence (IPV) is a significant public health issue that transcends sociodemographic characteristics and cultural contexts (WHO, 2012). The Centers for Disease Control and Prevention (CDC) describes IPV as any behavior within a current or former partnership that involves acts of physical or sexual violence, emotional or psychological aggression, or controlling tactics including isolating a person from their family or friends (CDC, 2015). IPV can range from a single episode of violence that could have a lasting impact to several episodes over time. Meta-analytic studies have found a strong association between IPV and adverse mental health outcomes such as depression, anxiety, and post-traumatic stress disorder (Spencer et al., 2019; Trevillion, Oram, Feder, & Howard, 2012). IPV has also been linked to adverse short-term and long-term physical health effects (beyond direct injury) such as gastrointestinal disorders, neurological disorders, and sexually transmitted infections (STIs) including HIV (Buller, Devries, Howard, & Bacchus, 2014; J. Campbell et al., 2002; Coker et al., 2002; Feldman, Ream, Diaz, & El-Bassel, 2007; Koblin et al., 2006).

Over the past decade, there has been an increase in research focusing on IPV among sexual and gender minorities in the United States (US) (Kim & Schmuhl, 2019). Recent data indicate that men who have sex with men (MSM) experience IPV at levels comparable to heterosexual women and higher than men who do not have sex with men (Finneran & Stephenson, 2013; Goldberg & Meyer, 2013; Herek & Sims, 2008). Estimates for experiencing IPV in the past year among partnered MSM range from 32% (Houston & McKirnan, 2007) to 54% (Pantalone, Schneider, Valentine, & Simoni, 2012). Although a relatively understudied phenomenon, estimates for perpetrating IPV in the past year among partnered MSM range from 8% (Carvalho, Lewis, Derlega, Winstead, & Viggiano, 2011) to 50% (Stephenson et al., 2019). The considerable variability in prevalence estimates yielded by these studies is a consequence of heterogeneity in sample sizes and composition (e.g., clinic-based, Internet-based), as well as the use of different IPV definitions. Drawing conclusions about the prevalence of IPV among MSM may also be limited by its possible underreporting due to social desirability (Freeman, Schumacher, & Coffey, 2015).

Regarding the antecedents of IPV, although there are some similarities with heterosexual couples, same-sex couples might have unique factors related to their sexual minority status (Rollè, Giardina, Caldarera, Gerino, & Brustia, 2018). MSM may experience internal or external stressors such as internalized homophobia, stigma consciousness, and sexuality-based discrimination or harassment (Meyer, 2003) which have been positively correlated with both the experience and perpetration of IPV (Carvalho et al., 2011; Edwards & Sylaska, 2013; Finneran & Stephenson, 2014). A recent systematic review found that MSM who experience IPV are more likely to engage in substance use, suffer from depressive

symptoms, and engage in unprotected anal intercourse (UAI), and those who perpetrate IPV are more likely to engage in substance use (Buller et al., 2014). Qualitative research has also shed light on possible triggers for IPV that are specific to sexual minority men. For example, a study with 64 MSM in Atlanta, Georgia found that dyadic differences (in age, education, employment, income, and "outness" pertaining to sexual identity), gender role conflict arising from both men striving to be the "leader" of the household, substance use, and sexual jealousy were sources of tension that could contribute to IPV (Goldenberg, Stephenson, Freeland, Finneran, & Hadley, 2016). In another study with 86 MSM in Los Angeles, California, participants described relationship power, a known predictor of IPV, as stemming from multiple sources including sexual positioning (i.e. being the insertive or receptive partner during anal sex), gender roles, and prior relationship experiences (Kubicek, McNeeley, & Collins, 2015). These studies contribute to our current understanding of IPV among MSM and highlight the need to continue investigating relationship-based predictors of IPV among male couples.

One area that has received substantial attention in the field of same-sex male relationships is the concept of sexual agreements. A comprehensive scoping review of the literature on sexual agreements found that 58 of 66 studies (88%) exclusively focused on self-identified gay, bisexual, and other MSM (Rios-Spicer, Darbes, Hoff, Sullivan, & Stephenson, 2019). Sexual agreements refer to a mutual understanding between two partners about the extent and types of sexual activities permitted within and outside their relationship. Research with male couples has demonstrated a high prevalence of sexual agreements, with estimates ranging from 58% (Cuervo & Whyte IV, 2015) to 99% (Colleen C. Hoff, Beougher, Chakravarty, Darbes, & Neilands, 2010). Broad categories of sexual agreements include "closed" agreements (i.e. sex with outside partners is not allowed) and "open" agreements (i.e. sex with outside partners is allowed). "Open" agreements can further be categorized into those with certain restrictions for sex with outside partners and those without any restrictions (Pruitt, White, Mitchell, & Stephenson, 2015). Regarding their prevalence in male couples, "closed" agreements tend to be more common [estimates range from 39% (Cuervo & Whyte IV, 2015) to 80% (Séguin et al., 2017)] than "open" agreements [estimates range from 27% (Stephenson, White, & Mitchell, 2015) to 51% (Neilands, Chakravarty, Darbes, Beougher, & Hoff, 2010)]. Sexual agreements may also be classified based on their verbal explicitness into spoken or unspoken (i.e. assumed or understood) agreements (C. K. Campbell et al., 2014). Leading motivators for establishing sexual agreements among partnered MSM include their desire to build mutual trust (Greene, Andrews, Kuper, & Mustanski, 2014; Colleen C Hoff & Beougher, 2010), protect or strengthen their relationship (Colleen C. Hoff et al., 2010; Mitchell et al., 2016), and prevent SHs including HIV (Beougher et al., 2012; Mitchell, 2014b).

Several studies with partnered MSM have focused on the associations between different aspects of sexual agreements and relationship characteristics (both positive and negative). For example, higher levels of investment in a sexual agreement have been associated with greater intimacy, relationship satisfaction, and mutual trust (Gass, Hoff, Stephenson, & Sullivan, 2012; Mitchell, 2014a; Neilands et al., 2010). Male couples who concur about their agreement type have been reported to score higher on measures of relationship satisfaction (Mitchell, Harvey, Champeau, Moskowitz, & Seal, 2012). In contrast, discrepant sexual

agreements have been shown to be associated with increased mutual avoidance (Colleen C. Hoff et al., 2010) and higher levels of sexual jealousy compared to concordant "open" sexual agreements (Parsons, Starks, Gamarel, & Grov, 2012). MSM in "closed" relationships have been reported to demonstrate higher commitment, attachment, and dedication to their partners versus those in "open" relationships (Colleen C. Hoff et al., 2010; Whitton, Weitbrecht, & Kuryluk, 2015), whereas MSM in "open" relationships have been reported to be less sexually jealous than those in "closed" relationships (Hosking, 2014; Parsons et al., 2012). Adherence to a sexual agreement has been associated with increased levels of investment in, commitment to, and valuing of a sexual agreement (Gass et al., 2012; Mitchell et al., 2012; Neilands et al., 2010), and agreement breakage can create tension and conflict between partners (Colleen C Hoff & Beougher, 2010).

Prior research has also evaluated how sexual agreements can influence sexual risk and health promoting behaviors among partnered MSM. For instance, formulating a sexual agreement has been negatively associated with engaging in UAI outside the relationship (Gass et al., 2012) and MSM in "closed" relationships have been reported to be less likely to engage in UAI with outside partners versus those in "open" relationships (Crawford, Rodden, Kippax, & Van de Ven, 2001; Mitchell, Champeau, & Harvey, 2013). MSM in "open" relationships have been reported to be more likely to use non-prescription drugs and alcohol during sex versus those in "closed" relationships (Mitchell, Boyd, McCabe, & Stephenson, 2014; Parsons et al., 2012), but also more likely to have been tested for HIV in the past 6 months (Stephenson, White, Darbes, Hoff, & Sullivan, 2015; Stephenson, White, & Mitchell, 2015). Collectively, these data can help inform programmatic efforts to reduce the risk of HIV and other SHs within male dyads.

Missing from the extant literature is a discussion of the potential link between sexual agreements and IPV among male couples. Sexual agreements are fluid, i.e. couples may decide to change their agreement type as their relationship evolves (Mitchell, 2014b). However, studies also indicate that couples are more likely to disagree on the terms of their agreement as time progresses (Mitchell, 2014a; Sharma et al., 2019). Discordance between partners, particularly with respect to sexual activities permitted outside the relationship, and suspicions about one's partner not adhering to an established agreement can result in increasing tensions and conflict (Colleen C Hoff & Beougher, 2010). Increasing levels of insecurity and mistrust in a relationship are known to be associated with violent behaviors (Bartholomew & Cobb, 2011) and could be a trigger for IPV. To our knowledge, only one article has reported on the relationship between agreement type and IPV victimization among partnered MSM (Pruitt et al., 2015). After adjusting for sociodemographic characteristics, MSM who had an "open" agreement were significantly less likely to have experienced IPV in the past year compared to those who had a "closed" agreement. A key limitation noted by the authors was that their data were not dyadic, i.e. the study design did not involve data collection from each partner. Given the relatively high levels of IPV reported in previous studies with MSM (Finneran & Stephenson, 2013; Goldberg & Meyer, 2013; Herek & Sims, 2008) and the documented associations between IPV and negative health outcomes (both mental and physical), it is important to gain a comprehensive understanding of different relationship contexts in which IPV might occur. Using dyadic data from a sample of male couples, this study sought to identify how certain aspects of

sexual agreements (e.g., type, verbal explicitness, duration, disclosure of breakage to partner, perception of breakage by partner) were associated with the experience and perpetration of IPV in the past year. Elucidating the influence of these factors can guide the development of screening tools and public health interventions aimed at reducing IPV within same-sex male relationships.

Methods

Study design

Data presented in this manuscript are from the baseline survey of a randomized controlled trial (RCT) that sought to evaluate a dyadic intervention involving video-based counseling combined with rapid home HIV testing for male couples in the US (ClinicalTrials.gov Identifier: NCT02335138). Details pertaining to the study protocol have been published elsewhere (Stephenson et al., 2017). Briefly, couples first completed a baseline survey programmed in SurveyGizmo, after which they were randomized to receive either rapid home HIV test kits followed by self-reporting of test results via the study's website (control arm), or rapid home HIV test kits followed by testing together under the facilitation of a remotely-located counselor during a prescheduled video session (experimental arm). Couples were also asked to complete follow-up surveys at 3 months and 6 months. For each survey, separate emails containing unique links were sent to both partners at the same time, but participants were requested to take the surveys individually. Study approval was obtained from the Institutional Review Board at the University of Michigan (HUM00102906).

Study population

Participants were recruited from across the US via targeted advertising on social media platforms (e.g., Facebook, Instagram), on geospatial mobile apps for gay, bisexual and other MSM (e.g., Grindr, Scruff), and in POZ magazine. Advertising emails were also sent to MSM who had completed the American Men's Internet Survey and expressed an interest in participating in future research studies. Between April 2016 and June 2017, 13,592 individuals accessed the study's landing page that contained a brief description of the RCT and its proposed activities. Of these, 2,926 individuals (21.53%) provided electronic informed consent. Eight hundred and sixty-two individuals (29.46%), i.e. 431 couples in which both partners reported being cis-gender male, ≥18 years of age, in a relationship for ≥6 months, not in a sero-concordant HIV-positive relationship, willing to receive rapid home HIV test kits, able to access the Internet and willing to participate in a video-based HIV testing and counseling session with their partner were eligible to receive the baseline survey. Of these, both partners in 424 couples (98.38%) completed separate baseline surveys. Data for this analysis are restricted to survey responses from 386 couples (91.04%) who answered each item on the Intimate Partner Violence for Gay and Bisexual Men (IPV-GBM) Scale (Stephenson & Finneran, 2013). No statistically significant differences were observed with respect to sociodemographic characteristics between participants who were included in the analytic sample and those who were excluded due to missing data.

Key covariates

Sociodemographic characteristics—Data on participants' age, race/ethnicity, and highest educational level were collected. Age was categorized at the individual level into 18-24 years, 25-29 years, 300-34 years, and >35 years, and dichotomized at the dyadic level into whether partners were >5 years apart or within 5 years of each other. Due to small numbers in some strata, race/ethnicity was categorized at the individual level as non-Hispanic white, non-Hispanic black/African American, Hispanic, and "other" (which included Asian, Native American/Alaskan Native, Native Hawaiian/other Pacific Islander, multiracial and other), and dichotomized at the dyadic level based on whether partners belonged to different categories or the same category. Similarly, highest educational level was categorized at the individual level into high school diploma or some high school, Associate's/Technical degree or some college, Bachelor's degree, and Master's/Doctoral degree, and dichotomized at the dyadic level based on whether partners belonged to different categories or the same category. Participants were also asked whether they identified as gay, bisexual, heterosexual, queer, questioning, or some other sexual orientation. Due to small numbers in some strata, this variable was categorized at the individual level into gay-identifying men, bisexual-identifying men, and "other"-identifying men (which included only queer and questioning as no participants selected heterosexual or some other sexual orientation). For analytic purposes, this variable was categorized at the dyadic level based on whether couples were comprised of two gay-identifying men, one or two bisexual-identifying men, and one "other"-identifying and one gay-identifying man or two "other"-identifying men. Participants were asked about whether they had previously been tested for HIV, and if so, the result of their most recent HIV test. Information on their legal marital status and relationship duration was also obtained.

Non-prescription drug or alcohol use—Participants were asked to indicate if they had used any non-prescription drugs in the past 3 months, and those who responded in the affirmative were asked to select one or more options from the following list: marijuana ("pot" or "weed"), amyl nitrite ("poppers"), central nervous system depressants ("downers" such as Valium, Ativan or Xanax), opioid analgesics (such as Oxycontin or Percocet), hallucinogens (such as lysergic acid diethylamide or "acid"), 3,4-methylenedioxy-methamphetamine ("ecstasy" or "molly"), club drugs (such as ketamine or "special K"), non-injection amphetamine ("speed", "crystal meth" or "crank"), injection amphetamine ("speed", "crystal meth" or "crank"), non-injection cocaine (smoked or snorted), injection cocaine, non-injection heroin (smoked or snorted), injection heroin, or some other non-prescription drug. Participants were also asked to indicate how often they had consumed >6 alcoholic drinks on the same occasion in the past 3 months (never, less than monthly, monthly, weekly, almost daily, or daily). Those who reported consuming >6 alcoholic drinks on the same occasion weekly, almost daily, or daily were categorized as heavy alcohol users. The Substance Abuse and Mental Health Services Administration (SAMHSA) defines binge drinking as consuming >5 alcoholic drinks on the same occasion on at least 1 day in the past month, and heavy alcohol use as binge drinking on >5 days in the past month (NIAAA, 2019). We acknowledge that our categorization of heavy alcohol use does not perfectly correspond to the SAMHSA definition, but believe it is a reasonable proxy for this variable.

Depressive symptomatology—Depressive symptomatology was assessed using the 11-item Iowa short form of the Center for Epidemiologic Studies Depression Scale (CES-D-11) (Carpenter et al., 1998). Participants were asked about how often they experienced the following in the past week ("hardly ever or never", "some of the time", or "much or most of the time"): felt depressed, felt lonely, felt sad, had a poor appetite, had restless sleep, felt everything they did was an effort, felt they could not get going, felt people were unfriendly, felt people disliked them, felt happy, and enjoyed life. The last two items were reverse coded and each participant's responses were summed to calculate an overall score. Higher values indicate greater levels of depressive symptomatology. Scores ≥9 suggest a person is experiencing frequent depressive symptoms (Payne, Hedberg, Kozloski, Dale, & McClintock, 2014), which corresponds to scores ≥16 on the original 20-item CES-D (Torres, 2012). Although presented in categories, this individual-level characteristic was included in our statistical models in its original format as a continuous variable. Data from 20 participants, each belonging to a unique couple who did not respond to all scale items, were not included in our regression models. We found strong internal reliability for this scale in our sample (Cronbach's alpha=0.87).

Sexual agreement characteristics—The baseline survey included a series of questions to elicit information on whether participants had a sexual agreement with their main partner, and if so, the characteristics of their agreement. Participants who reported having a sexual agreement (described to them as an "agreement about whether or not you can have sex with people besides each other") were asked if it was "closed" (i.e. sex with outside partners was not allowed), or "open" (i.e. sex with outside partners was allowed with or without restrictions). Data were collected on the verbal explicitness of one's sexual agreement, i.e. whether it was spoken (described to participants as "something you and your partner have spoken about" or unspoken (described to participants as "something you assumed or understood") and its duration. Participants were also asked about whether they had ever broken their sexual agreement (i.e. violated the agreed-upon terms of their agreement), and if so, whether they had disclosed the break to their partner. Finally, participants were asked whether they believed their partner had ever broken their sexual agreement.

Relationship dynamics—Agreement regarding general lifestyle issues (e.g., exercise, money matters, social activities) was measured using the 6-item Preferences for General Lifestyle Outcomes Scale and agreement regarding sexual health issues (e.g., getting tested for HIV and other STIs, sexual positioning) was measured using the 7-item Preferences for Sexual Health Outcomes Scale (Salazar, Stephenson, Sullivan, & Tarver, 2013). Participants were asked about the extent to which they agreed with their partners on each issue (ranging from "we don't agree at all" to "we completely agree"). Each participant's responses were summed to calculate an overall score, and differences in agreement between partners were calculated by taking the absolute difference between the scores. Higher values indicate greater differences in agreement regarding general lifestyle or sexual health issues within the relationship. Both these dyadic-level characteristics were included in our statistical models as continuous variables. We found acceptable internal reliability for the Preferences for General Lifestyle Outcomes Scale (Cronbach's alpha=0.65) and good internal reliability for the Preferences for Sexual Health Outcomes Scale in our sample (Cronbach's alpha=0.72).

Trust was measured using the 8-item Dyadic Trust Scale (Gabbay, Lafontaine, & Bourque, 2012; Larzelere & Huston, 1980). Participants were asked about the extent to which they agreed with the following statements (ranging from “strongly disagree” to “strongly agree”): their partner is more interested in his own welfare, there are times when their partner cannot be trusted, they feel their partner does not show them enough consideration, their partner is honest and truthful, they feel they can trust their partner completely, their partner is truly sincere in his promises, their partner treats them fairly and justly, and they can count on their partner for help. The first three items were reverse coded and each participant’s responses were summed to calculate an overall score. Differences in trust between partners were calculated by taking the absolute difference between the scores for each partner. Higher values indicate greater differences in trust between partners. This dyadic-level characteristic was included in our regression models as a continuous variable. We found strong internal reliability for this scale in our sample (Cronbach’s alpha=0.87).

Outcome measures

Our two main outcomes of interest were: (i) experience of IPV in the past year, and (ii) perpetration of IPV in the past year. These constructs were measured using the IPV-GBM Scale, adapted from the Conflict Tactics Scale to assess IPV among male couples (Stephenson & Finneran, 2013). Experience of physical IPV was measured by asking participants whether their partner had punched, hit or slapped them, kicked them, pushed or shoved them, forced them to do something sexual against their will, raped them, or damaged or destroyed their personal property in the past year (6 items). Experience of emotional IPV was measured by asking participants whether their partner had called them fat or ugly, told them to “act straight” around certain people, or criticized them about their clothes in the past year (3 items). Experience of controlling IPV was measured by asking participants whether their partner had prevented them from seeing their own family, prevented them from seeing their own friends, prevented them from seeing their partner’s family, or prevented them from seeing their partner’s friends in the past year (4 items). Experience of monitoring IPV was measured by asking participants whether their partner had demanded access to their cell phone, demanded access to their email, read their text messages without their knowledge, read their email without their knowledge, or posted repeatedly on their social networks in the past year (5 items). Perpetration of each type of IPV was measured using a separate set of questions that asked whether participants had done any of the above to their partner in the past year. Each participant’s responses were dichotomized into “yes” and “no” for both experience and perpetration of IPV. Data from our sample showed strong internal reliability for both experience (Cronbach’s alpha=0.83) and perpetration of IPV (Cronbach’s alpha=0.82).

Descriptive analysis and regression modeling

Statistical analyses were conducted using SAS 9.4. Descriptive statistics were used to summarize the sociodemographic and behavioral characteristics of the sample (n=386) at the individual and dyadic level (frequencies and proportions for categorical variables, and means, medians and ranges for continuous variables). For the subset of couples who had formulated sexual agreements (n=278), we tabulated information on their type, verbal explicitness and duration of agreement. Data on whether participants had ever broken their

sexual agreement and perceptions of agreement breakage by one's partner were also summarized.

For each main outcome of interest (i.e. experience of IPV in the past year, and perpetration of IPV in the past year), we used a multilevel generalized linear mixed model for individuals nested within dyads to assess dyadic-level, participant-specific, and partner-specific factors associated with the outcome (Kenny, Kashy, & Cook, 2006; Mustanski, Starks, & Newcomb, 2014). Two sets of models were considered, one set examining independent associations with experiencing and perpetrating IPV in the overall sample of 386 couples, and another set examining independent associations with experiencing and perpetrating IPV in the subset of 278 couples who had formulated sexual agreements. Variables included in the final models were based on lowest AIC model fit, but all models were adjusted for differences in partners' age, race/ethnicity and highest educational level. Results are presented as adjusted odds ratios (aORs) with 95% confidence intervals (CIs).

Results

Table 1 summarizes the sociodemographic and behavioral characteristics of our sample, overall and stratified by sexual orientation. The majority of 772 participants were younger than 29 years (59.45%) and non-Hispanic white (63.73%). Approximately half (51.55%) had completed college or had a higher educational level. Seven hundred and three participants (91.06%) identified as gay and 52 (6.74%) identified as bisexual. In the past 3 months, 28.11% of participants reported non-prescription drug use and 5.83% reported heavy alcohol use. Approximately a quarter (23.54%) were experiencing frequent depressive symptoms (using a cutoff score ≥9) at the time of the baseline survey (Payne et al., 2014). The mean score on the CES-D-11 was 5.28, the median was 4, and the range was 0-21. The majority of 386 couples were comprised of partners aged within 5 years of each other (74.61%) and of the same race/ethnicity (61.66%). Approximately two-thirds (66.32%) were comprised of partners with different levels of education. Three hundred and twenty-four couples (83.94%) were comprised of two gay-identifying men and 47 couples (12.18%) were comprised of at least one bisexual-identifying man. Two hundred and ninety-six couples (76.68%) were HIV sero-concordant negative and 14 couples (3.63%) were HIV sero-discordant. One or both partners were unaware of their HIV serostatus in 76 couples (19.69%). More than a quarter of the couples (27.72%) were legally married and approximately half (47.67%) had been together for ≥3 years. Two hundred and seventy-eight couples (72.02%) had formulated sexual agreements.

Table 2 describes the sexual agreement characteristics in the subset of 278 couples who had formulated agreements, overall and stratified by sexual orientation. One hundred and eighty couples (64.75%) had a "closed" agreement, 79 (28.42%) had an "open" agreement (of whom 73 indicated that sex with outside partners was allowed with certain restrictions), and 19 (6.83%) provided discordant responses to their type of agreement. Two hundred and five couples (73.74%) had spoken about their agreement, 24 (8.63%) had an unspoken (i.e. assumed or understood) agreement, and 49 (17.63%) provided discordant responses to the verbal explicitness of their agreement. One hundred and seventy-two couples (61.87%) had an agreement for <3 years, 89 (32.01%) had an agreement for ≥3 years, and 17 provided

discordant responses to the duration of their agreement. Sixty-eight of 556 participants (12.23%) reported ever breaking their agreement, of whom 33 (48.53%) indicated disclosing the break to their partner. Sixty-six of 556 participants (11.87%) believed their partner had ever broken their agreement, of whom 21 (31.82%) were correct about their partner's agreement breakage.

High levels of mutual agreement regarding general lifestyle issues, sexual health issues, and trust within the relationships were noted among the 386 couples. The distributions of average scores for each couple on the Preferences for General Lifestyle Outcomes Scale (mean=23.95, median=24, range=13-30), the Preferences for Sexual Health Outcomes Scale (mean=30.96, median=32, range=13-35), and the Dyadic Trust Scale (mean=33.85, median=34.50, range=18.50-40) were skewed to the left. The distributions of absolute differences in each partner's score on these scales were skewed to the right. This indicates few differences in agreement regarding general lifestyle issues (mean=2.99, median=2, range=0-12), sexual health issues (mean=3.37, median=3, range=0-20), and trust between partners (mean=4.82, median=4, range=0-32).

Table 3 summarizes the experience and perpetration of IPV in our sample, overall and stratified by sexual orientation. Four hundred and ninety-five of 772 participants (64.12%) experienced IPV in the past year. This reflects the relatively high prevalence of experiencing emotional (49.48%) and monitoring (35.36%) IPV compared to physical (23.70%) or controlling (16.19%) IPV. No statistically significant differences were observed across categories of sexual orientation in bivariate analyses: 450 of 703 gay-identifying men (64.01%), 37 of 52 bisexual-identifying men (71.15%), and 8 of 17 "other"-identifying men (47.06%) experienced IPV (Fisher's exact P=0.190). However, on examining variations for different types of IPV across sexual orientation, we found that the prevalence of experiencing physical IPV was higher among bisexual-identifying men (44.23%) than either gay-identifying (22.62%) or "other"-identifying (5.88%) men (Fisher's exact P=0.001). Four hundred and ninety of 772 participants (63.47%) perpetrated IPV in the past year. Similar to experiencing IPV, this reflects the relatively high prevalence of perpetrating emotional (44.30%) and monitoring (43.39%) IPV compared to physical (20.21%) or controlling (10.36%) IPV. Once again, no statistically significant differences were observed across categories of sexual orientation in bivariate analyses: 448 of 703 gay-identifying men (63.73%), 35 of 52 bisexual-identifying men (67.31%), and 7 of 17 "other"-identifying men (41.18%) perpetrated IPV (Fisher's exact P=0.144). However, on examining variations for different types of IPV across sexual orientation, we found that the prevalence of perpetrating physical IPV was higher among bisexual-identifying men (36.54%) than either gay-identifying (19.35%) or "other"-identifying (5.88%) men (Fisher's exact P=0.005).

Dyadic-level, participant-specific, and partner-specific factors independently associated with the experience and perpetration of IPV in the past year among 386 couples are described in Table 4. Participants were significantly more likely to have experienced IPV if they were in a relationship for ≥3 years versus <3 years (aOR=1.62, 95% CI=1.03-2.53). The odds of experiencing IPV significantly increased per unit increase in the depressive symptomatology scores of the participants (aOR=1.13, 95% CI=1.07-1.19), as well as scores of their partners (aOR=1.07, 95% CI=1.02-1.13). Regarding perpetration of IPV by participants, the odds

significantly increased per unit increase in their own depressive symptomatology scores (aOR=1.11, 95% CI=1.05-1.17). The sexual orientation of participants or their partners was not associated with either experiencing or perpetrating IPV in the adjusted models.

Table 5 summarizes the dyadic-level, participant-specific, and partner-specific factors independently associated with the experience and perpetration of IPV in the past year among 278 couples who had formulated sexual agreements. Participants were significantly less likely to have experienced IPV if they concurred with their partners on being in an “open” relationship versus a “closed” relationship (aOR=0.47, 95% CI=0.25-0.89). However, they were significantly more likely to have experienced IPV if their partners believed they had ever broken their sexual agreement (aOR=2.79, 95% CI=1.03-7.52). The verbal explicitness and duration of sexual agreements were not associated with either experiencing or perpetrating IPV in the past year in the adjusted models. The magnitude and direction of associations of increasing depressive symptomatology scores with both the experience and perpetration of IPV in this subset of couples matched those in the full sample.

Discussion

Prior research indicates that it is common for male couples to formulate sexual agreements (Cuervo & Whyte IV, 2015; Colleen C. Hoff et al., 2010) for reasons including building trust, protecting or strengthening the relationship, and preventing HIV and other STIs (Beougher et al., 2012; Greene et al., 2014; Colleen C. Hoff et al., 2010; Mitchell et al., 2016). MSM also report experiencing IPV at levels comparable to heterosexual women and higher than men who do not have sex with men (Finneran & Stephenson, 2013; Goldberg & Meyer, 2013; Herek & Sims, 2008). Given that IPV can lead to adverse mental and physical health outcomes, understanding the variety of contexts in which IPV can occur within same-sex relationships is important to inform violence prevention efforts and programs for survivors of IPV. Recent literature reviews reveal that little has been published on the associations between sexual agreements and the experience or perpetration of IPV among partnered MSM (Kim & Schmuhl, 2019; Rios-Spicer et al., 2019). The sole study that attempted to evaluate this issue was methodologically limited by the lack of data from each partner within the dyad (Pruitt et al., 2015). Our study is the first to use dyadic data to assess potential links between different aspects of sexual agreements and the experience and perpetration of recent IPV among male couples in the US. Below we discuss the significance and implications of our findings to advance efforts that seek to promote healthy, respectful, and nonviolent same-sex male relationships.

Overall, almost three-fourths of our sample had formulated sexual agreements, which is well within the range reported in previous studies (Cuervo & Whyte IV, 2015; Colleen C. Hoff et al., 2010). In the subset of couples who had formulated sexual agreements, “closed” agreements were more than twice as common as “open” agreements, which is also consistent with the literature (Rios-Spicer et al., 2019). Approximately 7% of couples did not agree on their type of agreement, i.e. whether it was “closed” or “open”. This proportion is lower than the estimate of 21% documented in another study involving male dyads (Sharma et al., 2019) and may reflect sampling variability. Almost one-fifth of our couples provided discordant responses to the verbal explicitness of their sexual agreements, i.e.

partners did not agree on whether they had a spoken or an unspoken agreement. This finding suggests that male couples might not be engaging in actual discussions about an issue that could influence their relationship dynamics and might be making assumptions instead. Regarding the breaking of sexual agreements, approximately 12% of participants reported ever having violated the agreed-upon terms of their agreement with their current partner, half of whom disclosed the break after it occurred. Neither of these results conflicts with published reports of sexual agreement breakage within male partnerships (Gomez et al., 2012; Mitchell et al., 2012). Notably, our study provides an estimate for the perception of agreement breakage by one's partner, something that is missing in the existing sexual agreements literature (Rios-Spicer et al., 2019). Approximately 12% of participants believed their partner had ever broken their sexual agreement, more than two-thirds of whom were incorrect about their partner's agreement breakage. Ongoing suspicions about one's partner not adhering to an agreement have been reported to negatively affect the relationship and can result in its dissolution (Colleen C Hoff & Beougher, 2010). Collectively, our findings highlight the need to prioritize couples-based interventions for MSM that focus on encouraging and facilitating dyadic communication in a supportive environment (Purcell et al., 2014).

Regarding the experience and perpetration of recent IPV, slightly higher levels were observed in this sample compared to those previously documented among partnered MSM (Pantalone et al., 2012; Stephenson et al., 2019). Almost two-thirds of participants experienced and a similar proportion perpetrated IPV in the past year. These estimates are largely driven by the high prevalence of emotional and monitoring IPV noted in our study. Approximately 49% and 44% of participants experienced and perpetrated emotional IPV respectively, and approximately 35% and 43% of participants experienced and perpetrated monitoring IPV respectively. Both emotional and monitoring IPV have been comparatively less studied than physical IPV among sexual minorities (Kim & Schmuhl, 2019), but the high levels observed in our sample are not particularly surprising. Important to bear in mind while interpreting these estimates is the manner in which each type of IPV was measured (Stephenson & Finneran, 2013). For example, participants were not directly asked if they had experienced or perpetrated emotional IPV in the past year. Instead, they were asked about specific acts such as being called/calling their partners fat or ugly and being criticized/criticizing their partners about their clothes. Responses were then used to classify the presence or absence of emotional IPV within the relationship. Similarly, participants were not directly asked if they had experienced or perpetrated monitoring IPV in the past year. Instead, they were asked about specific acts such as demanding access to each other's cell phone or email and secretly reading each other's text messages or email. Responses were then used to classify the presence or absence of monitoring IPV within the relationship. Certain acts in these categories of IPV might not be perceived to be as socially undesirable as the more widely accepted notions of physical violence (Stephenson, Hall, Williams, Sato, & Finneran, 2013), which could have resulted in their relatively accurate reporting.

Participants who concurred with their partners on having an "open" agreement versus a "closed" agreement were less likely to experience IPV in the past year. This association was independent of differences in agreement regarding general lifestyle issues, sexual health issues, and trust between partners, and is consistent with the non-dyadic study involving

partnered MSM mentioned above (Pruitt et al., 2015). A similar association was observed between the type of agreement and perpetration of IPV, but that result was not statistically significant. Several studies with male couples have reported that “open” agreements are equally satisfying as “closed” agreements (Bonello, 2009; Colleen C. Hoff et al., 2010; Hosking, 2014). Additionally, among male partners with “open” agreements, relationship satisfaction has been documented to be higher for those who have explicit rules regarding the extent and types of sexual activities permitted outside the relationship versus those who do not (Ramirez & Brown, 2010). Couples in “open” relationships might feel less pressure to conform to the rules of monogamy that apply to “closed” relationships. Research suggests that some male couples may gradually move along the continuum of a “closed” relationship to an “open” relationship by discussing and easing restrictions for sex with outside partners (Colleen C Hoff & Beougher, 2010). Therefore, it is possible that an “open” agreement could be an indicator reflecting effective dyadic communication around potentially sensitive issues. Partners in mutually satisfying relationships characterized by high levels of constructive communication have been hypothesized to be at lower risk for IPV, regardless of their individual dispositions towards violence (Bartholomew & Cobb, 2011). Given the increasing prevalence of sexual agreements within male partnerships, researchers designing IPV reduction interventions should be mindful that IPV might operate differently across different types of agreements.

Our study also found that participants whose partners believed they had ever broken their sexual agreement were more likely to experience IPV. This result indicates the roles that suspicion and sexual jealousy might play in influencing IPV within male partnerships. Qualitative studies have revealed that mistrust about whether one’s partner is adhering to a sexual agreement can induce stress and negatively impact the relationship (Colleen C Hoff & Beougher, 2010). A recent systematic review that included articles on same-sex male relationships concluded there is strong evidence that IPV is associated with psychological stress, and that psychological stress follows new instances of IPV (Yim & Kofman, 2019). In addition to possibly experiencing stressors such as a financial crisis, changes in job responsibilities, and death of a family member or close friend that have been linked to IPV within heterosexual relationships (Acevedo, Lowe, Griffin, & Botvin, 2013; Gormley & Lopez, 2010; Roberts, McLaughlin, Conron, & Koenen, 2011), male couples may experience sexual minority stressors (both internal and external). Furthermore, the idea of one’s partner having sex with other men can generate feelings of jealousy, irrespective of whether couples have a “closed” or an “open” agreement (LaSala, 2004). These vulnerabilities can ultimately contribute to IPV following perceived provocation from one’s partner in relationships characterized by gradually escalating hostility (Bartholomew & Cobb, 2011). Interestingly, the actual disclosure of sexual agreement breakage to one’s partner was not associated with experiencing IPV in our sample. One explanation could be that the disclosure sparked a constructive discussion on whether each partner felt his sexual and emotional needs were being met, thereby diffusing a potentially contentious situation. In a study that examined attitudes towards disclosing broken sexual agreements, although 90% of participants were afraid to tell their partners, 95% felt that discussing their agreement breakage was necessary, 90% reported that talking about it with their partners was helpful,

and 83% indicated that the conversation helped clarify the terms of their agreement (Colleen C Hoff et al., 2009).

Prior research evaluating the predictors of IPV among sexual minority couples has concentrated primarily on sociodemographic characteristics (e.g., age, race/ethnicity), history of victimization (including adverse childhood experiences), and personal and behavioral characteristics (e.g., personality, engagement in sex work) (Kim & Schmuhl, 2019). Our study contributes to this literature by providing additional information on relationship-based predictors of IPV among male couples. Participants in relationships longer than 3 years were significantly more likely to experience IPV compared to those in relationships of a shorter duration. Previous work with individuals in heterosexual partnerships has indicated that the length of a relationship is predictive of the likelihood and severity of violence. For example, in a study involving 92 women residing in a battered women's shelter, most reported being in long-term relationships with their abusers: 31% reported a relationship duration of 1 −3 years, 18% reported a relationship duration of 4-7 years, and 24% reported a relationship duration of 8 or more years (Novisky & Peralta, 2015). In another study, relationships longer than 2 years involved a higher likelihood of male-perpetrated violence and a greater need to seek medical treatment by female victims (Sutton & Dawson, 2018). Our finding is particularly important in the context of the theoretical cycle of violence (Walker, 1977). As a relationship continues, the severity of violence increases as the perpetrator learns that their behavior can produce a desired effect on their victim, without the consequence of partnership dissolution. Interventionists should pay attention to relationship duration when developing IPV prevention strategies for male couples.

Another factor related to the burden of recent IPV in our study was depression. Increasing levels of depressive symptomatology were associated with a greater likelihood of both experiencing and perpetrating IPV in the past year. These findings mirror results from previous studies with male couples (Buller et al., 2014; Miltz et al., 2019; Siemieniuk et al., 2013) and are similar to associations reported in the IPV research literature on heterosexual relationships (Barros-Gomes et al., 2019; Graham, Bernards, Flynn, Tremblay, & Wells, 2012; Lipsky, Caetano, Field, & Bazargan, 2005). One possible explanation for the positive association between depression and experiencing IPV could be that the presence of frequent depressive symptoms heighten an individual's vulnerability to dysfunctional relationship dynamics by distorting the buffering effect of adaptive coping mechanisms (Calvete, Corral, & Estevez, 2007; Herek & Sims, 2008). However, the link between increasing levels of depressive symptomatology and IPV victimization may be bidirectional, i.e. the experience of IPV could have resulted in depression. In a 2-year long cohort study with 436 MSM, the prevalence of depression was almost twice as high in men who reported IPV victimization compared to those who reported no experiences of IPV (Miltz et al., 2019). Previous research has also indicated that the perpetration of IPV during adulthood is correlated with adverse experiences during childhood and adolescence, including witnessing parental violence, growing up in a negative family environment, and peer rejection (Bauer, Gilbert, Carroll, & Downs, 2013; Dutton, 2006; Manchikanti Gómez, 2011; Vaeth, Ramisetty-Mikler, & Caetano, 2010). All of these are known risk factors for depression later in life (Danese et al., 2009; Green, Zebrak, Fothergill, Robertson, & Ensminger, 2012; Reinherz,

Giaconia, Hauf, Wasserman, & Paradis, 2000). Although we did not assess negative early life experiences, exposure to violence during formative years could be an explanation for the higher levels of depressive symptomatology among participants who perpetrated IPV. Our findings highlight the need for mental health services to identify and address IPV within same-sex male relationships. Nevertheless, it is important to recognize the wide range of challenges that might be faced by partnered MSM who suffer from depression and are also involved in violent relationships. Such individuals may find it especially difficult to seek medical and other support services due to stigma and systematic inequalities (Calton, Cattaneo, & Gebhard, 2016), adhere to prescribed treatment regimens, or end their abusive relationships.

Sexual orientation was not associated with the experience or perpetration of IPV in the adjusted models. However, our bivariate analyses did reveal statistically significant variations with respect to the occurrence of physical IPV. The prevalence of experiencing physical IPV was higher among bisexual-identifying men compared to either gay-identifying or “other”-identifying men. This parallels findings from the CDC’s 2010 National Intimate Partner and Sexual Violence Survey, in which 37% of men who identified as bisexual had experienced rape, physical violence, and/or stalking by an intimate partner compared to 26% of men who identified as gay (CDC, 2013). In another recent analysis, 70% of 54 bisexual-identifying men had ever experienced physical IPV versus 51% of 82 gay-identifying men (Dickerson-Amaya & Coston, 2019). The prevalence of perpetrating physical IPV in our sample was also higher among bisexual-identifying men compared to either gay-identifying or “other”-identifying men. Unique stressors experienced by bisexual individuals (e.g., negative attitudes towards bisexuality, challenges related to bisexual identity concealment and disclosure, internalized biphobia) (Feinstein & Dyar, 2017) might help explain this observation, as IPV perpetrators could be displacing their negative feelings toward themselves onto their partners. In one study with 581 gay-identifying men and lesbians, higher levels of internalized homophobia and greater stigma consciousness were independently associated with the perpetration of physical IPV (Carvalho et al., 2011). Another study with 439 bisexual individuals found that anti-bisexual experiences of perpetrators (including assumptions of sexual orientation instability, assumptions of sexual irresponsibility, and experiences of hostility) were positively related to both IPV victimization and perpetration, especially if the perpetrator was male and both partners were bisexual (Turell, Brown, & Herrmann, 2018). Our prevalence estimates should be interpreted with caution because less than 7% of 772 participants in our sample identified as bisexual. Nonetheless, we agree with proponents who believe there is a critical need to develop and evaluate interventions to improve the health and psychosocial experiences of bisexual-identifying men, including those in relationships (Feinstein, Dodge, Korpak, Newcomb, & Mustanski, 2019).

Our study makes an important contribution to the literature, but we recognize that it is not without limitations. Caution must be exercised in generalizing our findings to other male couples in the US, who may or may not use social media platforms and geospatial mobile apps. Internet-based recruitment has become increasingly common in research with MSM, and such samples have been found to be comparable to those recruited through venue-based sampling with respect to sociodemographic and behavioral characteristics (Hernandez-

Romieu et al., 2014). However, we acknowledge that our sample is predominantly non-Hispanic white, with only 6% of 772 participants identifying as non-Hispanic black/African American and 20% identifying as Hispanic. Although we did not find variations in the experience or perpetration of IPV between couples comprised of partners of different versus the same race/ethnicity (either in the full sample or in the subset of couples who had formulated sexual agreements), we are unable to comment on potential variations at a more granular level due to small numbers. Less than 1% of 386 couples were comprised of two non-Hispanic black/African American partners and less than 10% were comprised of two Hispanic partners. Some non-dyadic studies have reported higher levels of IPV victimization and perpetration among partnered racial/ethnic minority MSM compared to non-Hispanic white MSM (Finneran & Stephenson, 2014; Stephenson & Finneran, 2013), whereas others have found no differences between these subgroups (Pruitt et al., 2015; Stephenson & Finneran, 2017). Additional research, preferably with population-based samples, is needed to estimate the prevalence of IPV among racial/ethnic minority male couples, and to understand the influence of different aspects of sexual agreements on its experience and perpetration. The cross-sectional nature of our study precludes us from commenting on the temporality of observed associations, particularly the link between depression and IPV noted in our sample. Longitudinal data from follow-up surveys will be important in assessing the causal relationship between sexual agreement characteristics and the experience and perpetration of IPV in this population. Because we collected personal identifying information such as name, email address, and mobile number, social desirability could have prompted our participants to underreport data on certain acts classified under physical IPV (e.g., being kicked/kicking, being forced/forcing someone to do something sexual against their will).

Despite these shortcomings, we believe our results further our limited understanding of the link between sexual agreements and IPV among male couples. A notable strength of our analysis is the use of dyadic data, in which both partners independently reported their understanding of their sexual agreement, as well as their experience and perpetration of acts reflecting physical, emotional, controlling, and monitoring IPV. Our study also provides new information on how the perception of agreement breakage by one’s partner can influence recent IPV. Researchers should consider how factors such as suspicion regarding whether one’s partner is adhering to a sexual agreement and sexual jealousy might push one or both partners towards violent behaviors. Same-sex victims of IPV suffer from similar negative health outcomes as heterosexual victims, bolstering the need for prevention and response efforts for same-sex couples. Comprehensive dyadic interventions for partnered MSM that focus on skills building around enhancing mutual communication, formulating and renegotiating sexual agreements, and applying problem-solving techniques to relationship issues such as incorrect perceptions of agreement breakage should be prioritized. Such efforts could lead to greater investment in the relationship, increased feelings of fulfillment and satisfaction, and reduction in the experience and perpetration of IPV.

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Table 1.

Sociodemographic and behavioral characteristics of 386 male couples, United States, April 2016-June 2017.

Characteristic	n	(%)	n	(%)	n	(%)	n	(%)
Individual-level		Total (n=772)		Gay-identifying men (n=703)		Bisexual-identifying men (n=52)		"Other"-identifying men[a] (n=17)
Age (years)[b]								
18-24	228	(29.53)	199	(28.31)	22	(42.31)	7	(41.18)
25-29	231	(29.92)	213	(30.30)	14	(26.92)	4	(23.53)
30-34	139	(18.01)	130	(18.49)	8	(15.38)	1	(5.88)
≥35	174	(22.54)	161	(22.90)	8	(15.38)	5	(29.41)
Race/ethnicity								
Non-Hispanic white	492	(63.73)	451	(64.15)	30	(57.69)	11	(64.71)
Non-Hispanic black/ African American	48	(6.22)	45	(6.40)	3	(5.77)	0	(0.00)
Hispanic	158	(20.47)	146	(20.77)	11	(21.15)	1	(5.88)
"Other"[c]	74	(9.59)	61	(8.68)	8	(15.38)	5	(29.41)
Highest educational level								
High school diploma or some high school	120	(15.54)	109	(15.50)	9	(17.31)	2	(11.76)
Associate's/Technical degree or some college	254	(32.90)	236	(33.57)	15	(28.85)	3	(17.65)
Bachelor's degree	236	(30.57)	208	(29.59)	20	(38.46)	8	(47.06)
Master's/Doctoral degree	162	(20.98)	150	(21.34)	8	(15.38)	4	(23.53)
Non-prescription drug use in the past 3 months								
Yes[d]	217	(28.11)	194	(27.60)	17	(32.69)	6	(35.29)
No	555	(71.89)	509	(72.40)	35	(67.31)	11	(64.71)
Heavy alcohol use in the past 3 months								
Yes[e]	45	(5.83)	41	(5.83)	4	(7.69)	0	(0.00)
No	727	(94.17)	662	(94.17)	48	(92.31)	17	(100.00)
Depressive symptomatology[f]								
Present	177	(23.54)	157	(22.99)	13	(25.00)	7	(41.18)
Absent	575	(76.46)	526	(77.01)	39	(75.00)	10	(58.82)
Self-reported HIV status								
Negative	662	(85.75)	604	(85.92)	42	(80.77)	16	(94.12)
Positive	14	(1.81)	13	(1.85)	1	(1.92)	0	(0.00)
Unknown[g]	96	(12.44)	86	(12.23)	9	(17.31)	1	(5.88)
Dyadic-level		Total (n=386)		Two gay-identifying men (n=324)		One or two bisexual-identifying men[h] (n=47)		One "other"-identifying and one gay-identifying man or two "other"-identifying men[i] (n=15)
Age								
>5 years apart	98	(25.39)	83	(25.62)	9	(19.15)	6	(40.00)

Characteristic	n	(%)	n	(%)	n	(%)	n	(%)
Within 5 years of each other	288	(74.61)	241	(74.38)	38	(80.85)	9	(60.00)
Race/ethnicity								
Different[j]	148	(38.34)	124	(38.27)	17	(36.17)	7	(46.67)
Same[k]	238	(61.66)	200	(61.73)	30	(63.83)	8	(53.33)
Highest educational level								
Different	256	(66.32)	216	(66.67)	28	(59.57)	12	(80.00)
Same	130	(33.68)	108	(33.33)	19	(40.43)	3	(20.00)
Non-prescription drug use in the past 3 months								
Both partners	57	(14.77)	46	(14.20)	9	(19.15)	2	(13.33)
Only one partner	103	(26.68)	87	(26.85)	10	(21.28)	6	(40.00)
Neither partner	226	(58.55)	191	(58.95)	28	(59.57)	7	(46.67)
Heavy alcohol use in the past 3 months								
Both partners	5	(1.30)	4	(1.23)	1	(2.13)	0	(0.00)
Only one partner	35	(9.07)	32	(9.88)	3	(6.38)	0	(0.00)
Neither partner	346	(89.64)	288	(88.89)	43	(91.49)	15	(100.00)
Depressive symptomatology								
Both partners	30	(8.20)	24	(7.84)	4	(8.89)	2	(13.33)
Only one partner	115	(31.42)	95	(31.05)	15	(33.33)	5	(33.33)
Neither partner	221	(60.38)	187	(61.11)	26	(57.78)	8	(53.33)
Self-reported HIV status								
Both negative	296	(76.68)	252	(77.78)	30	(63.83)	14	(93.33)
One negative, and other positive	14	(3.63)	11	(3.40)	3	(6.38)	0	(0.00)
One negative, and other unknown	56	(14.51)	46	(14.20)	9	(19.15)	1	(6.67)
Both unknown	20	(5.18)	15	(4.63)	5	(10.64)	0	(0.00)
Legal marital status								
Married	107	(27.72)	98	(30.25)	7	(14.89)	2	(13.33)
Unmarried	279	(72.28)	226	(69.75)	40	(85.11)	13	(86.67)
Duration of relationship								
≥3 years	184	(52.33)	158	(48.77)	19	(40.43)	7	(46.67)
<3 years	202	(47.67)	166	(51.23)	28	(59.57)	8	(53.33)
Formulated a sexual agreement[l]								
Yes	278	(72.02)	234	(72.22)	33	(70.21)	11	(73.33)
No	108	(27.98)	90	(27.78)	14	(29.79)	4	(26.67)

[a] Includes 14 queer, and 3 questioning.

[b] Age: Mean=30.05, Median=28, Range=18-68.

[c] Includes 37 multiracial, 24 Asian, 4 Native American/Alaskan Native, 2 Native Hawaiian/other Pacific Islander, and 7 other.

[d] Includes 159 who had used marijuana (“pot” or “weed”), 50 who had used amyl nitrite (“poppers”), 26 who had used central nervous system depressants (“downers” such as Valium, Ativan or Xanax), 17 who had used opioid analgesics (such as Oxycontin or Percocet), 14 who had used hallucinogens (such as lysergic acid diethylamide or “acid”), 12 who had used 3,4-methylenedioxy-methamphetamine (“ecstasy” or “molly”), 5

who had used club drugs (such as ketamine or “special K”), 10 who had used non-injection amphetamine (“speed”, “crystal meth” or “crank”), 5 who had used injection amphetamine (“speed”, “crystal meth” or “crank”), 24 who had used non-injection cocaine (smoked or snorted), 1 who had used non-injection heroin (smoked or snorted), and 22 who had used some other non-prescription drug (numbers are not mutually exclusive).

[e] Defined as consuming ≥6 alcoholic drinks on the same occasion weekly, almost daily, or daily.

[f] Assessed using the 11-item Iowa short form of the Center for Epidemiologic Studies Depression Scale. Mean=5.28, Median=4, Range=0-21. Higher scores indicate greater levels of depressive symptomatology. Scores ≥9 suggest an individual is experiencing frequent depressive symptoms. Numbers do not add to total due to missing data.

[g] Includes 87 who had never been tested for HIV, and 9 who did not know their HIV status.

[h] Includes 41 couples comprised of one bisexual- and one gay-identifying man, 1 couple comprised of one bisexual- and one “other” identifying man, and 5 couples comprised of two bisexual-identifying men.

[i] Includes 14 couples comprised of one “other”- and one gay-identifying man, and 1 couple comprised of two “other”-identifying men.

[j] Includes 11 couples in which one partner was non-Hispanic white and the other was non-Hispanic black/African American, 67 couples in which one partner was non-Hispanic white and the other was Hispanic, 42 couples in which one partner was non-Hispanic white and the other was of some other race/ethnicity, 8 couples in which one partner was non-Hispanic black/African American and the other was Hispanic, 5 couples in which one partner was non-Hispanic black/African American and the other was of some other race/ethnicity, 9 couples in which one partner was Hispanic and the other was of some other race/ethnicity, and 6 couples in which each partner was of a different other race/ethnicity.

[k] Includes 186 couples in which both partners were non-Hispanic white, 12 couples in which both partners were non-Hispanic black/African American, 37 couples in which both partners were Hispanic, and 3 couples in which both partners were of the same other race/ethnicity.

[l] Described to participants as an “agreement about whether or not you can have sex with people besides each other”.

Table 2.

Sexual agreement characteristics of 278 male couples who had formulated sexual agreements, United States, April 2016-June 2017.

Characteristic	n	(%)	n	(%)	n	(%)	n	(%)
Dyadic-level		Total (n=278)		Two gay-identifying men (n=234)		One or two bisexual-identifying men[a] (n=33)		One "other"- identifying and one gay-identifying man or two "other"-identifying men[b] (n=ll)
Type of sexual agreement Closed (i.e. sex with outside partners was not allowed)	180	(64.75)	155	(66.24)	21	(63.64)	4	(36.36)
Open (i.e. sex with outside partners was allowed)[c]	79	(28.42)	64	(27.35)	8	(24.24)	7	(63.64)
Discordant responses	19	(6.83)	15	(6.41)	4	(12.12)	0	(0.00)
Verbal explicitness of sexual agreement								
Spoken	205	(73.74)	173	(73.93)	23	(69.70)	9	(81.82)
Unspoken (i.e. assumed or understood)	24	(8.63)	21	(8.97)	3	(9.09)	0	(0.00)
Discordant responses	49	(17.63)	40	(17.09)	7	(21.21)	2	(18.18)
Duration of sexual agreement								
<3 years	172	(61.87)	142	(60.68)	23	(69.70)	7	(63.64)
≥3 years	89	(32.01)	77	(32.91)	9	(27.27)	3	(27.27)
Discordant responses	17	(6.12)	15	(6.41)	1	(3.03)	1	(9.09)
Individual-level		Total (n=556)		Gay-identifying men (n=507)		Bisexual-identifying men (n=37)		"Other"-identifying men[d] (n=12)
Ever broken their sexual agreement								
Yes[e]	68	(12.23)	61	(12.03)	6	(16.22)	1	(8.33)
No	488	(87.77)	446	(87.97)	31	(83.78)	11	(91.67)
Believed that partner had ever broken their sexual agreement								
Yes[f]	66	(11.87)	58	(11.44)	6	(16.22)	2	(16.67)
No	490	(88.13)	449	(88.56)	31	(83.78)	10	(83.33)

[a] Includes 28 couples comprised of one bisexual- and one gay-identifying man, 1 couple comprised of one bisexual- and one "other" identifying man, and 4 couples comprised of two bisexual-identifying men.

[b] Includes 10 couples comprised of one "other"- and one gay-identifying man, and 1 couple comprised of two "other'-identifying men.

[c] Includes 73 couples in which sex with outside partners was allowed with certain restrictions, 3 couples in which sex with outside partners was allowed without any restrictions, and 3 couples who provided discordant responses with respect to restrictions.

[d] Includes 11 queer, and 1 questioning.

[e] Includes 33 who disclosed breaking their sexual agreement to their partner, and 35 who did not disclose breaking their sexual agreement to their partner.

[f] Includes 21 who were correct about their partner having previously broken their sexual agreement, and 45 who were incorrect about their partner having previously broken their sexual agreement.

Table 3.

Experience and perpetration of intimate partner violence (IPV) in the past year among 386 male couples, United States, April 2016-June 2017.

Characteristic	n	(%)	n	(%)	n	(%)	n	(%)
Individual-level		Total (n=772)		Gay-identifying men (n=703)		Bisexual-identifying men (n=52)		"Other"-identifying men[a] (n=17)
Experienced IPV	495	(64.12)	450	(64.01)	37	(71.15)	8	(47.06)
Experienced physical IPV	183	(23.70)	159	(22.62)	23	(44.23)	1	(5.88)
Punched, hit or slapped	83	(10.75)	70	(9.96)	12	(23.08)	1	(5.88)
Kicked	27	(3.50)	24	(3.41)	3	(5.77)	0	(0.00)
Pushed or shoved	111	(14.38)	93	(13.23)	18	(34.62)	0	(0.00)
Forced to do something sexual against will	11	(1.42)	9	(1.28)	2	(3.85)	0	(0.00)
Raped	5	(0.65)	5	(0.71)	0	(0.00)	0	(0.00)
Damaged or destroyed personal property	106	(13.73)	91	(12.94)	14	(26.92)	1	(5.88)
Experienced emotional IPV	382	(49.48)	344	(48.93)	31	(59.62)	7	(41.18)
Called fat or ugly	142	(18.39)	128	(18.21)	11	(21.15)	3	(17.65)
Told to "act straight" around certain people	98	(12.69)	90	(12.80)	5	(9.62)	3	(17.65)
Criticized about clothes	299	(38.73)	267	(37.98)	25	(48.08)	7	(41.18)
Experienced controlling IPV	125	(16.19)	114	(16.22)	9	(17.31)	2	(11.76)
Prevented from seeing own family	36	(4.66)	34	(4.84)	2	(3.85)	0	(0.00)
Prevented from seeing own friends	70	(9.07)	64	(9.10)	6	(11.54)	0	(0.00)
Prevented from seeing partner's family	48	(6.22)	44	(6.26)	2	(3.85)	2	(11.76)
Prevented from seeing partner's friends	49	(6.35)	43	(6.12)	4	(7.69)	2	(11.76)
Experienced monitoring IPV	273	(35.36)	249	(35.42)	20	(38.46)	4	(23.53)
Demanded access to cell phone	133	(17.23)	122	(17.35)	10	(19.23)	1	(5.88)
Demanded access to email	49	(6.35)	46	(6.54)	3	(5.77)	0	(0.00)
Read text messages without knowledge	204	(26.42)	190	(27.03)	13	(25.00)	1	(5.88)
Read email without knowledge	100	(12.95)	98	(13.94)	2	(3.85)	0	(0.00)
Posted repeatedly on social networks	86	(11.14)	74	(10.53)	9	(17.31)	3	(17.65)
Perpetrated IPV	490	(63.47)	448	(63.73)	35	(67.31)	7	(41.18)
Perpetrated physical IPV	156	(20.21)	136	(19.35)	19	(36.54)	1	(5.88)
Punched, hit or slapped	85	(11.01)	74	(10.53)	10	(19.23)	1	(5.88)
Kicked	21	(2.72)	19	(2.70)	2	(3.85)	0	(0.00)
Pushed or shoved	99	(12.82)	86	(12.23)	13	(25.00)	0	(0.00)
Forced to do something sexual against will	6	(0.78)	5	(0.71)	1	(1.92)	0	(0.00)
Raped	2	(0.26)	1	(0.14)	1	(1.92)	0	(0.00)

Characteristic	n	(%)	n	(%)	n	(%)	n	(%)
Damaged or destroyed personal property	68	(8.81)	58	(8.25)	9	(17.31)	1	(5.88)
Perpetrated emotional IPV	342	(44.30)	309	(43.95)	26	(50.00)	7	(41.18)
Called fat or ugly	143	(18.52)	132	(18.78)	10	(19.23)	1	(5.88)
Told to “act straight” around certain people	81	(10.49)	72	(10.24)	8	(15.38)	1	(5.88)
Criticized about clothes	266	(34.46)	242	(34.42)	17	(32.69)	7	(41.18)
Perpetrated controlling IPV	80	(10.36)	68	(9.67)	11	(21.15)	1	(5.88)
Prevented from seeing own family	14	(1.81)	13	(1.85)	0	(0.00)	1	(5.88)
Prevented from seeing own friends	45	(5.83)	39	(5.55)	6	(11.54)	0	(0.00)
Prevented from seeing partner’s family	37	(4.79)	30	(4.27)	6	(11.54)	1	(5.88)
Prevented from seeing partner’s friends	25	(3.24)	22	(3.13)	3	(5.77)	0	(0.00)
Perpetrated monitoring IPV	335	(43.39)	308	(43.81)	24	(46.15)	3	(17.65)
Demanded access to cell phone	120	(15.54)	107	(15.22)	11	(21.15)	2	(11.76)
Demanded access to email	42	(5.44)	39	(5.55)	3	(5.77)	0	(0.00)
Read text messages without knowledge	288	(37.31)	265	(37.70)	21	(40.38)	2	(11.76)
Read email without knowledge	157	(20.34)	145	(20.63)	12	(23.08)	0	(0.00)
Posted repeatedly on social networks	85	(11.01)	74	(10.53)	8	(15.38)	3	(17.65)
Dyadic-level		Total (n=386)		Two gay-identifying men (n=324)		One or two bisexual-identifying men[b] (n=47)		One “other”-identifying and one gay-identifying man or two “other”-identifying men[c] (n=15)
Experienced IPV								
Both partners	185	(47.93)	156	(48.15)	24	(51.06)	5	(33.33)
Only one partner	125	(32.38)	104	(32.10)	16	(34.04)	5	(33.33)
Neither partner	76	(19.69)	64	(19.75)	7	(14.89)	5	(33.33)
Perpetrated IPV								
Both partners	185	(47.93)	154	(47.53)	27	(57.45)	4	(26.67)
Only one partner	120	(31.09)	104	(32.10)	8	(17.02)	8	(53.33)
Neither partner	81	(20.98)	66	(20.37)	12	(25.53)	3	(20.00)

[a] Includes 14 queer, and 3 questioning.

[b] Includes 41 couples comprised of one bisexual- and one gay-identifying man, 1 couple comprised of one bisexual- and one “other” identifying man, and 5 couples comprised of two bisexual-identifying men.

[c] Includes 14 couples comprised of one “other”- and one gay-identifying man, and 1 couple comprised of two “other”-identifying men.

Table 4.

Characteristics associated with the experience and perpetration of intimate partner violence (IPV) in the past year among 386 male couples, United States, April 2016-June 2017.

Characteristic	Experienced IPV aOR[a] (95% CI)	Perpetrated IPV aOR[a] (95% CI)
Dyadic-level		
Duration of relationship (≥3 years vs. <3 years)	1.62 (1.03-2.53)	1.13 (0.69-1.85)
Sexual agreement		
Closed vs. no agreement	1.57 (0.91-2.70)	0.99 (0.54-1.80)
Open vs. no agreement	0.89 (0.48-1.67)	0.65 (0.32-1.31)
Discordant responses versus no agreement	1.12 (0.36-3.49)	0.65 (0.19-2.28)
Differences in agreement regarding general lifestyle issues[b] (continuous)	1.04 (0.94-1.14)	0.99 (0.90-1.10)
Differences in agreement regarding sexual health issues[c] (continuous)	1.04 (0.97-1.12)	1.03 (0.95-1.11)
Differences in trust between partners[d] (continuous)	1.03 (0.97-1.09)	1.06 (0.99-1.13)
Participant-specific		
Sexual orientation		
Bisexual vs. gay	1.33 (0.60-2.96)	1.38 (0.58-3.28)
"Other" vs. gay	0.48 (0.13-1.74)	0.26 (0.06-1.04)
Non-prescription drug use or heavy alcohol use in the past 3 months[e] (yes vs. no)	1.12 (0.71-1.77)	1.62 (0.98-2.67)
Depressive symptomatology[f] (continuous)	1.13 (1.07-1.19)	1.11 (1.05-1.17)
Partner-specific		
Sexual orientation		
Bisexual vs. gay	0.91 (0.42-1.99)	0.60 (0.26-1.39)
"Other" vs. gay	0.48 (0.13-1.76)	0.97 (0.23-4.07)
Non-prescription drug use or heavy alcohol use in the past 3 months[e] (yes vs. no)	1.30 (0.82-2.05)	0.81 (0.50-1.32)
Depressive symptomatology[f] (continuous)	1.07 (1.02-1.13)	1.04 (0.99-1.09)

[a]Adjusted for differences in partners' age, race/ethnicity and highest educational level.

[b]Calculated by taking the absolute difference between the scores for each partner on the 6-item Preferences for General Lifestyle Outcomes Scale. Higher values indicate greater differences in agreement within the relationship.

[c]Calculated by taking the absolute difference between the scores for each partner on the 7-item Preferences for Sexual Health Outcomes Scale. Higher values indicate greater differences in agreement within the relationship.

[d]Calculated by taking the absolute difference between the scores for each partner on the 8-item Dyadic Trust Scale. Higher values indicate greater differences in trust between partners.

[e]Defined as using marijuana ("pot" or "weed"), amyl nitrite ("poppers"), central nervous system depressants ("downers" such as Valium, Ativan or Xanax), opioid analgesics (such as Oxycontin or Percocet), hallucinogens (such as lysergic acid diethylamide or "acid"), 3,4-methylenedioxy-methamphetamine ("ecstasy" or "molly"), club drugs (such as ketamine or "special K"), non-injection amphetamine ("speed", "crystal meth" or "crank"), injection amphetamine ("speed", "crystal meth" or "crank"), non-injection cocaine (smoked or snorted), injection cocaine, non-injection heroin (smoked or snorted), injection heroin, or some other non-prescription drug, or consuming ≥6 alcoholic drinks on the same occasion weekly, almost daily, or daily.

[f]Assessed using the 11-item Iowa short form of the Center for Epidemiologic Studies Depression Scale. Higher scores indicate greater levels of depressive symptomatology.

Table 5.

Characteristics associated with the experience and perpetration of intimate partner violence (IPV) in the past year among 278 male couples who had formulated sexual agreements, United States, April 2016-June 2017.

Characteristic	Experienced IPV aOR[a] (95% CI)	Perpetrated IPV aOR[a] (95% CI)
Dyadic-level		
Type of sexual agreement		
Open vs. closed	0.47 (0.25-0.89)	0.61 (0.32-1.16)
Discordant responses vs. closed	0.50 (0.16-1.63)	0.59 (0.18-1.98)
Verbal explicitness of sexual agreement		
Unspoken (i.e. assumed or understood) vs. spoken	0.40 (0.15-1.03)	0.88 (0.32-2.39)
Discordant responses vs. spoken	0.85 (0.41-1.75)	1.28 (0.59-2.75)
Duration of sexual agreement		
≥3 years vs. <3 years	1.48 (0.83-2.64)	0.80 (0.44-1.46)
Discordant responses vs. <3 years	2.00 (0.59-6.77)	0.77 (0.23-2.51)
Differences in agreement regarding general lifestyle issues[b] (continuous)	1.07 (0.95-1.20)	1.06 (0.94-1.20)
Differences in agreement regarding sexual health issues[c] (continuous)	1.00 (0.91-1.10)	0.98 (0.89-1.09)
Differences in trust between partners[d] (continuous)	1.02 (0.94-1.09)	1.03 (0.96-1.11)
Participant-specific		
Sexual orientation		
Bisexual vs. gay	2.33 (0.84-6.40)	2.48 (0.88-7.01)
“Other” vs. gay	0.77 (0.15-3.84)	0.58 (0.11-3.17)
Non-prescription drug use or heavy alcohol use in the past 3 months[e] (yes vs. no)	1.31 (0.75-2.30)	1.60 (0.89-2.87)
Disclosed breaking their sexual agreement to partner (yes vs. no)	1.77 (0.47-6.68)	-
Believed that partner had ever broken their sexual agreement (yes vs. no)	-	2.53 (0.96-6.65)
Depressive symptomatology[f] (continuous)	1.14 (1.07-1.22)	1.09 (1.03-1.17)
Partner-specific		
Sexual orientation		
Bisexual vs. gay	1.29 (0.49-3.39)	0.96 (0.37-2.48)
“Other” vs. gay	0.43 (0.08-2.17)	1.74 (0.29-10.30)
Non-prescription drug use or heavy alcohol use in the past 3 months[e] (yes vs. no)	1.04 (0.60-1.82)	0.84 (0.47-1.48)
Disclosed breaking their sexual agreement to participant (yes vs. no)	-	1.79 (0.50-6.40)
Believed that participant had ever broken their sexual agreement (yes vs. no)	2.79 (1.03-7.52)	-
Depressive symptomatology[f] (continuous)	1.07 (1.01-1.14)	1.01 (0.95-1.07)

[a] Adjusted for differences in partners’ age, race/ethnicity and highest educational level.

[b] Calculated by taking the absolute difference between the scores for each partner on the 6-item Preferences for General Lifestyle Outcomes Scale. Higher values indicate greater differences in agreement within the relationship.

[c] Calculated by taking the absolute difference between the scores for each partner on the 7-item Preferences for Sexual Health Outcomes Scale. Higher values indicate greater differences in agreement within the relationship.

[d] Calculated by taking the absolute difference between the scores for each partner on the 8-item Dyadic Trust Scale. Higher values indicate greater differences in trust between partners.

[e] Defined as using marijuana ("pot" or "weed"), amyl nitrite ("poppers"), central nervous system depressants ("downers" such as Valium, Ativan or Xanax), opioid analgesics (such as Oxycontin or Percocet), hallucinogens (such as lysergic acid diethylamide or "acid"), 3,4-methylenedioxy-methamphetamine ("ecstasy" or "molly"), club drugs (such as ketamine or "special K"), non-injection amphetamine ("speed", "crystal meth" or "crank"), injection amphetamine ("speed", "crystal meth" or "crank"), non-injection cocaine (smoked or snorted), injection cocaine, non-injection heroin (smoked or snorted), injection heroin, or some other non-prescription drug, or consuming ≥6 alcoholic drinks on the same occasion weekly, almost daily, or daily.

[f] Assessed using the 11-item Iowa short form of the Center for Epidemiologic Studies Depression Scale. Higher scores indicate greater levels of depressive symptomatology.