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Discrepant Patterns of Heavy Drinking, Marijuana Use, and Smoking and Intimate Partner Violence: Results from the California Community Health Study of Couples

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Abstract

This study analyzed whether discrepant (husband or wife use only) or concordant (both partners use) patterns of heavy drinking, marijuana use and smoking are associated with increased risk for male-to-female partner violence (MFPV) and female-to-male partner violence (FMPV) among adult couples. Based on a geographic sample of married/cohabiting couples residing in 50 California cities, logistic regression analyses were conducted using dyadic data on past-year partner violence, binge drinking and frequency of intoxication, marijuana use, and smoking. When all substance use patterns were included simultaneously, wife-only heavy drinking couples were at elevated risk for MFPV, as were concordant marijuana-using couples. Husband-only marijuana discrepant couples were at increased risk for FMPV. Further research is needed to explore the processes by which discrepant and concordant substance use patterns may contribute to partner aggression.

Keywords

Discrepant Patterns; Drinking; Marijuana Use; Smoking; Intimate Partner Violence

INTRODUCTION

Prevalence estimates of intimate partner violence (IPV) obtained from nationally representative samples indicate that physical aggression between romantic partners is a widespread public health problem. For example, among married or dating respondents in Wave II of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), 6.9% of females and 4.0% of males reported past-year IPV perpetration; 5.0%

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of females and 5.6% of males reported IPV victimization (Smith, Homish, Leonard, & Cornelius, 2012). Approximately 30% of young adult participants in the National Longitudinal Study of Adolescent Health (Add Health) reported IPV by age 26 (Reingle, Staras, Jennings, Branchini, & Maldonado-Molina, 2012). Analysis of NESARC data indicates that men are as likely as women to have sustained IPV-related injuries requiring medical care, and that frequency of IPV increases risk for new onset Axis I disorders, such as alcohol abuse, drug dependence, major depression and anxiety (Okuda et al., 2011). Because IPV is a dyadic interaction, it is important to understand how characteristics of both partners may contribute to IPV risk. This information can aid in IPV screening, prevention and treatment programs. For example, healthcare providers can initiate discussions with patients who present with IPV risk profiles, and make recommendations for prevention or referrals for treatment (Reingle Gonzalez, Connell, Businelle, Jennings, & Chartier, 2014).

A substantial body of research links substance use behaviors and IPV. As described by the proximal effects model, alcohol intoxication is a causal agent of IPV either via psychopharmacologic effects of alcohol on cognitive processing or through alcohol-related expectancies (Klostermann & Fals-Stewart, 2006). A meta-analytic review by Foran and O'Leary (2008) found a small to moderate effect size among adults for the association between alcohol use/abuse and male-to-female partner violence (MFPV) and a small effect size for female-to-male partner violence (FMPV). Findings from the multinational Gender, Alcohol and Culture: An International Study (GENACIS) project showed that self-reported IPV severity was significantly higher for incidents in which one or both partners had been drinking (Graham, Bernards, Wilsnack, & Gmel, 2011). Moreover, among a U.S. community sample of couples, likelihood of perpetrating verbal and physical aggression, and likelihood of being verbally and physically victimized, increased significantly when alcohol was consumed in the previous 4 hours (Testa & Derrick, 2014).

Less is known about the relationship between marijuana use and IPV. Despite research evidence that pre-clinical administration of delta-9-tetrahydrocannabinol (THC) decreases aggression (Taylor & Hulsizer, 1998), numerous studies have found marijuana use linked to IPV. For example, a meta-analysis conducted by Moore et al. (2008) found that marijuana was positively associated with partner violence ($d = .18$). Marijuana use was significantly associated with IPV perpetration in adolescence, and with perpetration and victimization in early adulthood among participants in the Add Health study (Reingle et al., 2012). In cross-sectional analysis of National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) data, participants with a past-year marijuana use disorder were at elevated risk for IPV victimization, or both victimization and perpetration (Reingle, Jennings, Connell, Businelle, & Chartier, 2014). Additionally, among National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) respondents who were marijuana users, marijuana withdrawal symptoms were associated with partner aggression, but only among those with a history of aggression (Smith, Homish, Leonard, & Collins, 2013). Yet based on a sample of those arrested for domestic violence, Stuart et al. (2013) found that women were less likely to perpetrate physical violence on days in which marijuana was used relative to non-use days.

Data on cigarette smoking obtained from population-based surveys and clinical samples indicate that women who are current smokers are more likely than non-smokers to report past-year IPV victimization (Gerber, Ganz, Lichter, Williams, & McCloskey, 2005; Vest, Catlin, Chen, & Brownson, 2002). A meta-analysis of IPV victimization and smoking found a small to medium composite effect size (Crane, Hawes, & Weinberger, 2013), although few studies in the analysis included male victims. Analysis of NESARC data showed that male and female IPV victims were significantly more likely than non-victims to report incident nicotine dependence (AOR=1.5; 95% CI 1.1, 2.1) (Okuda et al., 2011). Interestingly, NESARC respondents with co-occurring cannabis use disorders and nicotine dependence were three times as likely to report IPV (either perpetration or victimization) compared to those with nicotine dependence only (Peters, Schwartz, Wang, O'Grady, & Blanco, 2014). Stuart and colleagues reported elevated prevalence of smoking (>60%) among male and female IPV perpetrators arrested for domestic violence and court-referred to a batterer's intervention program (Stuart et al., 2006; Stuart, Moore, Kahler, Ramsey, & Strong, 2004). Nicotine may be related to IPV through common predictors of both behaviors, such as impulsivity. Smoking may also be a way to cope with the stress of a relationship marred by aggression. Lastly, those who are nicotine dependent may be more irritable and prone to conflict with their partner, which could increase the likelihood that IPV will occur.

The purpose of this study is to determine whether discrepant or concordant patterns of heavy drinking, marijuana use and smoking are associated with increased risk for MFPV and FMPV among a population-based sample of married/cohabiting couples after accounting for numerous partner violence risk factors. Previous studies have shown that discrepant substance use patterns and concordant heavy drinking are linked with negative dyadic outcomes, such as lower levels of relationship satisfaction (Homish, Leonard, Kozlowski, & Cornelius, 2009; Meiklejohn, Connor, & Kypri, 2012) and marital dissolution (Leonard, Smith, & Homish, 2014; Torvik, Røysamb, Gustavson, Idstad, & Tambs, 2013). In terms of IPV, Smith et al. (2014) found that couples who were concordant for frequent marijuana use were at lower risk for IPV over time; couples' discordant use was also associated with lower IPV perpetration. Leadley and colleagues (2000) reported that couples with discrepant drinking patterns were at elevated risk for physical aggression, yet Testa et al. (2012) found that discrepant drinking couples were not more likely to perpetrate IPV. Neither of these two studies included measures of tobacco or marijuana use, however. Because use of these substances often co-occurs with drinking (Redonnet, Chollet, Fombonne, Bowes, & Melchior, 2012), it is important to consider their potential impacts on partner aggression. Discrepant patterns of substance use could result in increased couple conflict, and thereafter physical aggression. Moreover, prior research on assortative mating (i.e., the social and biological mechanisms that lead to mate selection between similar individuals) suggests that spouses are likely to share smoking and drinking behaviors (Agrawal et al., 2006; Grant et al., 2007). We hypothesized that couples with discordant substance use patterns would be at elevated risk for each type of IPV compared to couples in which neither partner was a heavy drinker, smoker, or marijuana user.

METHODS

Sample and Data Collection

The sample and survey data collection methodology is described in Cunradi, Mair, Todd, and Remer (2012). Briefly, from an initial geographic sample of 138 California cities with 2000 Census populations between 50,000 and 500,000, 50 geographically distinct cities were sampled. The sample of 50 cities is a purposive sample of cities intended to maximize validity with regard to the geography and ecology of the state.

The study aim was to recruit approximately 40 couples from each of the 50 cities for a final sample of 2,000 couples (4,000 individuals). Beginning in February 2010, we mailed a bilingual letter (in Spanish and English) announcing the Community Health Study of Couples to all listed sample points (addresses) in a purchased sample of addresses and telephone numbers of households drawn from credit card records, utility company records, and magazine subscription lists. Potential respondents were contacted via telephone 3–7 days after receiving the mailing. Households with couples who (a) were married or cohabiting, (b) had lived together for at least 12 months at the time of the survey interview, (c) were at least 18 years old, and (d) were fluent in English or Spanish were considered to be eligible for inclusion. If the potential respondent expressed interest in the study, verbal informed consent was obtained. A toll-free number was provided to respondents who wished to call back at their own convenience or from a location other than their home.

In all cases, trained, professional survey interviewers first spoke with the female partner in the couple using computer-assisted telephone interviewing (CATI) procedures. If the female partner reported that she had experienced severe IPV (e.g., had been beaten up by her partner), the interviewer asked her permission before contacting her male partner for his interview (in which no questions about IPV were asked). Otherwise, the male partner was contacted for the full interview following completion of the female's interview. Sixteen women reported that they had experienced severe IPV; all gave permission for their male partners to be interviewed. Each respondent was offered a \$40.00 check as an incentive to participate in the study. The check and a bilingual fact sheet on California's 2-1-1 information system for a variety of social service agencies and organizations were mailed to the respondent following their survey participation. Interviews were obtained from 1,950 couples. On average, interviews lasted 31 minutes for female respondents and 29 minutes for male respondents. Data collection activities concluded in September 2010. The full CASRO (Council of American Survey Research Organizations) or ISER (Institute for Social and Economic Research) response rate was 59.5%; the Cooperation Rate (Lynn, Beerten, Laiho, & Martin, 2001) was 78.3%. All survey procedures were approved by the Institutional Review Board (IRB) of the Pacific Institute for Research and Evaluation, and a Certificate of Confidentiality was obtained from the National Institute on Alcohol Abuse and Alcoholism.

Measures

Intimate partner violence—Past-12 month IPV was measured with the physical assault subscale of the revised Conflict Tactics Scale (CTS2). The internal consistency reliability

(alpha) of this subscale is .86 (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The subscale includes questions about the occurrence of 12 behaviors (e.g., pushing or shoving; grabbing; slapping; beating up) that the respondent may have perpetrated against their spouse/partner, and that their spouse/partner may have perpetrated against them. Separate dependent variables were created for MFPV and FMPV. For each behavior in the subscale, aggression was considered to have occurred if at least one partner reported a violent incident in the past year, regardless of whether the incident was corroborated by the other partner. If either partner reported occurrence of a violent incident, the partner violence variable (MFPV or FMPV, depending on the gender of the perpetrator) was coded “1;” if neither reported an incident, the variable was coded ‘0.’ This method allows for the correction of under-reporting of violence common in one partner data (Caetano, Cunradi, Schafer, & Clark, 2000).

Heavy drinking—Following methodology described by Leonard, Smith and Homish (2014), a variable was created to represent heavy drinking, defined as having engaged in past-year binge drinking or drinking to intoxication. To measure binge drinking, respondents were asked to state how many times in the past 12 months they drank 4 or more drinks in about 2 hours (if female), or 5 or more drinks in about 2 hours (if male). To measure frequency of intoxication, respondents were asked, “During the past 12 months, about how many times did you drink enough to feel intoxicated or drunk, that is, when your speech was slurred, you felt unsteady on your feet, or you had blurred vision?” A single frequency variable was created for each respondent, based on the maximum score from these two items. A dichotomous heavy drinking variable was then created based on the top decile of each gender-specific frequency variable. For males, this group included those who engaged in heavy drinking at least 10 times over the past year; for females, it included those who engaged in heavy drinking at least 3 times over the past year. In order to categorize couple-level drinking patterns, a categorical variable was created with the following four categories: (a) discrepant heavy drinking – husband only; (b) discrepant heavy drinking – wife only; (c) concordant heavy drinking; and (d) neither partner was a heavy drinker (reference category).

Marijuana use—Respondents were asked, “How many times during the past 12 months, or 365 days, did you use marijuana or hashish (weed, pot, hash) without a doctor’s instruction?” Amount of marijuana use was not measured. A dichotomous variable was created, coded ‘1’ for those who reported any past-year marijuana use and ‘0’ for those with no past-year use. Next, a categorical variable was created with the following categories: (a) discrepant marijuana use – husband only; (b) discrepant marijuana use – wife only; (c) concordant marijuana use; and (d) neither partner uses marijuana (reference category).

Smoking—Respondents were asked, “Did you smoke any cigarettes in the past 30 days?” A binary variable was created, coded ‘1’ for those who answered affirmatively and ‘0’ for those who did not smoke. A categorical variable was then created with the following categories: (a) discrepant smoking – husband; (b) discrepant smoking – wife; (c) concordant smoking; and (d) neither partner smokes (reference category).

Depression—Depression was measured with 6 items from the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). Items were scored from 1–4, with a higher score representing greater depression, and averaged to create a composite score for each partner (Cronbach’s α s = .62 and .67 for females and males, respectively).

Impulsivity—This construct was measured with a 3-item scale that originated in the National Alcohol Survey (Schafer, 1994) and has been used in prior IPV studies (Caetano et al., 2000; Cunradi, Todd, Duke, & Ames, 2009). Items were scored from 1–4, and were reverse-coded prior to computing separate composite scores for each partner (Cronbach’s α s = .76 and .78 for females and males, respectively) so that higher scores represented higher impulsivity.

Adverse childhood experiences—Childhood exposure to violence, alcoholism, and other adverse events was measured with a modified version of the Adverse Childhood Experiences (ACE) scale (Felitti et al., 1998). The modified ACE (Cabrera, Hoge, Bliese, Castro, & Messer, 2007) covers six categories of experiences respondents may have encountered while they were growing up. A score (range of 0 – 6) was created for each respondent by summing the number of positive responses to each of the six categories.

Demographic factors—Because ages of partners were strongly correlated ($r = .79$), using them as separate predictors proved to be problematic due to high collinearity. We therefore used a couple-level average of partners’ ages. Educational attainment consisted of 4 categories: did not graduate from high school or obtain a General Equivalency Diploma (GED); graduated from high school or obtained a GED; enrolled in or completed some post-high school education/training (vocational training, some college, or AA degree); and graduated with bachelor’s degree or completed some post-graduate education (reference category). Self-reported race/ethnicity was categorized as Hispanic/Latino; non-Hispanic Black/African-American; Asian/Asian-American/Pacific Islander; multi-racial/other; and non-Hispanic white (reference category).

Data Analysis

We estimated a series of 8 multiple logistic regression models for each of our two outcome measures (MFPV, FMPV). The only predictors in the first 4 models of each series were dummy vectors coding for discrepant substance use, as follows: Model 1-discrepant heavy drinking; Model 2-discrepant (past year) marijuana use; Model 3-discrepant (past-30 day) cigarette smoking; Model 4-all three discrepant substance use measures. We estimated these models using SAS PROC LOGISTIC with “neither partner” as the reference category for substance use measures and the occurrence of IPV treated as the “event”. Models 5–8 paralleled Models 1–4 in terms of the substance use measures included as predictors, but also included partner-specific measures of variables known to be related to IPV outcomes (education level, race/ethnicity, depression, adverse childhood experiences, and impulsivity) and mean partner age. As such, results from Models 1–4 reflect unadjusted associations between discrepant use and IPV, while results from Models 5–8 reflect adjusted estimates. All models use data from only those couples who had complete data on the outcomes and the full set of predictors used in Models 5–8 ($n = 1,759$ couples). In addition to the substance

use-IPV associations estimated in the main analyses, we estimated focused contrasts for each model comparing (a) husband-only use couples to both-partner use couples, (b) wife-only use couples to both-partner use couples, and (c) husband-only use couples to wife-only use couples. We report odds ratios and 95% profile likelihood confidence intervals.

RESULTS

Sample Characteristics

Among couples in the analyses, 6.7% reported MFPV, and 9.7% reported FMPV. Mean couple age was 41.9 years (*SD* 5.5). A majority of male and female partners (52.1% and 51.2%, respectively) had completed at least a college education. In terms of race/ethnicity, most males and females (70.3% and 64.2%, respectively) described themselves as white non-Hispanic. Approximately 20% of males, and 22% of females, identified as Hispanic. For males, 3.1% were African American, 4.1% were Asian American, and 2.4% described their race/ethnicity as multiracial or belonging to other racial/ethnic groups. For females, 2.3% were African American, 4.8% were Asian American, and 6.5% described themselves as multiracial or belonging to other racial/ethnic groups.

Regarding heavy drinking patterns, most couples (79.7%) were classified as non-heavy drinkers based on neither partners' drinking reaching the top 10th percentile for their gender. Nearly 8% of couples were classified as husband-only discrepant heavy drinkers; approximately 9% of couples were classified as wife-only discrepant heavy drinkers. Concordant heavy drinking (i.e., both partners were classified as heavy drinkers) was reported in 3.4% of couples. Regarding past-year marijuana use, most couples (88.8%) were classified as non-users. Nearly 6% of couples were classified as husband-only discrepant users, and 2.7% of couples were classified as wife-only discrepant users. Both partners reported any past-year marijuana use in 2.6% of couples. In terms of past-30 day smoking, approximately 87% of couples were non-smokers. Husband-only discrepant smoking was reported by 6.2% of couples; 3.9% of couples were classified as wife-only discrepant smokers. Concordant smoking was reported by 2.7% of couples.

We examined bivariate associations between the discrepant substance use measures using exact tests and contingency coefficients (*C*s), and all three measures were significantly related to one another (*ps* < .0001). Associations between the discrepant marijuana use measure and the discrepant heavy drinking (*C* = .347) and discrepant smoking (*C* = .207) measures were stronger than the association between discrepant heavy drinking and discrepant smoking measures (*C* = .160).

Unadjusted estimates of discrepant substance use-IPV associations

Table 1 shows the unadjusted estimates for associations between each type of couples' substance use and partner violence. For heavy drinking (Model 1), the results show that husband-only (discrepant) couples and both-partner (concordant) couples were more likely to report MFPV and more likely to report FMPV than couples in which neither partner is a heavy drinker. For marijuana (Model 2), concordant-use couples were more likely to report MFPV, while couples in which only the husband used marijuana were more likely to report

FMPV, when compared to couples in which neither partner used marijuana. For cigarette use (Model 3), couples in which only the wife smoked were more likely than non-smoking couples to report FMPV. Discrepant and concordant cigarette use was not related to MFPV. None of the focused contrasts were significant for any of the models. In models considering all three substance use measures (Model 4), the patterns of significant associations for MFPV mirrored those for Models 1–3. Specifically, couples with husband-only heavy drinkers, and couples that consisted of concordant heavy drinkers, were at elevated risk for MFPV compared to couples in which neither was a heavy drinker. Couples comprised of concordant marijuana users were at elevated risk for MFPV compared to couples in which neither partner used marijuana. In Model 4 for FMPV, results were similar to those seen in Models 1–3. Couples with husband-only heavy drinkers, and couples that consisted of concordant heavy drinkers, were at elevated risk for FFPV compared to couples in which neither was a heavy drinker. Couples with husband-only marijuana users were at elevated risk for FMPV compared to couples in which neither partner used marijuana. Couples with discordant or concordant smokers were not at elevated risk for either MFPV or FMPV.

Estimates of discrepant substance use-IPV associations, adjusted for background variables

Table 2 shows the associations between each of the couples' substance use measures and IPV, adjusted for demographic and psychosocial variables. Regarding heavy drinking patterns (Model 5), wife-only discrepant drinking couples were at elevated risk for MFPV (OR=2.22; 95% CI 1.18, 3.97) compared to couples in which neither partner was a heavy drinker. When compared to Model 1, adjustment for demographic and psychosocial variables strengthened the association between wife-only discrepant drinking and MFPV seen in Model 5. In contrast, couples with husband-only discrepant heavy drinkers, and concordant heavy drinker couples, were no longer at elevated risk for MFPV; adjustment for demographic and psychosocial variables reduced the significant associations seen in Model 1. In terms of heavy drinking and FMPV (Model 5), couples with a husband-only discrepant drinker were at increased risk compared to couples in which neither partner was a heavy drinker (OR=1.88; 95% CI 1.09, 3.12); significance was slightly reduced from Model 1. Couples in which both partners were heavy drinkers were no longer at elevated risk for FMPV. Here, adjustment for demographic and psychosocial variables reduced the significant association seen in Model 1.

In terms of marijuana use (Model 6), couples in which both partners were past-year users were at increased risk for MFPV compared to couples in which neither partner used marijuana (OR=3.14; 95% CI 1.30, 6.91). Discrepant marijuana use couples were not at elevated risk for MFPV. For FMPV, couples with husband-only discrepant marijuana users were at increased risk (OR=2.59; 95% CI 1.45, 4.45) compared to couples in which neither partner used marijuana. Couples with wife-only discrepant marijuana users and couples with concordant marijuana use were not at increased risk for FMPV. Adjustment for demographic and psychosocial variables did not substantially alter the associations seen in Model 2.

Regarding cigarette smoking (Model 7), none of the couples' patterns were associated with increased risk for MFPV when compared to couples in which neither smoked. For FMPV,

couples with wife-only discrepant smokers were at elevated risk (OR=2.02; 95% CI 0.96, 3.93) compared to non-smoking couples. Couples with husband-only discrepant smokers and couples comprised of dual smokers were not at increased FMPV risk relative to non-smoking couples. The results seen in Model 7 are similar to the unadjusted results seen in Model 3.

When all substance use patterns are considered together (Model 8), couples with wife-only discrepant drinkers remained at elevated risk for MFPV (OR=2.25; 95% CI 1.18, 4.09), as did couples in which both partners were marijuana users (OR=2.96; 95% CI 1.15, 7.00). Couples with husband-only discrepant marijuana users remained at elevated risk for FMPV (OR=2.19; 95% CI 1.18, 3.89). None of the focused contrasts were significant.

Several of the demographic and psychosocial variables were significantly associated with IPV in Models 5–8. Couples with wives identifying as Asian or Asian-American or as multiracial/other were more likely to report MFPV than were couples with wives identifying as non-Hispanic white, and couples with husbands identifying as Hispanic/Latino were more likely to report MFPV than were couples with husbands identifying as non-Hispanic white. Husband's impulsivity and adverse childhood experiences (ACE), and wife's depression, were all positively related to occurrence of MFPV.

Couples in which the husband had a high school diploma (or GED) as their highest level of education were less likely to report FMPV than couples in which the husband had at least a 4-year degree. Couples in which the wife identified as Asian-American or as multiracial/other were also more likely to report FMPV than were couples in which the wife identified as non-Hispanic white, while couples in which the husband identified as Asian or Asian-American were less likely to report FMPV than were couples in which the husband identified as non-Hispanic white. Husband's impulsivity and depression, and wife's depression and report of ACE, were all positively related to occurrence of FMPV.

DISCUSSION

This study is among the first to consider the relationship of dyadic patterns of discordant and concordant heavy drinking, marijuana use, and smoking to partner aggression among a sample of married/cohabiting couples. Structuring the data this way provides new information that indicates some of these dyadic patterns contribute to IPV risk. Findings from our analyses considering individual measures of discrepant substance use provide some support for the hypothesis that couples with discordant substance use patterns would be at elevated risk for each type of IPV compared to couples in which neither partner was a heavy drinker, smoker, or marijuana user. Support was more limited in analyses where multiple discrepant use measures were considered simultaneously. For example, when considered independently, increased risk for MFPV was observed among couples with wife-only discrepant heavy drinking, and among those in which both partners used marijuana, even after adjusting for background demographic and psychosocial variables. For FMPV, the findings showed that couples with husband-only discrepant heavy drinkers, husband-only discrepant marijuana users, and those with wife-only discrepant smokers were at increased risk when each of these patterns was considered independently. In the model where all

substance use is considered together, however, husband-only marijuana use discrepant couples were at increased risk for FMPV; discrepant drinking and smoking were no longer significant. This suggests that while these dyadic substance use patterns were significant when considered independently, the diminished influence of discrepant drinking and smoking on FMPV in the final model may be attributed to their association with marijuana use. The results indicate that although it is important to consider the role of each partner's substance use in contributing to the likelihood of IPV, the patterns of their use in relation to each other may be of particular salience. As medical marijuana laws are enacted in more states, with concomitant increases in use (Cerdá, Wall, Keyes, Galea, & Hasin, 2012), couples' marijuana use patterns should be incorporated into IPV research in order to test how these patterns may contribute to risk for partner aggression both independently and in conjunction with heavy alcohol use.

For both heavy drinking and marijuana use, the results of the fully adjusted model (Model 8) showed that couples with discrepant use patterns were twice as likely to experience aggression compared to couples who do not engage in these substance use behaviors. Specifically, discrepant heavy drinking wives were at increased risk for MFPV; discrepant marijuana use husbands were at increased risk for FMPV. A potential explanation for these findings is that the wife's heavy drinking or the husband's marijuana use may be deemed unacceptable by their spouse, which could lead to conflict and thereafter aggression. Alternatively, the discrepant substance use seen here may be a response to prior conflict and aggression in the relationship. Our finding that concordant marijuana use couples were at greater risk for MFPV compared to couples in which neither used marijuana is contrary to results of Smith et al. (2014), who found an inverse association between frequency of marijuana use and risk for IPV. Given the paucity of research on dyadic substance use patterns and IPV, further studies are needed to clarify these associations.

Strengths and Limitations

This study has several strengths. The analysis is based on a geographically representative sample recruited to the Community Health Study of Couples from 50 California cities. Obtaining separate, confidential interviews with both partners in the couple allows for the calculation of upper-bound estimates of male-to-female and female-to-male IPV prevalence. This helps reduce bias associated with single-person accounts of IPV, which often underestimate prevalence (Cunradi, Todd, Mair, & Remer, 2013). Previous analysis of the data herein showed that agreement between partners as to the occurrence of past year MFPV or FMPV was low (Cunradi et al., 2012), thus underscoring the importance of using both partners' reports about intimate aggression. Additionally, obtaining dyadic data enabled the substance use patterns of both partners to be modelled in relationship to risk for MFPV and FMPV. Lastly, the study's analysis accounted for psychosocial factors that are associated with increased likelihood of IPV, such as impulsivity (Cunradi, Ames, & Duke, 2011), depression (Reingle et al., 2014), and adverse childhood experiences (Roberts, McLaughlin, Conron, & Koenen, 2011), as well as demographic correlates, such as age, race/ethnicity, and education (Cunradi, 2007). This is important because although most studies of substance use and IPV adjust for demographic characteristics, relatively few also take into account each partner's psychosocial characteristics that are linked to both substance use and IPV.

The findings should be interpreted in the context of several study limitations. First, the cross-sectional study design precludes causal inference regarding the role of discrepant or concordant substance use patterns as predictors of IPV. Although we speculate that discrepant substance use could result in couple conflict that may lead to aggression, the data do not allow a direct test of this hypothesis. Moreover, no information was collected as to whether couples with concordant substance use engaged in this behavior together or at the same or different times. Thus, while the study findings suggest that certain patterns of couples' substance use are associated with risk for IPV, more research is needed that can provide a temporal link between each partner's day-to-day substance use and partner violence events. Second, although the analyses accounted for the most common types of substance use, the study did not obtain measures of cannabis use disorders or nicotine dependence. These indicators of addiction may be more closely related to behaviors that result in couple conflict and aggression than indicators of past-month smoking or past-year marijuana use. Creating concordance measures using dichotomized substance use measures also collapses across what may be important differences in substance use. Finally, it should be noted that the study's sample comprised couples with relatively low levels of heavy drinking; furthermore, among couples reporting any IPV, most of their behaviors are categorized as "moderate" aggression (e.g., pushing, grabbing) according to the CTS2 typology proposed by Straus et al. (1996). The current findings may therefore underestimate the association between dyadic patterns of heavy drinking and IPV. Future studies should test these associations among higher-risk populations, including young adult couples and samples obtained in certain clinical settings, such as emergency medicine departments.

Despite its limitations, the current study adds to the substance use-IPV literature by testing if discrepant or concordant heavy drinking, marijuana use and smoking among couples are associated with MFPV and FMPV. From a prevention standpoint, the results suggest that couples should be made aware about how their own substance use patterns, independently and in concert with those of their partner, may increase risk for partner violence. This information can be conveyed in routine settings, such as during healthcare provider visits. Prevention messages can also be promoted in community-based settings and through social media campaigns.

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Table 1

Unadjusted Odds Ratios and (95% confidence intervals^a) for Logistic Regression Models Predicting MFPV and FMPV from Substance Use Measures.

Predictor	Model 1		Model 2		Model 3		Model 4	
	MFPV	FMPV	MFPV	FMPV	MFPV	FMPV	MFPV	FMPV
Heavy drinking								
Husband-only	2.40** (1.54, 3.69)	1.84** (1.25, 2.68)					2.33** (1.48, 3.62)	1.70** (1.15, 2.49)
Wife-only	1.40 (0.60, 2.83)	1.17 (0.58, 2.16)					1.33 (0.56, 2.75)	0.99 (0.48, 1.88)
Both partners	3.15** (1.64, 5.72)	2.35** (1.30, 4.03)					2.68** (1.35, 4.99)	2.04* (1.11, 3.56)
Neither partner ^b	-	-					-	-
Marijuana use								
Husband-only			1.46 (0.67, 2.84)	2.53** (1.46, 4.17)			1.17 (0.52, 2.32)	2.08** (1.19, 3.51)
Wife-only			1.02 (0.24, 2.85)	1.79 (0.72, 3.83)			0.89 (0.21, 2.60)	1.59 (0.62, 3.52)
Both partners			3.72** (1.64, 7.60)	1.88 (0.76, 4.04)			2.86* (1.22, 6.14)	1.46 (0.57, 3.24)
Neither partner ^b			-	-			-	-
Cigarette use								
Husband-only					0.82 (0.31, 1.76)	0.88 (0.41, 1.69)	0.72 (0.27, 1.57)	0.77 (0.35, 1.49)
Wife-only					1.34 (0.51, 2.92)	2.06* (1.03, 3.80)	1.23 (0.46, 2.76)	1.84 (0.90, 3.46)
Both partners					0.94 (0.22, 2.62)	1.67 (0.68, 3.57)	0.75 (0.18, 2.17)	1.39 (0.55, 3.04)
Neither partner ^b					-	-	-	-

Notes.

^a Profile likelihood estimates.

^b Reference category.

* $p < .05$.

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Table 2

Odds Ratios and (95% confidence intervals^a) for Logistic Regression Models Predicting MFPV and FMPV from Substance Use Measures, Adjusted for Background Variables

Predictor	Model 5		Model 6		Model 7		Model 8	
	MFPV	FMPV	MFPV	FMPV	MFPV	FMPV	MFPV	FMPV
Heavy drinking								
Husband-only	1.83 (0.94, 3.36)	1.88* (1.09, 3.12)					1.90 (0.94, 3.62)	1.57 (0.88, 2.69)
Wife-only	2.22** (1.18, 3.97)	1.31 (0.73, 2.24)					2.25* (1.18, 4.09)	1.22 (0.67, 2.11)
Both partners	2.10 (0.83, 4.72)	1.99 (0.90, 4.04)					1.72 (0.65, 4.10)	1.66 (0.72, 3.52)
Neither partner ^b	-	-					-	-
Marijuana use								
Husband-only			1.33 (0.57, 2.76)	2.59** (1.45, 4.45)			1.19 (0.49, 2.60)	2.19** (1.18, 3.89)
Wife-only			0.94 (0.21, 2.79)	1.89 (0.74, 4.22)			0.76 (0.16, 2.39)	1.61 (0.61, 3.74)
Both partners			3.14** (1.30, 6.91)	1.43 (0.55, 3.22)			2.96* (1.15, 7.00)	1.19 (0.44, 2.85)
Neither partner ^b			-	-			-	-
Cigarette use								
Husband-only					0.70 (0.26, 1.60)	0.84 (0.38, 1.68)	0.59 (0.21, 1.39)	0.73 (0.33, 1.47)
Wife-only					1.17 (0.42, 2.74)	2.02* (0.96, 3.93)	0.94 (0.32, 2.32)	1.70 (0.79, 3.37)
Both partners					0.49 (0.10, 1.58)	1.28 (0.48, 2.99)	0.30 (0.06, 1.08)	1.00 (0.36, 2.39)
Neither partner ^b					-	-	-	-
Couple mean age	1.00 (0.97, 1.04)	0.98 (0.95, 1.01)	1.00 (0.96, 1.04)	0.98 (0.95, 1.01)	0.99 (0.96, 1.03)	0.98 (0.95, 1.01)	1.00 (0.97, 1.04)	0.98 (0.95, 1.01)
Wife education								
Less than HS/GED	1.48 (0.50, 4.06)	2.32 (0.91, 5.67)	1.47 (0.50, 3.99)	2.36 (0.93, 5.77)	1.50 (0.51, 4.10)	2.31 (0.91, 5.63)	1.52 (0.52, 4.16)	2.39 (0.94, 5.84)

Predictor	Model 5		Model 6		Model 7		Model 8	
	MFPV	FMPV	MFPV	FMPV	MFPV	FMPV	MFPV	FMPV
HS diploma/GED	0.66 (0.30, 1.37)	0.75 (0.38, 1.39)	0.68 (0.30, 1.40)	0.73 (0.30, 1.36)	0.68 (0.31, 1.41)	0.72 (0.37, 1.34)	0.73 (0.33, 1.52)	0.71 (0.36, 1.34)
Some post-HS	1.18 (0.72, 1.92)	1.09 (0.72, 1.63)	1.15 (0.70, 1.87)	1.09 (0.72, 1.64)	1.20 (0.73, 1.94)	1.04 (0.69, 1.57)	1.23 (0.74, 2.00)	1.09 (0.72, 1.65)
Four-year degree ^b	-	-	-	-	-	-	-	-
Husband education								
Less than HS/GED	0.47 (0.13, 1.41)	0.58 (0.20, 1.49)	0.45 (0.13, 1.34)	0.57 (0.20, 1.48)	0.49 (0.14, 1.45)	0.55 (0.19, 1.43)	0.50 (0.14, 1.49)	0.62 (0.22, 1.61)
HS diploma/GED	0.77 (0.38, 1.50)	0.50* (0.26, 0.93)	0.85 (0.42, 1.64)	0.51* (0.26, 0.94)	0.85 (0.42, 1.64)	0.53 (0.27, 0.98)	0.84 (0.42, 1.64)	0.51* (0.26, 0.94)
Some post-HS	1.03 (0.62, 1.69)	1.07 (0.70, 1.61)	1.08 (0.65, 1.78)	1.10 (0.72, 1.65)	1.11 (0.67, 1.83)	1.10 (0.72, 1.65)	1.04 (0.62, 1.71)	1.06 (0.70, 1.60)
Four-year degree ^b	-	-	-	-	-	-	-	-
Wife race/ethnicity								
Hispanic/Latino	0.94 (0.51, 1.69)	0.98 (0.57, 1.62)	0.90 (0.48, 1.64)	1.04 (0.61, 1.72)	0.86 (0.40, 1.55)	0.97 (0.57, 1.61)	0.93 (0.50, 1.68)	1.03 (0.60, 1.72)
African-American	0.88 (0.15, 4.03)	1.50 (0.37, 5.38)	0.83 (0.14, 3.74)	1.38 (0.34, 4.93)	0.82 (0.14, 3.69)	1.43 (0.35, 5.13)	1.00 (0.18, 4.52)	1.47 (0.36, 5.37)
Asian/Asian-American	3.44** (1.28, 8.39)	4.51** (2.07, 9.37)	3.18* (1.18, 7.70)	4.56** (2.09, 9.50)	3.02* (1.13, 7.31)	4.41** (2.03, 9.14)	3.49** (1.29, 8.57)	4.80** (2.19, 9.07)
Multiracial/Other	2.75** (1.40, 5.12)	2.08* (1.15, 3.60)	2.67** (1.38, 4.94)	2.12** (1.17, 3.69)	2.57** (1.33, 4.75)	2.01* (1.12, 3.48)	2.95** (1.50, 5.55)	2.19** (1.21, 3.82)
White, non-Hispanic ^b	-	-	-	-	-	-	-	-
Husband race/ethnicity								
Hispanic/Latino	1.88* (1.04, 3.30)	0.81 (0.46, 1.40)	1.80* (1.00, 3.19)	0.78 (0.44, 1.33)	1.77 (0.98, 3.11)	0.79 (0.44, 1.35)	1.92* (1.06, 3.40)	0.79 (0.44, 1.35)
African-American	2.67 (0.73, 8.12)	1.33 (0.39, 3.86)	2.50 (0.69, 7.47)	1.34 (0.40, 3.85)	2.50 (0.70, 7.51)	1.26 (0.37, 3.64)	2.47 (0.68, 7.56)	1.39 (0.41, 4.04)
Asian/Asian-American	0.62 (0.17, 1.87)	0.30* (0.10, 0.80)	0.55 (0.15, 1.66)	0.29* (0.09, 0.77)	0.55 (0.16, 1.64)	0.28* (0.09, 0.74)	0.60 (0.17, 1.82)	0.30* (0.10, 0.80)
Multiracial/Other	0.81 (0.18, 2.45)	1.00 (0.35, 2.40)	0.69 (0.16, 2.12)	0.81 (0.28, 1.96)	0.77 (0.18, 2.31)	0.90 (0.32, 2.18)	0.85 (0.19, 2.60)	0.88 (0.31, 2.15)
White, non-Hispanic ^b	-	-	-	-	-	-	-	-

Predictor	Model 5		Model 6		Model 7		Model 8	
	MFPV	FMPV	MFPV	FMPV	MFPV	FMPV	MFPV	FMPV
Wife impulsivity	1.00 (0.72, 1.37)	0.94 (0.71, 1.23)	1.03 (0.74, 1.41)	0.96 (0.72, 1.26)	1.03 (0.74, 1.40)	0.95 (0.72, 1.25)	1.00 (0.71, 1.37)	0.92 (0.69, 1.22)
Husband impulsivity	2.03** (1.55, 2.66)	1.43** (1.12, 1.81)	2.02** (1.54, 2.64)	1.43** (1.13, 1.82)	2.09** (1.59, 2.73)	1.45** (1.14, 1.84)	2.06** (1.56, 2.70)	1.43** (1.12, 1.81)
Wife depression	2.07** (1.33, 3.19)	2.12** (1.46, 3.06)	2.06** (1.32, 3.17)	2.15** (1.48, 3.11)	2.08** (1.34, 3.19)	2.05** (1.41, 2.95)	2.11** (1.35, 3.28)	2.11** (1.45, 3.07)
Husband depression	1.46 (0.93, 2.26)	1.73** (1.19, 2.50)	1.45 (0.93, 2.25)	1.71** (1.17, 2.48)	1.48 (0.94, 2.28)	1.79** (1.23, 2.59)	1.44 (0.91, 2.24)	1.71** (1.17, 2.48)
Wife adverse childhood events	1.15 (0.99, 1.32)	1.19** (1.05, 1.34)	1.15 (0.99, 1.32)	1.18** (1.04, 1.33)	1.15 (1.00, 1.33)	1.19** (1.05, 1.34)	1.14 (0.98, 1.31)	1.17* (1.04, 1.32)
Husband adverse childhood events	1.22* (1.03, 1.44)	1.06 (0.90, 1.23)	1.21* (1.02, 1.42)	1.06 (0.90, 1.22)	1.23* (1.04, 1.45)	1.06 (0.91, 1.23)	1.25* (1.05, 1.47)	1.06 (0.90, 1.23)

Notes.

^a Profile likelihood estimates.

^b Reference category.

* $p < .05$.

** $p < .01$.