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Marijuana Use by Intimate Partners: Does Discrepant Use Impair Relationship Functioning?

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Abstract

Intimate couples with discrepant use of alcohol and other drugs experience poorer relationship functioning relative to couples with concordant use or non-use. Within a sample of marijuana-using couples, we hypothesized that greater discrepancy in marijuana use frequency between partners would be associated with lower relationship satisfaction and perceived partner responsiveness and with greater conflict, negative interpersonal exchange, and psychological and physical aggression. The Actor Partner Interdependence Model (APIM) allowed us to account for the effects of each partner's marijuana use, as well as the discrepancy between partners' use, on his or her own perceptions of relationship functioning. Using multivariate, two-level models, we considered both between-couple and within-couple effects of partner marijuana discrepancy using 4 waves of data collected over 10 months. The sample consisted of heterosexual community couples (ages 18 – 30) in which at least one partner reported using marijuana two or more times per week. For several outcome measures, we observed negative within-couple discrepancy effects on reports of relationship functioning: at time points when absolute discrepancy in marijuana use was greater than typical for the couple, relationship functioning was poorer. The pattern was the same regardless of whether it was the male or female partner who used more frequently. There were also some negative between-couple effects associated with more frequent female use. Findings replicate and extend prior research on partner discrepancy by demonstrating the dynamic nature of these effects over time.

Keywords

intimate partner violence; marijuana; intimate relationships; actor-partner interdependence model

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Marijuana is widely used in the United States, particularly by young adults. In 2015, 8.4% of Americans and 19.8% of 18–25 year olds used marijuana in the past month (Center for Behavioral Health Statistics and Quality, 2016). Although marijuana legalization, usage, and acceptance have increased rapidly over the past decade, few studies have considered the effects of partner marijuana use on marital or relationship functioning. The vast majority of adults experience intimate partnerships, which serve as important sources of both social support and stress (Karney & Bradbury, 1995; Ogolsky, Monk, Rice, Theisen, & Maniotes, 2017). The present study was designed to consider the impact of marijuana use by intimate partners on relationship functioning over a 10-month period. Using a sample of married or cohabiting young adult couples, we considered whether each partner's marijuana use, as well as the discrepancy in their use, influenced each partner's self-reported relationship satisfaction, intimacy, conflict, and partner aggression over four time points.

Does Marijuana Use have an Adverse Effect on Intimate Relationship Outcomes?

Although a substantial literature has considered the impact of alcohol use on couple functioning (Marshal, 2003), there is limited research considering the impact of marijuana use on couple functioning. A few longitudinal studies have considered whether people who use marijuana in early adulthood subsequently experience poorer outcomes in their intimate relationships. For example, people who used marijuana in their early 20's subsequently reported poorer relationship harmony and cohesion and more relationship disagreements and divorce by their later 20's (Brook, Pahl, & Cohen, 2008; Collins, Ellickson, & Klein, 2007). However, Collins et al. (2007) found that the bivariate relationship disappeared in multivariate models after accounting for the effect of frequency of alcohol intoxication and other covariates. Using a longitudinal sample of men recruited as adolescents, White, Bechtold, Loeber, and Pardini (2015) compared adult relationship outcomes at age 36 for men characterized by different trajectories of marijuana use: chronic, adolescent, or late onset relative to non-users. After controlling for covariates such as family socioeconomic status, peer deviance, and adolescent depression, they observed no differences in relationship quality associated with any of these marijuana use patterns compared with non-users. A limitation of these studies is that they do not explicitly consider the impact of marijuana use within the context of the relationship, but rather consider the impact of an individual's marijuana use on later relationship outcomes.

A few studies have considered the impact of marijuana use within marital relationships (rather than an individual's use earlier in life). Yamaguchi and Kandel (1985) found that marijuana use at the time of marriage increased the odds of subsequent separation or divorce within that marriage for men and women. Kaestner (1997) also found a negative effect of past year marijuana use among non-Black married people on the odds of being divorced or separated 4 years later. These studies provide some evidence of a possible deleterious effect of marijuana use within a marriage on relationship outcomes. A limitation of all studies reviewed thus far is that they consider the substance use of only one partner on relationship outcomes. Yet intimate partners are interdependent and the substance use of one partner is likely to influence the behaviors and outcomes of the other (Rodriguez, Neighbors, & Knee,

2014). Using a dyadic framework, Low, Tiberio, Shortt, Capaldi, and Eddy (2017) found that men whose partners used marijuana and alcohol in the past year (they did not consider marijuana separately) were more likely to perpetrate physical aggression. Use of marijuana (with alcohol) was associated with more sexual aggression perpetration for men and for women.

Considering substance use within the dyad allows for consideration of the degree to which partner use is discrepant, and whether the degree of discrepancy in substance use between partners has a unique effect on relationship outcomes. Specific to alcohol use, several studies suggest that discrepant use of alcohol is more deleterious for relationship functioning than is concordant use or non-use. For example, after controlling for heavy drinking, discrepancy in partner alcohol use predicted decreased marital satisfaction over time (Homish & Leonard, 2007). Similarly, couples whose drinking was discrepant were more likely to divorce than couples with concordant or no drinking (Ostermann, Sloan, & Taylor, 2005; Torvik, Røysamb, Gustavson, Idstad, & Tambs, 2013). A lighter drinking partner may be resentful of a heavier drinking partner spending time or money away from home, causing tension. In contrast, congruency in drinking patterns is thought to reflect shared values or activities, and similarity between partners is associated with greater relationship satisfaction (Gaunt, 2006). Even in couples in which both partners drink, drinking together as opposed to apart predicts more positive relationship outcomes the next day (Levitt & Cooper, 2010; Levitt, Derrick, & Testa, 2014) and over time (Homish & Leonard, 2005).

Fewer studies have considered the impact of discrepant drug use, including marijuana use, on relationship outcomes. Crane, Testa, Schlauch, and Leonard (2016) found some support for the hypothesis that discrepant marijuana use is more deleterious than concordant use. Among a sample of moderate-to-heavy drinking community couples, couples were classified according to marijuana use concordance based on any self-reported use over the past year. Couples interacted in a 15 minute conflict resolution task that was video-recorded and coded by 4 independent observers. Couples were not under the influence of marijuana at the time of the interaction. However, consistent with the hypothesis that discordant marijuana use leads to poorer relationship functioning, couples in which only one partner reported past year marijuana use were rated by coders as expressing more anger, more demand-withdrawal, less constructiveness, and poorer relationship quality relative to couples with concordant use or non-use. Self-reported post-interaction anger and satisfaction ratings echoed these results.

Homish, Leonard, and Cornelius (2008) considered the impact of discordant versus concordant use of illicit drugs on changes in marital satisfaction over 4 years within a community sample of newlywed couples (N = 634). The majority of drug use was marijuana; however, they analyzed all drugs together, classifying couples as drug users based on any occasion of illicit drug use in the past year. At baseline, discrepant drug use was associated with lower initial relationship satisfaction relative to concordant use or non-use, providing some support for the hypothesis that discordant use is detrimental. However, discordant, concordant, and non-using couples experienced similar declines in satisfaction over time.

Studies considering the impact of dyadic marijuana use have not always found a clear advantage for concordant versus discrepant use of marijuana. Using the same sample as Homish et al. (2008), Leonard, Smith, and Homish (2014) found that marijuana use, whether by one or both partners (i.e., discrepant and concordant use) was positively associated with the odds of divorce by Year 9 in bivariate analyses. These effects were no longer significant after controlling for the impact of alcohol and tobacco use. Smith et al. (2014) found that male and female partners in couples in which both partners used marijuana reported less frequent intimate partner violence (IPV) than all others, suggesting a protective effect of concordant use relative to concordant non-use or discrepant use. In a cross-sectional survey, Cunradi, Todd, and Mair (2015) considered the impact of concordant and discordant marijuana use, heavy drinking, and smoking on IPV in a telephone survey of a representative sample of California couples (N = 2,000). After accounting for the effects of other substance use, husband only (i.e., discordant) marijuana use elevated the odds of female-to-male IPV relative to concordant non-using couples. However, couples in which both partners used marijuana were more likely to report male-to-female IPV relative to discordant or non-using couples.

The Present Study

The present study was designed to consider the impact of couple marijuana use discrepancy on relationship outcomes over 10 months in a sample of marijuana-using couples. Previous studies have relied on community samples in which few participants use marijuana, necessitating classification based on any use (Crane et al., 2016; Cunradi et al, 2015; Smith et al., 2014). Thus, a couple in which the woman used marijuana once and the man did not use at all would be classified as discordant whereas a couple in which the man used weekly but the woman used only once all year would be classified as concordant users. Classification based on any use within community samples typically yields mostly concordant non-users, for example, 89% of couples were characterized by concordant non-use of marijuana, 6% husband only use, 3% wife only use, and 3% in which both used (Cunradi et al., 2015). The large differences in group sizes reduce power to detect effects of discrepant and concordant marijuana use. In contrast, the present sample, recruited for a study of daily marijuana use (Testa et al., in press), consisted of community couples in which at least one partner was a frequent marijuana user (at least twice weekly) but the use of the other partner varied. There were no couples with concordant non-use; however, we were able to characterize the degree of discrepancy in couple marijuana use with greater precision than has previously been possible.

We hypothesized that greater discrepancy in couple marijuana use frequency would be associated with poorer couple functioning – lower relationship satisfaction and perceived partner responsiveness and greater conflict, negative interpersonal exchange, and psychological and physical aggression. We considered these effects using 4 waves of data collected over 10 months. A unique aspect of our study was the ability to consider the effects of partner marijuana discrepancy both between-couples and within-couples. That is, we tested the hypothesis that couples with greater marijuana discrepancy relative to other couples would have poorer relationship functioning (a between-couple effect). We also considered whether within couples, changes in discrepancy over time were associated with

changes in couple functioning (e.g., were timepoints characterized by smaller discrepancy also characterized by better functioning?). Data were analyzed using the Actor Partner Interdependence Model (APIM, Kashy & Snyder, 1995; Kenny, Kashy, & Cook, 2006), depicted in Figure 1. Within the APIM framework we modeled the effects of each individuals' own marijuana use on his or her own perceived relationship functioning (Actor paths), the effects of each individual's marijuana use on the perceived relationships functioning of his or her partner (Partner paths), and the effect of the absolute difference between partners' use (Couple discrepancy paths) on each partner's perceived relationship functioning.

Method

Participants and Recruitment

Participants included 183 married or cohabiting heterosexual couples in which at least one partner used marijuana at least twice weekly. Participants self-identified as European-American (78.1%), African-American (9.3%), or mixed race (6.6%). Men averaged 25.16 (*SD* = 3.07) and women 24.06 (*SD* = 3.09) years of age. The majority had completed at least some college (70.5% of men, 79.3% of women, 24.0% currently enrolled) and were employed full- or part-time (84.2% of men and 81.4% of women). Most couples were cohabiting (84.2%) rather than married (15.8%); mean length of cohabitation (or marriage) was 2.50 years (range = 0.17–10.25, *SD* = 2.19).

Couples were recruited from a medium-sized metropolitan area in the Northeast primarily via Facebook ads (146/183, 79.8%) or print ads (22/183) seeking couples who use marijuana; a few were referred (15/183). Clicking the Facebook ad allowed respondents to complete a brief online screener and provide contact information. All couples were screened for eligibility by telephone. To be eligible, the couple was required to be married or cohabiting for at least 6 months. Both partners had to be between 18 and 30 years old and at least one partner had to use marijuana at least twice weekly with no intention to quit or seek treatment. Pregnant women were excluded. Because psychopathology or stimulant use may increase violence, couples were excluded if either reported receiving psychiatric treatment or use of cocaine or stimulants. For safety reasons, couples were excluded if either partner reported IPA that caused fear for one's life or required medical care; they were provided referral information.

Procedures

During an in-person assessment, partners independently completed computerized baseline measures that included the primary independent and dependent measures described below. The session also included an orientation to the ecological momentary assessment (EMA) component of the study in which participants reported episodes of marijuana use and partner conflict for the next 30 days (Testa et al., in press). Subsequent follow-up surveys containing largely identical measures were completed 4, 7, and 10 months after baseline measures. Partners were sent email invitations that included links to the secure web-based follow-up surveys. Participants were paid $50 for the in-person session, up to $100 (depending on

compliance) for the EMA study, and $30 for each follow-up assessment. All procedures were approved by the University Institutional Review Board.

Measures

Measures relevant to the present analyses were assessed for each partner at baseline and 4-, 7-, and 10-month follow-ups. Descriptive information for key independent and dependent variables is provided in Table 1.

Marijuana use—At each Wave, partners were asked "On how many days have you used marijuana in the past month?" using an 8-point ordinal scale (0 = No days; 1 = 1 day; 2 = 2–3 days in the month; 3 = 1 day a week; 4 = 2 days a week; 5 = 3–4 days a week; 6 = 5–6 days a week; 7 = Daily or most days in the month). To calculate the discrepancy between partners' use, at each time point we subtracted the scale value for male use from the value for female use. Then we took the absolute value of the discrepancy in partner marijuana use frequency. This resulted in a potential range of discrepancy scores from 0 (equal frequency) to 7[1].

Relationship Functioning—Relationship satisfaction was assessed using the 5-item satisfaction subscale of the Investment Model Scale (IMS; Rusbult, Martz, & Agnew, 1998). Items such as "My relationship is close to ideal" were rated on 9 point scales, ranging from 0 (do not agree at all) to 8 (agree completely) and averaged, with higher scores indicating greater satisfaction.

Perceived partner responsiveness was assessed using the Personal Assessment of Intimacy in Relationships Scale (PAIR; Schaefer & Olson, 1981). The items in this subscale capture perceptions of the partner's emotional availability (e.g., ''I often feel distant from my partner" [reversed]), understanding (e.g., ''My partner can really understand my hurts and joys"), and responsiveness (e.g., ''My partner listens to me when I need someone to talk to"). Six items were rated on 5-point scales ranging from 1 (strongly disagree) to 5 (strongly agree). Items were averaged to create a final score for each participant, with higher scores indicating greater perceived partner responsiveness.

The Test of Negative Social Exchange (TENSE, Ruehlman & Karoly, 1991) is an 18-item measure of negative interpersonal transactions (e.g., yelled at me, took my feelings lightly, made fun of me) that was adapted to be specific to behaviors received from the partner (e.g., Derrick et al., 2016). The frequency of each behavior experienced in the past month was rated on a 5-point scale ranging from 0 (not at all) to 4 (about every day). We created a TENSE score for each participant by taking the average of all 18 items, with higher scores indicating receipt of more negative behaviors.

[1]Ordinal scale responses may be converted to approximate days of use per month (e.g., 5–6 days per week = 24), and partner discrepancies computed using these values. This method results in larger discrepancy scores for the frequent use categories relative to less frequent categories (e.g., difference between 3–4 and 5–6 days per week is no longer 1 point on the ordinal scale but 9 points on the count scale) and increases standard errors. When analyses were repeated using discrepancy scores calculated based on marijuana episodes per month, the pattern of the results became weaker but similar. Full results are available from the first author.

Partner conflict was assessed using the 5-item Conflict Scale (Murray et al., 2013). Items such as “Overall, how much conflict is there in your relationship?” and “In general, how serious are your arguments and disagreements?” were rated on 7-point response scales. Scores on the 5 items were averaged, with higher scores representing more conflict.

The Conflict Tactics Scales (CTS-2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) were used to assess intimate partner aggression (IPA) perpetration and victimization. Partners reported the number of times they had done (and experienced) 78 items assessing a range of behaviors used in conflicts. Of interest were the 8-item psychological aggression scale and 11-item physical aggression scale. Each item was asked first to assess perpetration toward one’s partner (e.g., “I shouted or yelled at my partner”) and again to assess the victimization by partner (e.g., “my partner pushed or shoved me”). Items were rated on 8-point scales (1 = Once; 2 = Twice; 3 = 3–5 times; 4 = 6–10 times; 5 = 11–20 times; 6 = More than 20 times; 7 = Not in the past year, but it happened before; 8 = Never). Following the recommendations of Straus et al. (1996), we assigned a value based on the midpoint frequency and scored “not in past year” and “never” as 0. These values were summed to create psychological and physical aggression perpetration and victimization subscale scores (see Shorey, Brasfield, Febres, Cornelius, & Stuart, 2012).

Data Analytic Strategy

Analyses were performed using multivariate two-level models with random intercepts. We conducted our analyses separately for each relationship functioning outcome using maximum likelihood estimation with robust standard errors in Mplus Version 7.4 (Muthen & Muthen, 2015). Most outcomes were treated as continuous, but psychological and physical aggression were treated as count variables and estimated using negative binomial models (Hilbe, 2011; Long, 1997). Outcomes for male and female partners were modeled simultaneously. At Level 1 (the time level), we included the absolute discrepancy in partner marijuana use as a time-varying predictor variable. Consistent with the APIM (Kenny et al., 2006), we also included both actor and partner frequency of marijuana use as time-varying predictors to control for each partner’s marijuana use over time. These Level-1 variables were grand mean centered (Enders & Tofighi, 2007). We also entered time, coded to reflect months past baseline (0, 4, 7, and 10), to control for normative changes in relationship functioning over time. At Level 2 (the couple level), we included cluster means representing between-couple differences in the absolute discrepancy in partner marijuana use; inclusion allowed us to distinguish time-varying effects of discrepancies in marijuana use from between-couple differences (Enders & Tofighi, 2007; Hoffman & Stawski, 2009). We also entered cluster means of both actor and partner frequency of marijuana use at Level 2 to control for between-couple differences in actor and partner marijuana use.

Results

Descriptive Data

As shown in Table 1, at baseline, mean marijuana use frequency on the ordinal scale was 5.41 (SD = 2.25), corresponding to more than half the days in the month. Mean marijuana discrepancy between partners was 1.94 (SD = 2.37) scale points at baseline; however,

substantial proportions of couples had discrepancy scores of 0 (e.g., at baseline, 75/183 couples, or 41% had identical use). Scores on all key variables remained relatively stable over time.

Table 2 provides correlations among key variables for individuals at baseline. The pattern was very similar at later waves. Of note, marijuana use frequency was negatively correlated with discrepancy, reflecting the fact in this sample, infrequent or non-users were paired with frequent users; there were no concordant non-users. Relationship outcome variables were correlated in expected ways (e.g., satisfaction was positively correlated with perceived partner responsiveness and negatively correlated with conflict and aggression). Within couples, partner reports were positively correlated (see diagonal of Table 2).

Missing Data

Of 366 men and women (in 183 couples) who provided baseline data, 331 (90.4%) had 4-month data, 317 (86.6%) had 7-month data, and 313 (85.5%) had 10-month data. There were 135 men (73.8%) and 160 women (87.4%) who provided complete data at all 4 time points (80.6% of the total sample, 124/183 or 67.8% of couples). Individuals were able to continue participation in the study independent of their partner and could continue even if the original relationship ended. Although most couples remained together for the duration of the study (147/183, 80.3%), 16 individuals (13 couples) indicated that they were in a relationship with a different partner at some point over the 10 months. Because computation of the couple marijuana discrepancy variable required data from both members of the original dyad, analyses were limited to assessment points in which both of the original partners participated. Out of a possible 732 data points (183 couples X 4 waves of data), complete couple data was available for 608 (83.1%) data points.

Couples with no missing data (N = 124) were compared to couples with one or more missing time points (N= 59) on all baseline relationship functioning measures. At baseline, couples with eventual missing data reported lower relationship satisfaction (M = 6.37, SD = 1.55, vs. M = 6.79, SD = 1.27), $t(364) = 2.739$, $p = .006$, lower partner responsiveness (M = 3.80, SD = 0.93, vs. M = 4.13, SD = 0.79), $t(364) = 3.588$, $p < .001$, and more psychological victimization (M = 23.93, SD = 25.31, vs. M = 18.23, SD = 21.90), $t(364) = -2.219$, $p = .027$, compared to couples with complete data across all time points. They did not differ on any other baseline variables. To control for any possible differences, we created a dummy variable to indicate whether the couple had any missing data (1 = some missing, 0 = no missing). This variable was included at Level 2 in all analyses.

Multilevel Models: Effects of Marijuana Use Discrepancy on Relationship Functioning

Tables 3–5 display the results of the multilevel models. The effects of particular interest were the Level 1 and Level 2 effects of absolute discrepancies in couple marijuana use on male and female relationship functioning outcomes. We hypothesized that couples with more discrepant marijuana use would report less positive relationship functioning (relationship satisfaction and perceived partner responsiveness). As shown in Table 3, there were significant within-couple (i.e., Level 1) effects of discrepant marijuana use on men's reports of relationship satisfaction and perceived partner responsiveness in the expected

negative direction. Men reported less positive outcomes at time points when they experienced a larger discrepancy in marijuana use than typical for that couple. The corresponding effects for women's reports were not significant. The between-couple (i.e., Level 2) effect of discrepant marijuana use was not significant for either measure for men; however, for women there was a significant negative Level 2 effect of discrepancy on reports of perceived partner responsiveness and a Level 2 effect of Actor marijuana. Women who reported more frequent marijuana use and greater marijuana use discrepancies relative to other couples reported lower perceived partner responsiveness.

Similarly, we hypothesized that men and women with greater discrepancies in marijuana use would report more negative relationship outcomes: negative social exchange and conflict. As displayed in Table 4, both men and women reported more negative social exchange at times when the couple experienced more discrepant marijuana use than typical for that couple (i.e., a Level 1 effect). Men, but not women, exhibited a similar within-couple effect of discrepancy on conflict. We found no between-couple (i.e., Level 2) effects of discrepant marijuana use; however, there was a Level 2 effect for Actor marijuana on female negative social exchange. Women who reported more frequent marijuana use relative to other couples reported more negative social exchange.

Results for psychological and physical aggression perpetration and victimization are displayed in Table 5. Support for the discrepancy hypothesis was weak. The only significant effect of discrepancy was a positive Level 1 effect of discrepancy on female reports of psychological victimization; the effect on male reports was marginal. There were no significant discrepancy effects, at Level 1 or Level 2, on men's or women's reports of perpetration. However, echoing deleterious between-couple effects of female marijuana use on other outcomes, we observed some Level 2 effects of female marijuana use. These included more female-reported psychological and physical victimization associated with Level 2 actor (female) marijuana use (i.e., female use) and a corresponding effect of Level 2 partner (i.e., female) marijuana use on male psychological perpetration and victimization.

Supplemental Analyses: Gender-Specific Discrepancies

The main analyses considered the effects of absolute discrepancy in partners' marijuana use, regardless of whether it was the male or female partner who used more frequently. However, there is some evidence that discrepancies in partner substance use may be particularly deleterious when the female partner uses more than the male partner rather than the other way around (Leonard et al., 2014; Levitt & Cooper, 2010; Torvik et al., 2013). To explore whether relatively greater use by the female partner use was associated with poorer relationship functioning we created a term representing the extent to which female use exceeds male use, by subtracting male from female use. A significant positive effect of this variable on negative relationship functioning outcomes indicates that as female use becomes relatively greater than her partner's, relationship functioning deteriorates (see Homish & Leonard, 2007). The primary analyses were repeated, first replacing the absolute discrepancy term, at Level 1 and Level 2, with the female – male discrepancy term and again including both the female-male term and the absolute discrepancy term in the equations. The female – male discrepancy term was not significant at Level 1 or at Level 2 in any equation.

In contrast, the absolute discrepancy effects depicted in Tables 3–5 remained significant even when both terms were included. Thus, discrepancy effects are the result of the absolute difference in partner use and are not specific to the gender-specific difference in use. Full results are available upon request from the authors.

Discussion

Prior research maintains that couples with discrepant substance use experience poorer relationship functioning over time than couples with concordant use (Homish & Leonard, 2007; Homish, Leonard, Kozlowski, & Cornelius, 2009). Homish and Leonard (2005) theorize that couples with concordant substance use, particularly when it involves using substances together, enjoy more frequent couple interaction and shared activities, which in turn improves relationship quality, whereas discrepant use reflects social distance between partners and an absence of shared activities. The present study replicated and extended these findings using a sample of community couples who use marijuana frequently and typically together (Testa et al., in press). Consistent with Homish and Leonard's (2007) findings regarding alcohol use, at times of more discrepant couple marijuana use, there are corresponding decrements in relationship satisfaction and perceived partner responsiveness and increases in conflict and negative social exchange. These results were obtained after controlling for the effects of time, missing couple data, and importantly, the independent effects of each partner's marijuana use frequency. The effects of partner marijuana use discrepancy on relationship functioning appear to be dynamic and observable over relatively short periods of time. Supplemental analyses looking specifically at the effects of greater female use and greater male use suggest that the gender-specific nature of the discrepancy does not matter. Rather, greater discrepancies, regardless of which partner is the heavier user, are associated over time with poorer functioning.

Previous studies have found between-couple discrepancy effects, whereby couples with a greater discrepancy in their substance use relative to other couples report lower relationship satisfaction (e.g. Homish & Leonard, 2005). In contrast, we observed primarily within-couple (Level 1) effects, and just a single between-couple (Level 2) discrepancy effect (on female perceived partner responsiveness). That is, changes in relationship functioning over time, particularly for men, corresponded to changes in partner marijuana use discrepancy with little evidence that couples with greater discrepancies than the sample as a whole had worse functioning. The pattern may reflect the nature of the sample in that most individuals and most couples were frequent marijuana users. There were no couples with concordant non-use, a group well-represented in general population samples, and likely to differ in many ways from frequent marijuana-using couples, contributing to between-couple differences. On the other hand, the relative homogeneity of the present sample may have allowed the more subtle within-couple effects to emerge.

Findings generally support hypotheses regarding the detrimental effects of greater partner marijuana use discrepancies, with some consistency in the pattern across multiple measures, increasing confidence. However, there were some additional patterns that are worth noting. First, within-couple discrepancy effects were observed for most positive and negative relationship functioning measures using male partners' reports (satisfaction, perceived

partner responsiveness, negative social exchange, conflict) but, unexpectedly, emerged less consistently in female partners' reports. Second, despite these effects on other relationship functioning outcomes, we failed to observe any discrepancy effects on psychological and physical aggression with one exception: female reports of psychological victimization. It may be that these are secondary outcomes, only indirectly reflective of more immediate changes in conflict and perceived partner responsiveness, and hence less sensitive to changes in couple dynamics over this relatively short time-frame. Physical aggression in particular, was not a common outcome, experienced by only about 20% of the sample.

In addition to the within-couple discrepancy effects, we found some deleterious between-couple effects of female marijuana frequency, primarily on women's relationship outcomes. That is, women who used marijuana more frequently report lower perceived partner responsiveness, receipt of more negative social exchange, and more psychological and physical victimization than women who used marijuana less frequently. This pattern is consistent with prior research suggesting that women's substance use, particularly when it exceeds male use, is viewed by men as violating societal norms (Fillmore, 1984), resulting in particularly negative consequences for relationship outcomes (Leonard et al., 2014; Levitt & Cooper, 2010).

Limitations

Our theoretical model suggests that it is the discrepancy in marijuana use that drives corresponding relationship functioning. However, it is also possible, given that discrepancies and outcomes were measured concurrently, that relationship conflict drives discrepancy rather than the other way around. This pattern seems less plausible because it would require that a change in relationship functioning reported by both partners would lead to a change only in discrepancy of use (presumably a change in one but not the other partner's use), not a similar change in use for both partners. Nonetheless, the design cannot rule out that possibility.

Although couple retention was good, the design of the study required complete couple data to compute discrepancy at each time point and 1/3 of the sample had at least one missing time point. However, we controlled for whether the couple had missing data and found no effects on outcome variables, nor any changes in the pattern of results when this variable was included. Thus, we do not believe that missing data had a significant impact on the pattern of results. Finally, because the sample was comprised of couples in which at least one partner used marijuana at least twice weekly and included no concordant non-users, findings may not generalize to more typical community samples in which marijuana use is less frequent and concordant non-use is modal.

Implications and Conclusions

Findings provide additional evidence for the importance of partner substance use discrepancies as contributors to relationship functioning. These patterns are dynamic, with perceptions of relationship functioning, particularly among men, varying over time with changes in marijuana use discrepancies. For clinicians, changes in substance use by one partner and not the other, regardless of whether the change is an increase or decrease, may

serve as a marker of the development of relationship difficulties. For a couple in which both partners are frequent users, successful drug treatment or reduction of use by one but not both partners could contribute to relationship difficulties. In brief, findings emphasize the importance of considering the intimate partner dyad as a context and influence on substance use (Rodriguez & Derrick, 2017).

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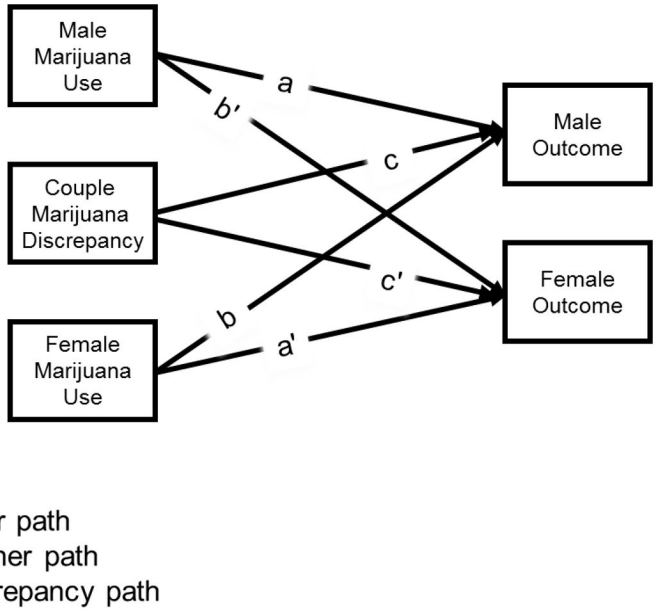

Figure 1.
Actor-Partner Interdependence Model

Table 1

Marijuana Use and Relationship Functioning, Descriptive Statistics over Four Waves

Variable	Means (SD)				Averaged α	r's range over assessment points [1]
	Baseline (T1)	4-month (T2)	7-month (T3)	10-month (T4)		
Marijuana use frequency	5.41 (2.25)	5.11 (2.51)	4.78 (2.71)	4.73 (2.67)	--	$0.60 < r < 0.80$
Absolute marijuana use discrepancy	1.94 (2.37)	2.19 (2.53)	2.41 (2.63)	2.23 (2.62)	--	$0.54 < r < 0.81$
Concordant use [1]	75/183 (41.0%)	67/155 (43.2%)	57/142 (40.1%)	58/141 (41.1%)		
Relationship Satisfaction (IMS)	6.65 (1.38)	6.01 (2.07)	6.09 (2.04)	6.25 (1.96)	0.947	$0.57 < r < 0.70$
Partner Responsiveness (PAIR)	4.02 (0.85)	3.82 (1.02)	3.82 (1.00)	3.85 (1.01)	0.738	$0.51 < r < 0.70$
Negative social exchange (TENSE)	0.85 (0.65)	0.92 (0.77)	0.89 (0.82)	0.83 (0.77)	0.936	$0.56 < r < 0.74$
Conflict in close relationships	1.38 (1.05)	1.60 (1.34)	1.61 (1.40)	1.49 (1.35)	0.912	$0.52 < r < 0.72$
Psychological perpetration (CTS-2)	19.65 (21.58)	11.32 (17.67)	18.01 (18.06)	18.07 (18.07)	0.706	$0.46 < r < 0.63$
Psychological victimization (CTS-2)	20.07 (23.17)	12.60 (20.02)	13.16 (22.81)	11.61 (21.25)	0.750	$0.37 < r < 0.64$
Physical perpetration (CTS-2)	2.47 (7.28)	3.40 (12.49)	1.85 (6.73)	1.92 (10.07)	0.767	$0.26 < r < 0.47$
Physical victimization (CTS-2)	2.87 (8.13)	3.83 (14.47)	3.21 (13.50)	2.77 (12.00)	0.822	$0.31 < r < 0.51$

Note:

[1] All $p < .01$.

[1] Concordant use indicates percentage of couples with identical marijuana use frequency by female and male partner (discrepancy = 0).

Table 2

Bivariate Correlations for Marijuana use, Absolute Marijuana Use Discrepancy, and Relationship Functioning at Baseline (T1), within Individuals

	Correlations									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. Marijuana use frequency	0.12									
2. Absolute marijuana use discrepancy	−.57**	1.00								
3. Satisfaction level (IMS)	0.04	−0.08	.50**							
4. Partner responsiveness (PAIR)	−0.03	−0.05	.72**	.41**						
5. Negative social exchange (TENSE)	0.09	0.03	−.51**	−.59**	.40**					
6. Conflict in close relationships	0.06	0.00	−.58**	−.61**	.74**	.49**				
7. Psychological perpetration (CTS-2)	0.07	−0.04	−.41**	−.47**	.61**	.68**	.46**			
8. Psychological victimization (CTS-2)	0.06	−0.03	−.44**	−.50**	.73**	.70**	.87**	.47**		
9. Physical perpetration (CTS-2)	0.01	−0.04	−.20**	−.21**	.24**	.32**	.41**	.42**	.10	
10. Physical victimization (CTS-2)	0.09	−0.07	−.22**	−.25**	.35**	.35**	.33**	.47**	.74**	.28**

** Correlation is significant at the 0.01 level (2-tailed).

Correlations on the diagonal represent the correlation between male and female partners with couples.

Table 3

Couple Marijuana Effects on Positive Couple Outcomes

Relationship Satisfaction				
Variable	**Male satisfaction**		**Female satisfaction**	
	Estimate (S.E.)	**95% CI**	**Estimate (S.E.)**	**95% CI**
Time	−0.050 (0.014) ***	[−0.076, −0.023]	−0.053 (0.014) ***	[−0.081, −0.025]
Actor marijuana use [a]	−0.058 (0.054)	[−0.163, 0.048]	−0.040 (0.044)	[−0.126, 0.046]
Partner marijuana use [a]	0.010 (0.056)	[−0.100, 0.121]	−0.006 (0.044)	[−0.093, 0.080]
Marijuana use discrepancy [b]	−0.107 (0.053) *	[−0.210, −0.004]	−0.058 (0.040)	[−0.137, 0.021]
Actor marijuana use (Level 2) [c]	0.084 (0.091)	[−0.095, 0.263]	0.017 (0.059)	[−0.099, 0.133]
Partner marijuana use (Level 2) [c]	−0.089 (0.071)	[−0.229, 0.051]	−0.098 (0.066)	[−0.228, 0.031]
Marijuana use discrepancy(Level 2) [d]	−0.013 (0.081)	[−0.171, 0.145]	−0.066 (0.062)	[−0.188, 0.057]
Couple missing data [e]	−0.540 (0.265) *	[−1.059, −0.020]	−0.315 (0.251)	[−0.806, 0.176]
Perceived Partner Responsiveness				
Variable	Male PPR		Female PPR	
	Estimate (S.E.)	95% CI	Estimate (S.E.)	95% CI
Time	−0.022 (0.007) **	[−0.037, −0.008]	−0.018 (0.008) *	[−0.033, −0.003]
Actor marijuana use [a]	0.001 (0.027)	[−0.053, 0.055]	−0.023 (0.026)	[−0.073, 0.028]
Partner marijuana use [a]	−0.024 (0.025)	[−0.073, 0.025]	−0.001 (0.031)	[−0.061, 0.060]
Marijuana use discrepancy [b]	−0.067 (0.023) **	[−0.113, −0.021]	−0.043 (0.026)	[−0.094, 0.009]
Actor marijuana use (Level 2) [c]	−0.005 (0.043)	[−0.090, 0.079]	−0.074 (0.033) *	[−0.140, −0.009]
Partner marijuana use (Level 2) [c]	−0.051 (0.041)	[−0.131, 0.030]]	−0.013 (0.041)	[−0.095, 0.068]
Marijuana use discrepancy (Level 2) [d]	−0.040 (0.044)	[−0.127, 0.047]	−0.076 (0.038) *	[−0.150, −0.002]
Couple missing data [e]	−0.366 (0.131) **	[−0.622, −0.110]	−0.263 (0.144) +	[−0.545, 0.019]

Note: Male and female outcomes were modeled simultaneously as multivariate outcomes.

[a] Marijuana use days in the past month (time varying).

[b] Absolute values of marijuana use discrepancy between female and male marijuana use days in the past month (time varying).

[c] Cluster means of marijuana use days in the past months.

[d] Cluster means of marijuana use discrepancy.

[e] Coded 0 = couple complete data; 1 = couple missing 1 or more time points.

*** $p < .001$,

** $p < .01$,

* $p < .05$,

$^{+}p < .10$.

Table 4

Couple Marijuana Effects on Negative Couple Outcomes

Negative Social Exchange (TENSE)				
Variable	**Male TENSE**		**Female TENSE**	
	Estimate (S.E.)	**95% CI**	**Estimate (S.E.)**	**95% CI**
Time	−0.001 (0.006)	[−0.012, 0.010]	−0.003 (0.005)	[−0.013, 0.007]
Actor marijuana use [a]	−0.030 (0.030)	[−0.088, 0.029]	0.011 (0.020)	[−0.029, 0.050]
Partner marijuana use [a]	0.036 (0.025)	[−0.014, 0.086]	−0.007 (0.020)	[−0.046, 0.031]
Marijuana use discrepancy [b]	0.053 (0.021) *	[0.012, 0.095]	0.042 (0.019) *	[0.005, 0.079]
Actor marijuana use (Level 2) [c]	0.033 (0.040)	[−0.044, 0.111]	0.066 (0.025) *	[0.016, 0.115]
Partner marijuana use (Level 2) [c]	0.040 (0.036)	[−0.030, 0.110]	0.013 (0.026)	[−0.037, 0.064]
Marijuana use discrepancy (Level 2) [d]	0.035 (0.037)	[−0.038, 0.108]	0.029 (0.024)	[−0.019, 0.077]
Couple missing data [e]	0.183 (0.108) +	[−0.029, 0.394]	0.074 (0.090)	[−0.103, 0.250]
Conflict				
Variable	Male conflict scale		Female conflict scale	
	Estimate (S.E.)	95% CI	Estimate (S.E.)	95% CI
Time	0.073 (0.046)	[−0.018, 0.164]	0.072 (0.045)	[−0.016, 0.159]
Actor marijuana use [a]	0.093 (0.219)	[−0.336, 0.522]	0.130 (0.171)	[−0.205, 0.464]
Partner marijuana use [a]	0.112 (0.192)	[−0.264, 0.488]	−0.141 (0.170)	[−0.475, 0.193]
Marijuana use discrepancy [b]	0.565 (0.202) **	[0.169, 0.961]	0.252 (0.186)	[−0.113, 0.618]
Actor marijuana use (Level 2) [c]	−0.085 (0.287)	[−0.648, 0.477]	0.429 (0.221) +	[−0.004, 0.863]
Partner marijuana use (Level 2) [c]	0.419 (0.267)	[−0.104, 0.941]	0.324 (0.252)	[−0.170, 0.818]
Marijuana use discrepancy (Level 2) [d]	0.026 (0.279)	[−0.521, 0.574]	0.268 (0.266)	[−0.253, 0.789]
Couple missing data [e]	1.649 (0.794) *	[0.093, 3.206]	0.579 (0.887)	[−1.160, 2.317]

Note: Male and female outcomes were modeled simultaneously as multivariate outcomes.

[a] Marijuana use days in the past month (time varying).

[b] Absolute values of marijuana use discrepancy between female and male marijuana use days in the past month (time varying).

[c] Cluster means of marijuana use days in the past months.

[d] Cluster means of marijuana use discrepancy.

[e] Coded 0 = couple complete data; 1 = couple missing 1 or more time points.

*** $p < .001$,

** $p < .01$,

* $p < .05$,

+ $p < .10$.

Table 5

Couple Marijuana Effects on Psychological and Physical Aggression

Psychological Perpetration				
Variable	**Male report**		**Female report**	
	Estimate (S.E.)	**95% CI**	**Estimate (S.E.)**	**95% CI**
Time	−0.110 (0.014) ***	[−0.137, −0.082]	−0.096 (0.011) ***	[−0.117, −0.074]
Actor marijuana use [a]	−0.024 (0.040)	[−0.104, 0.055]	0.055 (0.044)	[−0.032, 0.142]
Partner marijuana use [a]	0.013 (0.037)	[−0.059, 0.085]	0.059 (0.043)	[−0.025, 0.143]
Marijuana use discrepancy [b]	0.027 (0.038)	[−0.047, 0.101]	0.067 (0.041)	[−0.013, 0.146]
Actor marijuana use (Level 2) [c]	0.111 (0.059) +	[−0.005, 0.227]	0.111 (0.059) +	[−0.005, 0.227]
Partner marijuana use (Level 2) [c]	0.145 (0.052) **	[0.043, 0.247]	−0.015 (0.064)	[−0.141, 0.111]
Marijuana use discrepancy (Level 2) [d]	0.103 (0.058) +	[−0.010, 0.215]	0.008 (0.060)	[−0.110, 0.126]
Couple missing data [e]	0.384 (0.224) +	[−0.055, 0.823]	0.052 (0.219)	[−0.376, 0.481]
Psychological Victimization				
Variable	Male report		Female report	
	Estimate (S.E.)	95% CI	Estimate (S.E.)	95% CI
Time	−0.095 (0.015) ***	[−0.124, −0.066]	−0.092 (0.012) ***	[−0.115, −0.069]
Actor marijuana use [a]	−0.014 (0.047)	[−0.106, 0.079]	0.041 (0.050)	[−0.057, 0.139]
Partner marijuana use [a]	0.050 (0.048)	[−0.043, 0.143]	0.057 (0.046)	[−0.033, 0.146]
Marijuana use discrepancy [b]	0.076 (0.041) +	[−0.003, 0.156]	0.079 (0.039) *	[0.002, 0.157]
Actor marijuana use (Level 2) [c]	0.035 (0.066)	[−0.094, 0.164]	0.147 (0.067) *	[0.016, 0.278]
Partner marijuana use (Level 2) [c]	0.133 (0.065) *	[0.005, 0.261]	0.010 (0.067)	[−0.121, 0.142]
Marijuana use discrepancy (Level 2) [d]	0.026 (0.067)	[−0.105, 0.157]	0.050 (0.063)	[−0.072, 0.173]
Couple missing data [e]	0.524 (0.231) *	[0.071, 0.977]	0.067 (0.250)	[−0.422, 0.557]
Physical Perpetration				
Variable	Male report		Female report	
	Estimate (S.E.)	95% CI	Estimate (S.E.)	95% CI
Time	−0.103 (0.049) *	[−0.199, −0.006]	−0.159 (0.032) ***	[−0.221, −0.096]
Actor marijuana use [a]	−0.065 (0.182)	[−0.422, 0.292]	0.109 (0.111)	[−0.109, 0.327]
Partner marijuana use [a]	−0.030 (0.199)	[−0.420, 0.359]	0.107 (0.137)	[−0.162, 0.375]
Marijuana use discrepancy [b]	0.055 (0.198)	[−0.332, 0.443]	0.109 (0.105)	[−0.096, 0.314]
Actor marijuana use (Level 2) [c]	−0.044 (0.221)	[−0.477, 0.389]	0.204 (0.152)	[−0.094, 0.502]
Partner marijuana use (Level 2) [c]	0.414 (0.220) +	[−0.018, 0.845]	0.071 (0.177)	[−0.276, 0.418]

Psychological Perpetration				
Variable	**Male report**		**Female report**	
	Estimate (S.E.)	**95% CI**	**Estimate (S.E.)**	**95% CI**
Marijuana use discrepancy (Level 2) [d]	−0.229 (0.242)	[−0.704, 0.245]	0.072 (0.164)	[−0.248, 0.393]
Couple missing data [e]	2.021 (0.636) **	[0.775, 3.267]	0.268 (0.487)	[−0.686, 1.222]
Physical Victimization				
Variable	Male report		Female report	
	Estimate (S.E.)	95% CI	Estimate (S.E.)	95% CI
Time	−0.136 (0.045) **	[−0.223, −0.048]	−0.098 (0.035) **	[−0.166, −0.030]
Actor marijuana use [a]	−0.181 (0.196)	[−0.566, 0.203]	−0.059 (0.102)	[−0.259, 0.142]
Partner marijuana use [a]	0.099 (0.186)	[−0.267, 0.464]	0.135 (0.110)	[−0.081, 0.351]
Marijuana use discrepancy [b]	0.044 (0.184)	[−0.316, 0.404]	−0.060 (0.104)	[−0.265, 0.145]
Actor marijuana use (Level 2) [c]	0.140 (0.224)	[−0.299, 0.580]	0.386 (0.148) **	[0.095, 0.677]
Partner marijuana use (Level 2) [c]	0.161 (0.206)	[−0.242, 0.564]	−0.001 (0.169)	[−0.333, 0.331]
Marijuana use discrepancy (Level 2) [d]	−0.073 (0.213)	[−0.492, 0.345]	0.257 (0.172)	[−0.081, 0.595]
Couple missing data [e]	1.746 (0.564) **	[0.641, 2.852]	0.682 (0.549)	[−0.393, 1.758]

Note: Male and female outcomes were modeled simultaneously as multivariate outcomes.

[a] Marijuana use days in the past month (time varying).

[b] Absolute values of marijuana use discrepancy between female and male marijuana use days in the past month (time varying).

[c] Cluster means of marijuana use days in the past months.

[d] Cluster means of marijuana use discrepancy.

[e] Coded 0 = couple complete data; 1 = couple missing 1 or more time points.

*** $p < .001$,

** $p < .01$,

* $p < .05$,

+ $p < .10$.