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## Marijuana use is associated with intimate partner violence perpetration among men arrested for domestic violence

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### Abstract

Intimate partner violence (IPV) is a serious public health problem. Substance use, particularly alcohol, is a robust risk factor for IPV. There is a small but growing body of research demonstrating that marijuana use is positively associated with IPV perpetration. However, research on marijuana use and IPV has failed to control for other known predictors of IPV that may account for the positive association between marijuana use and IPV perpetration. Therefore, the current study examined whether marijuana use was associated with IPV perpetration after controlling for alcohol use and problems, antisocial personality symptoms, and relationship satisfaction, all known risk factors for IPV. Participants were men arrested for domestic violence and court-referred to batterer intervention programs ( $N = 269$ ). Findings demonstrated that marijuana use was positively and significantly associated with psychological, physical, and sexual IPV perpetration, even after controlling for alcohol use and problems, antisocial personality symptoms, and relationship satisfaction. Moreover, marijuana use and alcohol use and problems interacted to predict sexual IPV, such that marijuana use was associated with sexual IPV at high, but not low, levels of alcohol use and problems. These findings lend additional support to the body of research demonstrating that marijuana use is positively associated with IPV perpetration in a variety of samples. Results suggest that additional, rigorous research is needed to further explore why and under what conditions marijuana is associated with IPV perpetration.

### Keywords

Marijuana; intimate partner violence; substance use; domestic violence

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Intimate partner violence (IPV) is a difficult to treat and prevalent public health problem. IPV includes psychological, physical, and sexual aggression (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). In the general population, annual prevalence rates of IPV are approximately 80% for psychological IPV, 25% for physical IPV, and 20% for sexual IPV (Archer, 2000; Shorey, Cornelius, & Bell, 2008). Not surprisingly, victims of IPV experience numerous negative consequences, including depression (Devries et al., 2013), anxiety (Nathanson, Shorey, Tirone, & Rhatigan, 2012), increased substance use (Devries et al.,

2014), physical injuries (Archer, 2000; Campbell, 2002), suicidal ideation (Devries et al., 2013), and in the most severe cases, death (Davis, 2010). Unfortunately, psychosocial intervention efforts aimed at reducing IPV perpetration among men arrested for domestic violence have been largely unsuccessful. Meta-analyses on the effectiveness of batterer intervention programs (BIPs), programs individuals who are arrested for domestic violence are court-mandated to attend, demonstrate small effect sizes (Babcock, Green, & Robie, 2004) or no effect at all (Feder & Wilson, 2005). Thus, there is considerable room for improving these programs.

Researchers have argued that interventions for IPV should include a focus on reducing substance use (Stuart, Temple, & Moore, 2007), as substance use, particularly alcohol, is known to be a robust risk factor for IPV perpetration across populations (Foran & O'Leary, 2008; Shorey, Stuart, & Cornelius, 2011). Indeed, preliminary evidence suggested that BIPs have better short-term outcomes (i.e., reduced IPV) when adjunctive alcohol interventions are included; however, the positive effects of this brief alcohol intervention fade over time (Stuart et al., 2013). This may be due, in part, to extensive drug use among men arrested for domestic violence (e.g., Stuart et al., 2004), which may have compromised IPV treatment outcomes. Thus, researchers have recently advocated for additional research on substances other than alcohol to determine their relations to IPV (Shorey, Haynes, Strauss, Temple, & Stuart, 2017; Testa & Brown, 2015) since these substances may impact intervention outcomes. Specifically, researchers have advocated for studies on the association between marijuana and IPV, as well as the effects of combined alcohol and marijuana use on IPV (Shorey et al., 2017; Testa & Brown, 2015).

Marijuana use is prevalent among men arrested for domestic violence and some research suggests it is positively associated with IPV perpetration (Moore et al., 2008; Moore & Stuart, 2004; Moore & Stuart, 2005; Testa & Brown, 2015). This research is particularly important for a number of reasons, especially with the increasing legalization of marijuana for both medical and recreational purposes in many US states, as it is imperative that public health officials and policy makers have a clear understanding of how marijuana use intersects with other important public health problems, such as IPV. Thus, the purpose of the present study was to examine the association between marijuana use and IPV perpetration among men arrested for domestic violence and court-referred to BIPs, controlling for known IPV risk factors of alcohol use and problems, antisocial personality symptoms, and relationship satisfaction.

## Marijuana and IPV

The theoretical relationship between marijuana and IPV has received scant attention. Although still underdeveloped, it has been theoretically postulated that, for some individuals, marijuana may lead to increased negative effects (e.g., irritability, anxiety), which may then lead to negative couple-related outcomes, such as IPV (Testa & Brown, 2015). A meta-analysis on the association between marijuana and IPV perpetration demonstrated that, across 14 studies, there was a positive association between marijuana use and physical ( $d = .21$ ) and psychological ( $d = .35$ ), but not sexual, IPV (Moore et al., 2008). Since this meta-analysis, a review of 30 studies concluded that marijuana use distally (e.g.,

frequency of use in the past year) demonstrated modest, but positive, associations with distal reports of IPV (e.g., frequency of IPV perpetration in past year; Testa & Brown, 2015). In addition, Moore and Stuart (2004) reported that 53% of their sample of men arrested for domestic violence reported past year marijuana use. However, the majority of prior studies examining marijuana and IPV failed to control for known risk factors for IPV that may account for this relationship. Specifically, it has been postulated that the relationship between marijuana and IPV may be due to third variables such as alcohol use, antisocial personality, and relationship satisfaction (Moore & Stuart, 2005; Moore et al., 2008; Shorey et al., 2017). Thus, it will be important for marijuana and IPV research to account for these well-established IPV risk factors.

In addition to controlling for IPV risk factors, researchers have called for investigations on the interaction between marijuana and alcohol use in predicting IPV perpetration (Shorey et al., 2017). Research on simultaneous marijuana and alcohol use shows that it is associated with a number of negative consequences, including more frequent use of either substance, increased quantity of alcohol use, driving while under the influence, social conflicts (e.g., arguments; conflict with spouse), unprotected sex, arrests, and personal consequences (e.g., health, finances; Metrik, Caswell, Magill, Monti, & Kahler, 2016; Subbaraman & Kerr, 2015; Terry-McElrath, O'Malley, & Johnston, 2013). Not surprisingly, simultaneous use of these substances produces greater impairment, disinhibition, and risk-taking relative to either substance when used alone (Subbaraman & Kerr, 2015). From a theoretical standpoint, the disinhibition caused by using alcohol and marijuana together may increase the risk for IPV, as disinhibition, according to the alcohol myopia model (AMM; Steele & Josephs, 1990) is a proposed mechanism for the relationship between alcohol and IPV (Giancola, 2002). Thus, marijuana may further decrease disinhibition when alcohol is consumed, further increasing the risk for IPV.

We are aware of only one study to date that has examined the impact of concurrent marijuana and alcohol use on IPV. A recent cross-sectional study demonstrated that young adult men who were marijuana and alcohol users were more likely to perpetrate sexual IPV than men who only used alcohol (Low et al., 2017). Thus, continued research is needed to examine whether marijuana and alcohol interact to increase the risk for IPV perpetration. In all, knowledge of whether marijuana use is associated with IPV among men arrested for domestic violence, or whether marijuana and alcohol use interact to predict IPV, may provide important clinical information for the development of more effective BIPs. That is, it is currently unknown whether marijuana use would be an important treatment target in BIPs, and thus research in this area would provide initial information on whether these programs should focus attention on reducing marijuana use.

Based on previous findings and theory regarding the role of marijuana use with IPV, we examined whether marijuana use was associated with psychological, physical, and sexual IPV perpetration in a sample of men arrested for domestic violence and court-referred to BIPs. After controlling for alcohol use and problems, antisocial personality symptoms, and relationship satisfaction, we expected marijuana use to be positively associated with IPV perpetration. Antisocial personality symptoms and relationship satisfaction were chosen as covariates due to prior research demonstrating their consistent associations with IPV

perpetration (Brem, Florimbio, Elmquist, Shorey, & Stuart, 2017; Stith, Green, Smith, & Ward, 2008) and speculation that the association between marijuana and IPV may reflect the influence of these confounding variables (e.g., Moore et al., 2008). Based on the combined disinhibiting effects of marijuana and alcohol use, we also expected the strength of the association between marijuana use and IPV perpetration to be stronger for men high in alcohol use and problems, relative to men low in alcohol use and problems.

## Method

### Participants

Participants included men who were arrested for domestic violence and were court-referred to BIPs ( $N = 269$ ). These participants are a subsample of men reported on elsewhere (Brem, Florimbio, Elmquist, Shorey, & Stuart, in press), and were chosen for inclusion in the current study based on having completed all measures of interest. Participants reported a mean age of 32.39 years ( $SD = 11.26$ ). The majority of the sample identified as White (63.2%). Participants also identified as Hispanic or Latino (12.3%), Black (8.6%), American Indian or Alaska Native (4.1%), or other (6.3%); 5.6% of the sample did not report a race. In regards to relationship status, most participants reported being in a current intimate relationship (68.1%). In the entire sample, 27.9% reported being in a dating relationship, 26.4% of participants reported living with a partner but not being married, and 13.8% reported being married. The average length of relationship reported by participants was 4.63 years ( $SD = 7.07$ ).

### Procedure

Participants were recruited for study participation at BIP locations. Study investigators obtained informed consent from individuals interested in participating in the study. Questionnaires were completed in paper and pencil format in a group setting during participants' regularly scheduled BIP sessions. All study participation was voluntary and all information was kept confidential from the BIP group facilitators and courts. No compensation for participating was provided. All procedures were approved by the Institutional Review Board where the study took place. At the time of study participation, the mean number of BIP sessions attended by participants was 11.28 ( $SD = 7.61$ ).

### Measures

**Marijuana Use**—Marijuana use was measured using a single marijuana use item from the Drug Use Disorders Identification Test (DUDIT; Stuart et al., 2003a,b; Stuart et al., 2004), a measure that captures a variety of different substances (e.g., marijuana, cocaine, opiates). The marijuana item asked participants "How often do you use cannabis?", with instructions for participants to think of the year prior to entering their BIP. This is the only item on the DUDIT that is specific to marijuana use. Participants were asked to rate their marijuana use on a 7-point scale (0 = Never, 1 = less than monthly, 2 = monthly, 3 = 2–3 times a month, 4 = weekly, 5 = 2–3 times a week, 6 = 4 or more times a week). Higher scores correspond with more frequent marijuana use. The DUDIT has demonstrated good psychometric properties in prior research (Stuart et al., 2003a,b).

**IPV Perpetration**—Psychological, physical, and sexual IPV perpetration were measured using the Revised Conflict Tactics Scales (CTS2; Straus et al., 1996), a 78-item self-report measure that assesses the amount of negotiation, psychological aggression, physical assault, sexual coercion, and injury within an intimate relationship. The psychological aggression, physical assault, and sexual coercion perpetration subscales were included in the present study. Participants are asked to rate the frequency of each item's occurrence in the year prior to entry into the BIP on a 7-point scale (0=Never; 6=more than 20 times). The psychological perpetration subscale includes 8 questions, the physical perpetration subscale includes 12 questions, and the sexual perpetration subscale includes 7 questions. Total scores for each subscale are obtained by summing the midpoints for each item (e.g., 3–5 times is recoded into 4; Straus, Hamby, & Warren, 2003). Higher scores correspond to more frequent IPV perpetration. Past research with the CTS2 has demonstrated good reliability (Straus, 2004) and good construct and discriminant validity (Straus et al., 1996). For the present study, the internal consistency for the physical perpetration subscale was good ( $\alpha = .88$ ), the psychological perpetration subscale was good ( $\alpha = .83$ ), and the sexual subscale was acceptable ( $\alpha = .63$ ).

**Alcohol Use and Problems**—The 10-item Alcohol Use Disorders Identification Test (AUDIT; Saunders, Asaland, Babor, de la Fuente, & Grant, 1993) was used to measure alcohol use and problems in the year prior to entry into the BIP. Participants rated their agreement with the first seven items on a 5-point scale, and the final three items on a 3-point scale. Possible scores range from 0–40 and were calculated by summing all items. Higher scores correspond to more alcohol use and related problems. In past research the AUDIT demonstrated high internal consistency (average  $\alpha$ 's = .81–.93; Saunders, et al., 1993). Internal consistency in the current sample was good ( $\alpha = .87$ ).

**Antisocial Personality Symptoms**—The Antisocial Personality Disorder (ASPD) subscale of the Personality Diagnostic Questionnaire-4 (PDQ4; Hyler et al. 1988) was used to measure antisocial personality symptoms. The PDQ4 is a brief screening instrument used to assess possible personality disorders, and contains a subscale for symptoms of ASPD (e.g., “Lying comes easily to me and I often do it”). Individuals were asked to rate each item as true or false about their personality, and scores can range from 0–11. Higher scores on the ASPD subscale indicate higher endorsement of symptoms associated with ASPD. In past research, the PDQ4 has demonstrated good test re-test reliability (Trull, 1993), high internal consistency (Hyler et al., 1989), and high sensitivity and specificity for detecting ASPD (Hyler et al., 1989). Internal consistency in the present study was excellent ( $\alpha = .90$ ).

**Relationship Satisfaction**—Relationship satisfaction was measured using the Relationship Assessment Scale (RAS; Hendrick, 1988). Participants indicated their agreement with 7 questions about their current intimate relationship (or most recent intimate relationship if not currently in a relationship) on a 5-point scale (e.g. “How well does your partner meet your needs?”). Possible scores range from 7–35. Higher scores correspond to higher levels of relationship satisfaction. Participants completed the RAS in reference to the same partner they rated on the CTS2. In past research, the RAS has demonstrated good convergent validity with other relationship satisfaction measures and high internal

consistency (Hendrick, Dicke, & Hendrick, 1998). In the present study, internal consistency of the RAS was excellent ( $\alpha = .90$ ).

### Data Analytic Strategy

We examined the relationship between marijuana and IPV perpetration utilizing SPSS version 23.0. Prior to analyses, we log-transformed all IPV variables due to positive skew and kurtosis, consistent with prior IPV research (e.g., Mattson, O'Farrell, Lofgreen, Cunningham, & Murphy, 2012; Shorey, Brasfield, Febres, & Stuart, 2011). First, we examined bivariate correlations among study variables. Second, three separate regression analyses, one for each type of IPV, were conducted to determine whether the relationship between marijuana use and IPV was present after controlling for alcohol use and problems, antisocial personality symptoms, and relationship satisfaction. Finally, after main effect analyses, we examined the interactive effects of alcohol use and problems and marijuana use on IPV following recommendations for testing interactions by Aiken and West (1991). That is, we mean centered independent variables to reduce multicollinearity and then formed an interaction term between alcohol use and problems and marijuana use, which was entered into the regression equations. Significant interactions were probed at high (+1 *SD*) and low (-1 *SD*) levels of alcohol use and problems.

### Results

Means, standard deviations, and correlations among study variables are presented in Table 1. As displayed, psychological, physical, and sexual IPV perpetration were positively and significantly associated with marijuana use. All three forms of IPV were positively and significantly associated with alcohol use and problems and antisocial personality symptoms. Psychological and physical IPV were negatively and significantly related to relationship satisfaction. Marijuana use and alcohol use and problems positively and significantly related to antisocial personality symptoms. Number of BIP sessions completed negatively related to relationship satisfaction. Regarding marijuana use in the year prior to BIP entry, 40.5% of the sample reported no marijuana use, 11.5% reported less than monthly use, 3% reported monthly use, 5.6% reported use 2 to 3 times a month, 4.1% reported weekly use, 5.9% reported use 2 to 3 times a week, and 29.4% reported use 4 or more times a week. Thus, 59.5% of the entire sample reported marijuana use in the previous year and 39.4% of the entire sample reported at least weekly marijuana use.

Table 2 presents results of the regression analyses for each form of IPV perpetration. Semi-partial (*sr*) correlations between marijuana and IPV perpetration, derived from the regression analyses, are presented below. As displayed in Table 2, marijuana use frequency remained positively associated with the psychological ( $sr = .17, p < .01$ ), physical ( $sr = .14, p < .05$ ), and sexual IPV ( $sr = .23, p < .001$ ) perpetration frequency after accounting for alcohol use and problems, antisocial personality symptoms, and relationship satisfaction. The main effect of marijuana use on sexual IPV was qualified by a significant interaction between alcohol use and problems and marijuana use. Specifically, marijuana use was positively associated with IPV perpetration at high ( $\beta = .36, p < .001$ ), but not low ( $\beta = .12, p > .05$ ), levels of alcohol use and problems (see Figure 1).



## Discussion

Recent research indicated that marijuana use positively associated with IPV perpetration among men arrested for domestic violence, but did not examine this association in the presence of other known risk factors for IPV. Therefore, we examined the association between marijuana use and IPV perpetration while controlling for alcohol use and problems, antisocial personality symptoms, and relationship satisfaction in a sample of men arrested for domestic violence and court-referred to attend BIPs. After accounting for these risk factors, our findings demonstrated marijuana use positively associated with all forms of IPV (psychological, physical, and sexual). Moreover, the main effect of marijuana use on sexual IPV was qualified by an interaction between marijuana use and alcohol use and problems, such that marijuana use was associated with IPV at high, but not low, levels of alcohol use and problems among men arrested for domestic violence.

That marijuana use positively related to all three forms of IPV in the present study is noteworthy given previous meta-analytic findings indicating that marijuana use did not relate to sexual IPV (Moore et al., 2008). However, this meta-analysis only included one study that assessed the association between marijuana use and sexual IPV. Other studies show that marijuana use is associated with increased odds for problematic sexual behavior, such as condomless sex (Metrik et al., 2016). Our findings provide preliminary evidence that this association may also extend to sexual IPV perpetration. Importantly, the present findings demonstrated that the association between marijuana use and sexual IPV was stronger for individuals with high levels of alcohol use and problems relative to those with low alcohol use and problems. This finding is consistent with prior research which suggests that polysubstance users report more frequent IPV than non-polysubstance users (e.g., Low et al., 2017), suggesting polysubstance use is an indicator for increased IPV risk. Although our study did not assess the acute effects of marijuana and alcohol use, this finding may also suggest that co-ingestion of marijuana and alcohol could create a high-risk situation for sexual IPV, as simultaneous use of these two substances creates greater disinhibition and impairment than either substance alone (Subbaraman & Kerr, 2015). However, until future research examines these relationships utilizing event-level data (e.g., daily diary studies), firm conclusions about co-ingestion of these two substances on risk for IPV is limited to speculation. Moreover, caution should be used when interpreting this interaction finding due to the small percentage of variance accounted for in sexual IPV by the interaction between marijuana use and alcohol.

Our findings provide important information for future research to build upon, since increasing evidence suggests that marijuana use is positively associated with IPV perpetration. However, the reasons for this association (i.e., mechanisms) remain unknown. In order to understand this association, we believe that future research examining marijuana use at the event-level is needed. Indeed, researchers previously advocated for daily diary studies or ecological momentary assessment designs to explore the temporal association between marijuana use and IPV perpetration (Testa & Brown, 2015; Shorey et al., 2017). This design will allow for the examination of the events that immediately precede IPV, such as marijuana use, and potential mechanisms underlying marijuana-related IPV. This design would also allow for the examination of concordance of marijuana use between partners.

Theory (e.g., Testa & Brown, 2015) and prior research (e.g., Homish et al., 2009) suggests discordant marijuana use among intimate partners may increase the risk for negative couple outcomes, such as IPV, to a greater degree than concordant marijuana use, as concordant substance use may reflect shared behaviors and closeness among intimate partners.

The alcohol myopia model (AMM; Steele & Josephs, 1990), which provides theoretical support for the relationship between alcohol use and IPV, may offer insight into the association between marijuana use and IPV. According to the AMM, alcohol use causes individuals to focus on the most salient aspects in their environment (Steele & Joseph, 1990). When the most salient environmental cue is negative (e.g., negative affect), alcohol will intensify this myopic effect, which may increase the risk for IPV (Giancola, 2002). A similar process may take place for marijuana-related IPV. Indeed, research suggested that marijuana use may increase allocation of attentional resources to negative stimuli (Metrik et al., 2015). Moreover, negative affect may precede, and be increased by, marijuana use (Shadur, Hussong, & Haroon, 2015; Shrier, Ross, & Blood, 2014; Trull, Wycoff, Lane, Carpenter, & Brown, 2016). Preliminary daily diary research with drinking college women demonstrated that marijuana use was positively associated with psychological IPV perpetration at high, but not low, levels of negative affect (Shorey, Stuart, Moore, & McNulty, 2014). Thus, it is plausible that proximal negative affect may impact risk for marijuana-related IPV among men arrested for domestic violence. Future research incorporating event-level research methods should explore this theoretical supposition.

An additional area for future practitioners and researchers is to consider is whether marijuana use negatively impacts intervention outcomes for IPV. As previously mentioned, alcohol interventions for men in BIPs result in improved short-term outcomes relative to BIPs alone although the positive effects of the alcohol intervention fade over time (Stuart et al., 2013). Given the high prevalence of marijuana use among men in BIPs identified in the present study, and our preliminary finding that marijuana and alcohol use and problems interact to predict sexual IPV, it is plausible that marijuana use could negatively impact BIP outcomes. Indeed, individuals who are in alcohol treatment have poorer outcomes when they are using marijuana during treatment relative to individuals who do not use marijuana during treatment (Subbaraman, Metrik, Patterson, & Swift, 2017). Therefore, BIPs should consider targeting marijuana use in their programs in order to determine whether marijuana use treatment impacts BIP outcomes.

There are several limitations to consider when interpreting the findings of the present study. First, the sample was comprised of men arrested for domestic violence perpetration, limiting the generalizability of these findings to men who may perpetrate less frequent or less severe forms of IPV. In addition, the measure of marijuana use consisted of a single item and assessed only the frequency of marijuana use. Utilizing an in-depth measure that extends beyond one item and assesses for other characteristics of marijuana use (e.g., quantity, problems associated with marijuana use) would allow for a more comprehensive understanding of the relation between marijuana use and IPV. The cross-sectional nature of the study design precludes making causal inferences about the study variables. Future studies should employ a longitudinal design to further elucidate the relationship between marijuana use and IPV, while also controlling for identified risk factors for IPV perpetration.



Event-level data (e.g., daily diary designs) would also provide information on the acute effects of marijuana, and the combined effects of marijuana and alcohol, on IPV, and future research should utilize these types of designs. The generalizability of the findings is limited given the sample was comprised of primarily non-Hispanic White men. Future studies should include a more ethnically diverse sample, as well as include women. We also did not collect information on the number of men who declined to participate in the current study and whether they may have differed from men who agreed to participate. Finally, it should be noted that because the sample consisted of men arrested and court-mandated to BIPs, social desirability may have impacted study findings.

In summary, findings demonstrated marijuana use positively associated with psychological, physical, and sexual IPV perpetration among men arrested for domestic violence and court-referred to BIPs. These findings were present even after accounting for other known risk factors for IPV perpetration. We believe continued investigation into the associations between marijuana use and IPV is important due to the public health, legal policy, and treatment implications that would result from this line of research. Continued research utilizing rigorous methodological designs, such as daily diary designs, is needed to further understand the association between marijuana and IPV perpetration. Finally, pending replication and extension, findings suggest BIPs may want to target reductions in marijuana use, which may have the concurrent benefit of reducing IPV.

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**Public Significance Statement**

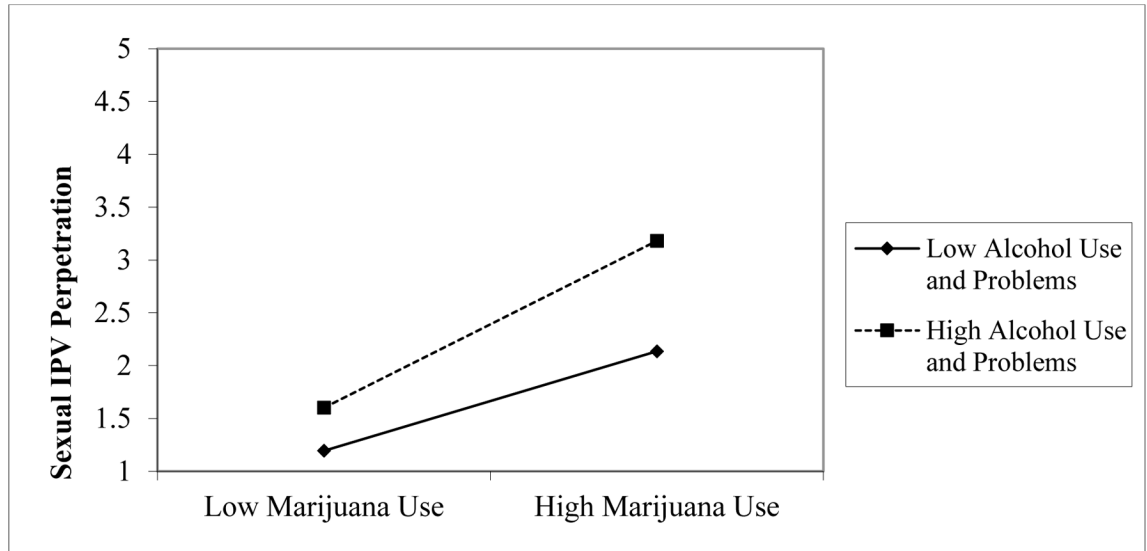
Marijuana use is prevalent among men arrested for domestic violence. Our findings demonstrated that marijuana use was positively associated with intimate partner violence perpetration among men arrested for domestic violence. Treatment of men arrested for domestic violence should consider reducing marijuana.

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**Figure 1.** Interaction between Marijuana Use and Alcohol Use and Problems predicting Sexual IPV Perpetration.

**Table 1**

Means, standard deviations, and bivariate correlations among study variables

	1	2	3	4	5	6	7	8
1. Psychological IPV Perpetration	-							
2. Physical IPV Perpetration	.55**	-						
3. Sexual IPV Perpetration	.28**	.43**	-					
4. Marijuana Use	.17**	.17**	.28**	-				
5. Alcohol Use and Problems	.27**	.23**	.22**	.06	-			
6. Antisocial Symptoms	.18**	.28**	.28**	.22**	.34**	-		
7. Relationship Satisfaction	-.37**	-.27**	-.11	.07	-.02	-.07	-	
8. Number of BIP Sessions	.08	.09	.16**	.00	.10	-.07	-.17**	-
Mean	37.46	10.81	6.36	2.57	9.11	3.16	22.96	11.28
Standard Deviation	38.10	26.06	15.50	2.63	8.65	2.23	7.49	7.61

Note. Psychological, physical, and sexual IPV mean scores reflect raw values; log-transformed scores were used for correlation analyses.

\*\* $p < .01$ .



**Table 2**

Regression analyses predicting IPV perpetration

	Psychological	Physical	Sexual
<b>Model 1</b>	F = 19.96; R <sup>2</sup> = .24	F = 14.64; R <sup>2</sup> = .18	F = 12.81; R <sup>2</sup> = .16
Alcohol Use and Problems	.24 (.01)***	.16 (.01)**	.14 (.01)*
Antisocial Personality	.04 (.04)	.17 (.04)**	.17 (.04)**
Relationship Satisfaction	-.37 (.01)***	-.27 (.01)***	-.13 (.01)*
Marijuana Use	.17 (.03)**	.16 (.03)**	.24 (.03)***
<b>Model 2</b>	F = 16.34; R <sup>2</sup> = .24	F = 12.21; R <sup>2</sup> = .18	F = 11.17; R <sup>2</sup> = .17
Alcohol Use and Problems	.23 (.01)***	.17 (.01)**	.16 (.01)**
Antisocial Personality	.04 (.04)	.17 (.04)**	.17 (.04)**
Relationship Satisfaction	-.37 (.01)***	-.26 (.01)***	-.11 (.01)*
Marijuana Use	.17 (.03)**	.14 (.03)**	.24 (.03)***
Marijuana X Alcohol	-.07 (.00)	.08 (.00)	.11 (.00)*

Note: Standardized betas are reported. Standard errors are in parentheses.

\*  
p < .05,

\*\*  
p < .01,

\*\*\*  
p < .001