Published in final edited form as:

Addict Behav. 2014 January ; 39(1): . doi:10.1016/j.addbeh.2013.10.025.

Acute Alcohol Use Temporally Increases the Odds of Male Perpetrated Dating Violence: A 90-Day Diary Analysis

Ryan C. Shorey¹, Gregory L. Stuart¹, James K. McNulty², and Todd M. Moore¹

¹University of Tennessee – Knoxville

²Florida State University

Abstract

Objective—Despite an extensive theoretical literature on acute alcohol intoxication likely increasing the odds of aggression between intimate partners, there have been few temporal studies on the relation between alcohol use and increased odds of intimate partner violence (IPV). Moreover, the literature on the temporal relation between marijuana use and IPV is in its infancy. The existing temporal research has yet to examine in the same study the three distinct types of IPV that occur most often between partners: physical, psychological, and sexual. Thus, the present study examined the temporal relationship between acute alcohol use, marijuana use, and male perpetrated physical, psychological, and sexual dating violence.

Method—College men who had consumed alcohol in the previous month and were in a current dating relationship participated ($N=67$). Men completed daily surveys that assessed their alcohol use, marijuana use, and violence perpetration (psychological, physical, and sexual) for up to 90 consecutive days.

Results—On any alcohol use days, heavy alcohol use days (5 or more standard drinks), and as the number of drinks increased on a given day, the odds of physical and sexual aggression perpetration increased. The odds of psychological aggression increased on heavy alcohol use days only. Marijuana use days did not increase the odds of any type of aggression.

Conclusions—These findings contribute to a growing body of research on the temporal relation between acute alcohol use and IPV perpetration among college men. Combined with previous research, our findings suggest that dating violence intervention and prevention programs should target reductions in alcohol use.

Keywords

Alcohol; marijuana; dating violence; aggression

© 2013 Elsevier Ltd. All rights reserved.

Corresponding Author: Ryan C. Shorey, M.A., University of Tennessee, Department of Psychology, 1404 Circle Dr., Austin Peay Building, Knoxville, TN 37996, Phone: (865) 974-3489, Fax: (865) 974-3330, rshorey@utk.edu.

Contributors: The first author wrote the first draft of the manuscript. The first author ran statistical analyses. All four authors wrote portions of the method and discussion and revised the entire manuscript. All authors have contributed to and approved this submission.

Conflict of Interest: There are no conflicts of interest among any of the authors.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Numerous theories detail the relation between alcohol use and intimate partner violence (IPV; e.g., Leonard, 1993; Finkel, in press), with the key premise being that acute alcohol use increases the probability of violence perpetration. Indeed, some researchers have even concluded that alcohol use is a contributing cause of IPV (Leonard, 2005). However, temporal research on the acute effects of alcohol increasing the odds of IPV is rare, making research in this area imperative for our understanding of alcohol-related IPV. Likewise, there is some theoretical reason to expect marijuana to contribute to aggressive behavior (see review by Moore et al., 2008), although there is even less temporal research on the marijuana-IPV relation. Thus, the present study examined the temporal relationship between alcohol use, marijuana use, and male perpetrated dating violence among college men.

Each year approximately 80% of college men will perpetrate psychological aggression; 20–30% physical aggression; and 15–20% sexual aggression against a dating partner (Shorey, Cornelius, & Bell, 2008). A recent review demonstrated that alcohol use is robustly associated with psychological, physical, and sexual dating violence by men in cross-sectional studies (Shorey, Stuart, & Cornelius, 2011). This review also suggested that marijuana may be related to male perpetrated aggression. However, without temporal research on the relation between alcohol, marijuana, and male perpetrated dating violence, we are limited in our understanding of whether it is the acute effects of these substances that increase the risk for dating violence.

To date only one study has examined the temporal relationship between alcohol, marijuana, and college men's dating violence perpetration. Moore, Elkins, McNulty, Kivisto, and Handsel (2011) used a 60-day daily diary design to demonstrate that the odds of psychological (OR=7.03) was higher on a drinking day relative to a non-drinking day; that physical aggression (OR=3.64) was higher on a drinking day relative to a non-drinking day among a combined analysis of men and women, with no difference between genders; and psychological (OR=1.16) and physical (OR=1.13) aggression increased with each additional drink consumed. Aggression was not more likely to occur on marijuana use days. This study did not examine sexual aggression perpetration or whether heavy alcohol use days increased the odds of aggression relative to non-heavy use days. Additionally, this study only contained 38 men.

Although other researchers have examined the temporal relationship between substance use and IPV, the results of these studies are difficult to generalize to college men, as one study examined women arrested for domestic violence (Stuart et al., 2013) and one study examined adolescents seeking emergency department services (Rothman et al., 2012). In addition, both studies utilized retrospective interviews and not prospective designs. Still, these studies also demonstrated that IPV perpetration was more likely on drinking days relative to non-drinking days, but not more likely on marijuana use days. However, there is a need for continued research in this area.

The present study therefore examined the temporal relationship between alcohol use, marijuana use, and male perpetrated dating violence. We hypothesized that male perpetrated dating violence (psychological, physical, and sexual) would be more likely to occur on drinking days (any, heavy, and as the number of drinks increased) relative to non-drinking days, but not more likely on marijuana use days relative to non-marijuana use days.

Method

Participants

Male undergraduate students from a Southeastern university participated in the current study. To participate, students had to (a) be at least 18 years of age, (b) be in a one-month or

longer current dating relationship with a partner who was at least 18 years old, (c) have consumed alcohol in the previous month, and (d) have an average of at least 2 face-to-face contact days with their dating partner weekly. Students from psychology courses were screened for eligibility through an online survey website. A total of 170 students met eligibility; 103 (60.5%) agreed to participate in a one-hour survey session to confirm eligibility and assess other personal characteristics. Students were then invited to participate in the 90-day diary study. Of the 103 men, 79 (76.7%) began the daily diary. The final sample is comprised of 67 male students who reported at least one day of face-to-face contact with their partner over the course of the study.

The mean age of participants was 19.74 ($SD = 2.42$) and the average length of participants' dating relationship was 14.20 ($SD = 12.29$) months. Academically, 44.8% were freshmen, 28.4% were sophomores, 11.9% juniors, 13.4% senior, and 1.5% post-bachelor. Ethnically, 86.6% were non-Hispanic Caucasian, 4.5% were African American, and the remainder identified as "other" (e.g., Hispanic, Asian American). The majority of students were heterosexual (95.5%).

Procedure

Each day participants received an email at 12:00 a.m. with a link to that day's surveys, completed on SurveyMonkey.com. Each set of surveys asked about their previous day's behavior, defined as the time elapsed from when they awoke until they went to sleep. An informed consent was completed prior to the first assessment. As compensation, participants received .50 cents for each completed daily survey and were entered into a random drawing for a \$100.00 gift card to an online retailer if they completed at least 70% of the surveys. Participants were informed all portions of the study were confidential. All procedures were approved by the Institutional Review Board of the first author's institution.

Daily Questions

Contact with Partner—Participants were asked if they had face-to-face contact with their partner the previous day.

Dating Violence—On face-to-face contact days participants were asked to answer questions regarding their aggression perpetration using a "Yes/No" format. The Physical Assault and Sexual Coercion subscales of the Revised Conflict Tactics Scales (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) were used to assess physical and sexual aggression. The Psychological Maltreatment of Women Inventory – Short Form (Tolman, 1989) was used to assess psychological aggression. For all types of aggression separately, participants who reported perpetration were coded with a "1" and participants who reported no perpetration were coded with a "0."

Alcohol Use—Participants were asked each day if they (1) consumed alcohol and (2) whether they consumed alcohol prior to the aggression on days in which aggression occurred. The number of standard drinks consumed was also assessed. Days in which people drank alcohol before perpetrating violence, or drank alcohol but did not perpetrate violence, were coded with a "1"; days on which people drank alcohol after, but not before, violence, or did not drink alcohol, were coded with a "0." A count index of the number of drinks consumed on drinking days was also created. On aggression days, this variable was limited to the number of drinks consumed before aggression. Lastly, days on which participants reported heavy drinking (5 or more standard drinks; NIAAA, 1995) were coded with a "1" and all other days were coded a "0". When alcohol was consumed both prior to and after aggression, only the number of drinks prior to aggression was included.

Marijuana Use—Participants indicated each day (1) whether they consumed marijuana and (2) had consumed marijuana prior to aggression, if applicable. Marijuana use days were coded a “1” and non-use days a “0”. Days in which marijuana occurred following aggression were recoded into non-use days.

Data Analytic Method

Multilevel modeling was used to examine whether the odds of perpetrating psychological, physical, and sexual aggression were (a) higher on drinking days relative to non-drinking days (and higher with greater alcohol consumption; and higher on heavy drinking days relative to non-drinking days) and (b) higher on marijuana use days relative to non-use days. To estimate the unique associations between aggression and drinking and marijuana, we regressed each form of aggression onto each drinking variable, one at a time, and marijuana, simultaneously. All drinking and marijuana use variables were uncentered. Models were estimated using HLM 7 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011) with fixed slopes and a Bernoulli sampling distribution, with a logit link function, due to the dichotomous outcomes.

Results

Participants completed a total of 3,441 (57%) of the 6,030 daily surveys. Out of the 90 possible daily surveys, thirty-one participants (46.2%) completed 61 or more days and sixteen (23.8%) completed between 30–60 days. Thus, we had at least one month of data from 70% of the sample. Because physical and sexual aggression is only possible on face-to-face contact days, only face-to-face contact days were included in analyses, which resulted in 1,833 daily surveys. Participants reported a total of 50 acts of psychological aggression, 23 acts of physical aggression, 18 acts of sexual aggression, 313 drinking days, and 100 marijuana use days across face-to-face contact days.

Multilevel analyses (Table 1)¹ demonstrated that all three indicators of alcohol use, controlling for marijuana use, were significantly associated with increased odds of physical and sexual aggression perpetration. In addition, analyses demonstrated that heavy alcohol use, but not any alcohol use or the number of drinks consumed, was significantly associated with increased odds of psychological aggression, controlling for marijuana use. Marijuana use was not significantly associated with any type of aggression.²

Discussion

The present study was only the second known temporal investigation of the relation between alcohol use, marijuana use, and college men’s dating violence perpetration. Moreover, it was the first study to examine psychological, physical, and sexual aggression in the same temporal study. Our findings were consistent with theoretical models of alcohol use and IPV (e.g., Leonard, 1993), and previous research (i.e., Moore et al., 2011), in that the odds of

¹We conducted subsequent analyses controlling for age in the second level of the model. This control had no meaningful effects on the results for alcohol use across all nine models, but marijuana use became a significant predictor of sexual aggression perpetration in the models estimating the effects of number of drinks and heavy alcohol use. Age was only inversely related to sexual aggression perpetration.

²We examined whether missing data impacted results by (a) controlling for the number of survey days completed and (b) testing whether the number of days completed moderated the effects. Although the number of survey days completed was inversely related to the odds of physical ($t = -4.92$, $OR = .96$, $p < .001$) and sexual aggression ($t = -4.54$, $OR = .96$, $p < .001$), none of the effects were altered by the control. Nevertheless, the number of days completed moderated the relation between sexual aggression and both any alcohol use days and number of drinks, such that the odds of sexual aggression increased on any alcohol use days (and number of drinks) among individuals who completed 15 more survey days than the mean but was unrelated to aggression among individuals who completed 15 fewer survey days than the mean. The number of survey days completed was unrelated to participant age, academic level, relationship length, and baseline Alcohol Use Disorder Identification Test (AUDIT) score.

psychological, physical, and sexual aggression were all increased subsequent to alcohol use. Specifically, heavy drinking days increased the odds of all three types of IPV; any alcohol use and the number of drinks consumed increased the odds of physical and sexual IPV; marijuana was unrelated to IPV.

It is notable that heavy alcohol use was the only indicator of alcohol use that was related to all three types of IPV, and was also the indicator of alcohol use that increased the odds of physical aggression to the greatest degree. These findings are consistent with prior research, mostly cross-sectional, which suggests that heavy alcohol use, and particularly the acute intoxicating effects of alcohol, may increase the odds of IPV to the greatest degree (see Leonard, 2005). Although any alcohol use did increase the odds of both physical and sexual aggression, these findings provide further support for the numerous negative consequences that are associated with heavy alcohol consumption among college students.

Combined with previous research, our findings suggest that dating violence prevention should target reductions in alcohol use. Surprisingly, dating violence prevention programs have largely ignored alcohol use (Shorey, Zucosky et al., 2012). A number of intervention programs could be employed to reduce alcohol use among college students to reduce their risk for dating violence, such as brief motivational interventions. Indeed, Woodin and O'Leary (2010) demonstrated that a brief motivational intervention for dating violence and alcohol use among college students resulted in reduced aggression and alcohol use relative to a control group. Thus, continued prevention efforts aimed at reducing alcohol use, in an effort to reduce dating violence, is needed.

The current study has a number of limitations. The daily compliance rate was low, although we did have one month of data from 70% of the sample and the compliance rate is also partially offset by the power inherent in a daily diary design. The generalizability of findings is limited due to the sample of primarily non-Hispanic Caucasian college men. We did not obtain corroborating reports of violence from relationship partners. Additionally, we have no information on the individuals who qualified for the study but chose not to complete the study and thus we were unable to compare these individuals to those who completed the study to determine if they differed in important ways. Finally, social desirability may have impacted results.

In summary, the current study provides continued support for the temporal effect of alcohol on increasing the odds of dating violence perpetration among college men. Combined with previous research and theoretical understandings of alcohol-related IPV, dating violence intervention and prevention programs could be improved by including the reduction of alcohol use as a programmatic component.

Acknowledgments

Role of Funding Sources: This work was supported, in part, by grants F31AA020131 and K24AA019707 from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) awarded to the first and second authors, respectively. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIAAA or the National Institutes of Health.

References

- Finkel E. The I³ Model: Meta-theory, theory, and evidence. *Advances in Experimental Social Psychology*. (in press).
- Leonard, KE. US Department of Health and Human Services. Research Monograph 24: Alcohol and Interpersonal Violence: Fostering Multidisciplinary Perspectives. Rockville, MD: National

- Institutes of Health; 1993. Drinking patterns and intoxication in marital violence: Review, critique, and future directions for research; p. 253-280. NIH Publication No. 93-3496
- Leonard KE. Alcohol and intimate partner violence: when can we say that heavy drinking is a contributing cause of violence? *Addiction*. 2005; 100:422–425.10.1111/j.1360-0443.2005.00994.x [PubMed: 15784050]
- Moore TM, Elkins SR, McNulty JK, Kivisto AJ, Handsel VA. Alcohol use and intimate partner violence perpetration among college students: Assessing the temporal association using electronic diary technology. *Psychology of Violence*. 2011; 1:315–328.10.1037/a0025077
- Moore TM, Stuart GL, Meehan JC, Rhatigan DL, Hellmuth J, Keen S. Drug use and aggression between intimate partners: A meta-analytic review. *Clinical Psychology Review*. 2008; 28:247–274.10.1016/j.cpr.2007.05.003 [PubMed: 17604891]
- National Institute on Alcohol Abuse and Alcoholism. NIH publication no. 95-3769. Rockville, Md: US Department of Health and Human Services, Public Health Service, National Institutes of Health, NIAAA; 1995. The physicians' guide to helping patients with alcohol problems.
- Raudenbush, SW.; Bryk, AS.; Cheong, YF.; Congdon, R.; du Toit, M. HLM7: Hierarchical linear and nonlinear modeling. Scientific Software International; Lincolnwood, IL: 2011.
- Rothman EF, Stuart GL, Winter M, Wang N, Bowen DJ, Bernstein J, Vinci R. Youth alcohol use and dating abuse victimization and perpetration: A test of the relationships at the daily level in a sample of pediatric emergency department patients who use alcohol. *Journal of Interpersonal Violence*. 2012; 27:2959–2979.10.1177/0886260512441076 [PubMed: 22550149]
- Shorey RC, Cornelius TL, Bell KM. A critical review of theoretical frameworks for dating violence: Comparing the dating and marital fields. *Aggression and Violent Behavior*. 2008; 13:185–194.10.1016/j.avb.2008.03.003
- Shorey RC, Stuart GL, Cornelius TL. Dating violence and substance use in college students: A review of the literature. *Aggression and Violent Behavior*. 2011; 16:541–550.10.1016/j.avb.2011.08.003 [PubMed: 22125415]
- Shorey RC, Zucosky H, Brasfield H, Febres J, Cornelius TL, Sage C, Stuart GL. Dating violence prevention programming: Directions for future interventions. *Aggression and Violent Behavior*. 2012; 17:289–296.10.1016/j.avb.2012.03.001 [PubMed: 22773916]
- Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The Revised Conflict Tactics Scales (CTS-2): Development and preliminary psychometric data. *Journal of Family Issues*. 1996; 17:283–316.10.1177/019251396017003001
- Stuart GL, Moore TM, Elkins SR, O'Farrell TJ, Temple JR, Ramsey S, Shorey RC. The temporal association between substance use and intimate partner violence among women arrested for domestic violence. *Journal of Consulting and Clinical Psychology*. 2013; 81:681–690.10.1037/a0032876 [PubMed: 23647284]
- Tolman RM. The development of a measure of psychological maltreatment of women by their male partners. *Violence and Victims*. 1989; 4:159–177. [PubMed: 2487132]
- Woodin EM, O'Leary KD. A brief motivational intervention for physically aggressive couples. *Prevention Science*. 2010; 11:371–383.10.1007/s11121-010-0176-3 [PubMed: 20401635]

Highlights

Substance use is theorized to increase intimate partner violence.

The current study examined the temporal relation between alcohol, marijuana, and male dating violence perpetration.

Alcohol use temporally increased the odds of psychological, physical, and sexual IPV.

Marijuana did not temporally increase the odds of IPV.

Dating violence prevention should target reduced alcohol use.

Table 1

Temporal Associations between Alcohol Use, Marijuana Use, and Dating Violence Perpetration.

Psychological Aggression Perpetration					
	<i>t</i>	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>CI</i>
Alcohol Use (Yes/No)	-1.17	-.33	.28	.71	.41, 1.25
Marijuana Use (Yes/No)	1.56	.68	.44	1.99	.83, 4.74
Alcohol Use (# of Drinks)	.78	.02	.02	1.01	.97, 1.06
Marijuana Use (Yes/No)	1.33	.56	.42	1.76	.76, 4.07
Alcohol Use (Heavy Drinking)	2.26*	.57	.25	1.78	1.08, 2.94
Marijuana Use (Yes/No)	1.06	.47	.44	1.60	.67, 3.81
Physical Aggression Perpetration					
	<i>t</i>	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>CI</i>
Alcohol Use (Yes/No)	3.82***	.71	.18	2.04	1.41, 2.95
Marijuana Use (Yes/No)	1.45	.77	.52	2.15	.76, 6.08
Alcohol Use (# of Drinks)	6.06***	.11	.02	1.12	1.08, 1.17
Marijuana Use (Yes/No)	1.33	.70	.53	2.02	.72, 5.71
Alcohol Use (Heavy Drinking)	7.67***	1.37	.17	3.93	2.77, 5.59
Marijuana Use (Yes/No)	1.31	.72	.54	2.05	.70, 6.02
Sexual Aggression Perpetration					
	<i>t</i>	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>CI</i>
Alcohol Use (Yes/No)	4.54***	1.35	.29	3.87	2.15, 6.95
Marijuana Use (Yes/No)	1.25	.55	.44	1.74	.73, 4.16
Alcohol Use (# of Drinks)	4.05***	.07	.02	1.08	1.04, 1.12
Marijuana Use (Yes/No)	1.83	.72	.39	2.05	.95, 4.45
Alcohol Use (Heavy Drinking)	2.71**	.70	.25	2.02	1.21, 3.35
Marijuana Use (Yes/No)	1.91	.76	.39	2.13	.97, 4.66

Note: SE = Standard error; OR = Odds ratio; CI = Confidence interval.

* $p < .05$,

** $p < .01$,

*** $p < .001$