

Daily Associations Between Alcohol Consumption and Dating Violence Perpetration Among Men and Women: Effects of Self-Regulation

CYNTHIA A. STAPPENBECK, PH.D.,^{a,*} NATASHA K. GULATI, B.A.,^a & KIM FROMME, PH.D.^b

^a*Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, Washington*

^b*Department of Psychology, University of Texas at Austin, Austin, Texas*

ABSTRACT. Objective: Alcohol intoxication has been associated with dating violence perpetration, defined here as psychological and/or physical violence occurring between young adult dating partners. However, little is known about how the individual variability in the level of alcohol intoxication would influence dating violence perpetration and how sex and self-regulation might influence this association. **Method:** College-aged men and women ($N = 146$) from a large southwestern U.S. university completed background questionnaires, including the Brief Self-Control Scale, to assess self-regulation and then reported their dating violence perpetration and alcohol consumption using a 90-day Timeline Followback assessment. Their average estimated blood alcohol concentration (eBAC) and their daily deviation from this average were calculated for each of the 90 days to examine the between- and within-person effects of alcohol consumption, respectively. **Results:** Results

of a two-level generalized estimating equation suggest that increases in daily eBAC were associated with an increased likelihood of perpetrating dating violence; however, this association was stronger for those who had a low average eBAC compared with those who had a high average eBAC. For those who had a low average eBAC, higher self-regulation was associated with a lower probability of perpetrating dating violence, whereas among those with a high average eBAC, self-regulation was not associated with dating violence perpetration. Sex did not moderate the association between eBAC and dating violence perpetration. **Conclusions:** Findings highlight the importance of self-regulation in dating violence perpetration—particularly for those with low average eBACs—and the need for varied intervention strategies, depending on one's typical drinking pattern. (*J. Stud. Alcohol Drugs*, 77, 150–159, 2016)

INTIMATE PARTNER VIOLENCE broadly refers to violence occurring between current spouses, current nonmarital partners, former marital partners, or former nonmarital partners (Saltzman et al., 1999). Dating violence is a specific form of intimate partner violence, defined here as psychological and/or physical violence occurring between young adult dating partners. Because the factors associated with violence between marital partners may differ from dating partners, when possible we have focused our literature review on what is known about violence between dating partners specifically (for a review and comparison of theoretical models between marital and dating violence, see Shorey et al., 2008). Dating violence is a significant public health concern and has been associated with myriad negative consequences including depression and anxiety (Amar & Gennaro, 2005; Harned, 2001), increased risk for substance use, unhealthy weight control behaviors, and suicidal ideation or suicide attempts (Silverman et al., 2001).

Rates of violence between partners tend to increase between ages 15 and 25, reaching the peak between ages 20 and 25 (Johnson et al., 2014; O'Leary, 1999). This period typically corresponds with attendance in college, which has been shown to be a time of increased risk for dating violence (Kaukinen, 2014; Smith et al., 2003). Indeed, one in three college couples reported at least one incident of violence during their dating relationship (Jackson, 1999; Lewis & Fremouw, 2001). Between 20% and 37% of dating relationships involve physical aggression (Bell & Naugle, 2007; Sears et al., 2007; Silverman et al., 2001), defined here as a physical attack that caused harm to a partner's body (e.g., hitting, slapping, punching; Centers for Disease Control and Prevention [CDC], 2014; Eaton et al., 2007). Psychological aggression, or any direct or indirect nonphysical act intended to upset a partner or harm his or her self-worth (e.g., name-calling, shaming, embarrassing on purpose; CDC, 2014; Jenkins & Aubé, 2002), occurs in as many as 70%–90% of dating couples (Banyard et al., 2000; Neufeld et al., 1999; Shorey et al., 2008).

Although it is still the case that the majority of studies focus on male-perpetrated aggression, some that have included both men and women in the same study have found comparable rates of physical and psychological dating violence perpetration (Harned, 2001; Katz et al., 2002; Prospero, 2007; Riggs et al., 1990; Shorey et al., 2008; Stappenbeck & Fromme, 2014; Straus, 2008). Other studies have found that women were more likely to perpetrate psychological

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*Correspondence may be sent to Cynthia A. Stappenbeck at the Department of Psychiatry and Behavioral Sciences, University of Washington, 1100 NE 45th Street, Suite 300, Seattle, WA 98105, or via email at: cstappen@uw.edu.

dating violence (Moore et al., 2011) and a combination of psychological and physical dating violence (Rothman et al., 2011) compared with men.

Alcohol and dating violence

Alcohol use has consistently been related to intimate partner violence among adults and married couples (for a review, see Foran & O'Leary, 2008; Leonard & Quigley, 1999; Wells et al., 2008). Although less research has been conducted on the link between alcohol use and dating violence among college-aged individuals, a growing body of literature suggests that there is a significant association (Fossos et al., 2007; Hines & Straus, 2007; Rapoza & Baker, 2008; Stappenbeck & Fromme, 2010, 2014; Stets & Henderson, 1991). A recent meta-analysis of dating violence perpetration among youth ages 11–21 concluded that the frequency or quantity of alcohol use, heavy episodic drinking (typically defined as consuming four or more drinks for women and five or more drinks for men in a 2-hour period), and alcohol problems were positively associated with dating violence perpetration (Rothman et al., 2012a). Moreover, Roudsari et al. (2009) examined dating violence among college students and found that higher estimated peak blood alcohol concentration (eBAC) in the past month was associated with increased perpetration of psychological aggression. Further, perpetrators of dating violence reported consuming alcohol at the time the aggressive behavior occurred; however, the authors did not examine whether the level of intoxication within each event was associated with dating violence.

In one comprehensive model of dating violence, several contextual (e.g., exposure to aggression) and situational (e.g., alcohol use) factors are proposed to influence dating violence perpetration (Riggs & O'Leary, 1989). Although alcohol use is included as a situational factor thought to be associated with increased dating violence perpetration, the model does not specifically address how alcohol may influence this behavior. The proximal effects model provides one conceptual model to explain the link between alcohol use and dating violence and posits that acute alcohol consumption contributes directly to the perpetration of dating violence (Chermack & Taylor, 1995; Leonard & Quigley, 1999; Shorey et al., 2011). Specifically, alcohol consumption is thought to impair higher order cognitive processes that may otherwise serve to inhibit aggressive behavior (Giancola, 2000). Because of this pharmacological effect of alcohol, as well as an individual's beliefs about the effect of alcohol on aggressive behavior (Fossos et al., 2007), dating violence perpetration should be more likely after consuming alcohol.

Several other competing theories have been posited to explain the association between alcohol use and aggression, including the indirect effects and the spurious models (Leonard & Quigley, 1999; Shorey et al., 2011). In the indirect effects model, rather than a direct association between

alcohol and aggression, alcohol consumption is thought to influence other variables (e.g., relationship satisfaction; Kelly & Halford, 2006), and these other variables in turn contribute to partner aggression (e.g., O'Leary et al., 1994). In the spurious model, alcohol use and aggression are hypothesized to be related because of their association with a third variable that is associated with aggressive behavior, such as trait aggressivity. Although trait aggressivity or a history of aggression has been associated with subsequent aggression (Eaton et al., 2007; Roudsari et al., 2009), the relationship between alcohol and aggression typically remains significant after these factors have been controlled (Kaufman-Kantor & Straus, 1990; Leonard & Senchak, 1996), suggesting that the indirect effects and spurious models may not provide the best explanation for the association between alcohol and aggression. The proximal effects model has received the most empirical support (for a review, see Shorey et al., 2011) and was the focus of our investigation.

Whereas a large number of studies have examined the proximal effects of alcohol on dating violence using aggregate methods, a smaller number of studies have focused on these proximal effects using daily reports. In one of the first known studies to examine the daily association between alcohol use and dating violence among male and female youth ages 17–21, Rothman et al. (2012b) found that, compared with nondrinking days, dating violence perpetration was more likely on drinking days and heavy drinking days. Similarly, in a sample of college men and women, psychological and physical dating violence perpetration were more likely on drinking days compared with nondrinking days and as the number of drinks consumed increased (Moore et al., 2011).

In two separate studies, Shorey and colleagues examined alcohol consumption and dating violence perpetration among college men (Shorey et al., 2014a) and women (Shorey et al., 2014b) using daily assessments for a 90-day period. Among men, the odds of physical aggression perpetration increased on days of any alcohol use, on days of heavy alcohol use (i.e., five or more standard drinks), and as their drinking increased on a given day; the odds of psychological aggression increased on heavy drinking days (Shorey et al., 2014a). Among women, the odds of both psychological and physical aggression increased on days of any alcohol use, heavy alcohol use (i.e., four or more standard drinks), and as their drinking increased on a given day (Shorey et al., 2014b).

Event-level studies provide a richness of data not fully used by the previous event-level investigations of alcohol and dating violence (Moore et al., 2011; Rothman et al., 2012b; Shorey et al., 2014a, 2014b). Specifically, event-level studies make it possible to examine the within-person effects of intoxication—the deviation on a drinking occasion from the individual's own average level of intoxication—on the likelihood of dating violence perpetration. Although the within-person effect of alcohol intoxication on the perpetration of dating violence has not been previously examined,

increases in an individual's level of intoxication above their average have been associated with a general measure of aggression (Neal & Fromme, 2007; Quinn et al., 2013). In addition, Quinn and colleagues found that sex moderated this association such that men had a stronger association between increased levels of intoxication and an increased probability of aggression relative to women.

In the one known study that compared the effects of alcohol on dating violence perpetration among men and women, men were more likely to perpetrate psychological aggression on a drinking day compared with women (Moore et al., 2011). However, men and women did not differ in their likelihood to perpetrate physical aggression on drinking days. It is not known whether sex would moderate the association between one's level of alcohol intoxication and the perpetration of dating violence. A greater understanding of individual variability in the link between alcohol intoxication and dating violence could help shed light on situations in which individuals are at increased risk of perpetrating dating violence.

Self-regulation as a moderator of the alcohol–dating violence association

Self-regulation broadly refers to “the many processes by which the human psyche exercises control over its functions, states, and inner processes” (Vohs & Baumeister, 2004, p. 1). Individuals with less ability to self-regulate, therefore, have low levels of self-control. Because violence can be thought of as a failure to exercise adequate self-control (Baumeister, 1997; Gottfredson & Hirschi, 1990), it follows that less self-regulation or self-control would be associated with the perpetration of violence. Indeed, participants low in trait self-control indicated greater aggression intentions than those high in trait self-control (DeWall et al., 2007). In addition, individuals with lower dispositional self-control perpetrated approximately 7.5 times more acts of dating violence compared with those having higher levels of self-control (Finkel et al., 2009).

In the conceptual framework proposed by Leonard (1993), distal factors such as personality traits are thought to influence the association between alcohol intoxication and aggression and could help our understanding of who is at greatest risk of perpetrating dating violence. Poor self-regulation has been associated with increased aggressive behavior (DeWall et al., 2007; Finkel, 2008; Gottfredson & Hirschi, 1990) but has not been examined as a moderator of the link between alcohol intoxication and dating violence. Given that the pharmacological effects of alcohol intoxication (e.g., increased impulsivity, impaired cognitive processing) also impair processes essential for self-regulation (Hull & Slone, 2004), it is necessary to examine self-regulation as a moderator of the link between alcohol intoxication and dating violence.

Present study

The present study provided an examination of the proximal effects model of alcohol and dating violence and extended previous event-level investigations by examining the within-person association between alcohol intoxication and dating violence perpetration. In addition, the present study sought to examine the distal background factors of sex and self-regulation, which may help illuminate who is at greatest risk of perpetrating dating violence under conditions of acute intoxication, thus informing targeted intervention and prevention efforts. We hypothesized that greater increases in level of intoxication from an individual's own average level of drinking and poor self-regulation would be associated with a greater likelihood of perpetrating dating violence. We also expected that the association between increased level of intoxication and dating violence perpetration would be stronger for men compared with women based on previous research examining a measure of general aggression (Quinn et al., 2013) and for those with poor self-regulation.

Method

Participants and procedures

A convenience sample of 150 (51% female) participants was recruited from a pool of introductory psychology students at a large southwestern U.S. university, as well as from newspaper advertisements, flyers around the community and campus, and Internet advertisements. Introductory psychology students were sent an email from the study email address seeking individuals interested in participating in a study on the “effects of alcohol on communication in relationships.” Print advertisements and flyers included this same text. Interested individuals were instructed to call the laboratory and were screened over the telephone for inclusion criteria by trained research assistants. Eligible participants were in a current dating relationship for at least 1 month but were not married, self-identified as heterosexual, and were between ages 21 and 30 years.

Data for the present study were taken from a larger study that included an alcohol administration procedure. Therefore, consistent with recommendations for the ethical administration of alcohol (National Advisory Council on Alcohol Abuse and Alcoholism, 2005), participants were also required to be alcohol non-naïve (defined as having consumed at least three drinks in one sitting at least three times in the past 3 months) with no history of problem drinking (e.g., seeking help or being hospitalized for drinking), or any medical conditions, medication use, or personal reasons that contraindicated the ingestion of alcohol.

Eligible and interested participants were scheduled for an in-person appointment to come into the laboratory. On arrival, participants provided informed consent, were weighed,

completed background questionnaires, and were then taken into a private room to complete the semi-structured interview with a trained research assistant. For the parent study, they next participated in an alcohol administration paradigm; however, all data for the current study were collected before alcohol administration. The university's institutional review board approved all study procedures.

Four participants were excluded from these analyses for not providing data on their daily alcohol use and dating violence, resulting in a final sample of 146 (50% female). On average, participants were 23.0 ($SD = 2.2$) years old and their ethnic distribution was 51.4% White, 21.9% Hispanic, 16.4% Asian, 2.7% Black, and 7.6% multi-ethnic or other. Approximately half of the participants (47.3%) estimated that their average annual family income was less than U.S. \$60,000. The majority of participants indicated that their current dating relationship was exclusive (79.5%), whereas 17.1% were in non-exclusive dating relationships, 3.4% were engaged, and the majority (56.6%) were in their current relationships for more than 12 months.

Measures

Demographics. Participants reported their age, sex, ethnicity, and estimated average annual family income. They were also asked about their relationship status and the length of time in their current relationship.

Self-regulation. Self-regulation was assessed with the 13-item Brief Self-Control Scale (B-SCS; Tangney et al., 2004). The B-SCS is designed to evaluate perceptions of self-control along a variety of theoretically derived dimensions (self-control of thoughts, emotions, impulses, and performance). Participants are asked to indicate how much each item (e.g., "I am good at resisting temptation") reflects how they typically are on 5-point scales (1 = *not at all*, 5 = *very much*). Items are summed such that higher scores are indicative of better self-regulation, and the B-SCS had good internal reliability (Cronbach's $\alpha = .82$).

Alcohol use and dating violence. The Timeline Follow-back (TLFB; Sobell & Sobell, 1992; Sobell et al., 1996) is a semi-structured interview that was administered to obtain daily reports of drinking and dating violence perpetration for the previous 90 days. The TLFB is a widely used and accepted method for collecting retrospective reports of daily alcohol consumption. It has also been used to assess partner violence using a modified version of the Revised Conflict Tactics Scale (CTS2; Straus et al., 1996) in conjunction with the TLFB assessment (Chermack et al., 2006). Using a calendar marked with holidays and special days specific to the university and larger community (e.g., sports games, semester start and end dates), participants reported on which days they consumed alcohol, the number of standard drinks they consumed (defined as 12 oz. of beer, 5 oz. of wine, or 1.5 oz. of distilled spirits), and the amount of time in which

they consumed the drinks. From these data, as well as the participants' sex and weight, we estimated their blood alcohol concentration (Matthews & Miller, 1979).

Using the TLFB calendar, participants were shown a list of 11 aggressive behaviors—including both psychological (e.g., insulted or swore, shouted, or yelled) and physical (e.g., pushed, grabbed, shoved, or slapped) aggression—as well as an option to indicate other aggressive behaviors not on the list. Participants were asked to indicate whether they engaged in any of these behaviors with their dating partner (0 = *no dating violence*, 1 = *dating violence perpetration*) for each of the previous 90 days. On days in which participants indicated both alcohol consumption and dating violence perpetration, they were queried as to whether they started consuming alcohol before or after the occurrence of violence.

Data analytic strategy

Because we had repeated measures nested within individuals, we examined the event-level associations between alcohol intoxication and dating violence using two-level generalized estimating equations (Hardin & Hilbe, 2003) in Stata Version 13 (StataCorp LP, College Station, TX). Of 334 events in which dating violence was perpetrated, only 20 included physical violence and only 3 of those involved physical but not psychological aggression. Because of the low endorsement of physical violence, we combined psychological and physical violence perpetration. (All models were re-run, excluding the physical violence events [$n = 20$], to examine the effects of alcohol intoxication on psychological dating violence perpetration separately. Results were identical to those that included physical violence perpetration.) Therefore, the dependent variable referred to the occurrence of any dating violence on a given day. Because this was binary, we specified the binomial reference distribution and a logit link function.

To examine the between- and within-person effects of eBAC on dating violence, we created an average (i.e., person-mean) eBAC variable to represent the between-person effects and a daily eBAC variable by person-mean centering (e.g., daily eBAC = eBAC – person-mean eBAC) to represent the within-person effects (Raudenbush & Bryk, 2002). Before the analyses, both daily and average eBAC values were multiplied by 100. Therefore, the odds ratios for the eBAC variables reflect changes in odds associated with an eBAC change of .01g/dl. Because we were interested in examining the effects of alcohol intoxication on the occurrence of dating violence, we recoded daily eBAC values to 0 before centering for events in which the dating violence occurred before alcohol consumption ($n = 49$). We also excluded six events in which the eBAC was .40g/dl or greater.

We first conducted a main-effects-only generalized estimating equations model that included average eBAC, daily

TABLE 1. Descriptive statistics of dating violence, alcohol consumption and intoxication, and self-regulation by men and women

Variable	Women	Men	$\chi^2(1 df)$
	(<i>n</i> = 73) <i>n</i> (%)	(<i>n</i> = 73) <i>n</i> (%)	
Any dating violence perpetration	54 (74.0)	39 (53.4)	6.7*
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>t</i> test
Dating violence perpetration frequency ^a	2.2 (2.5)	2.2 (4.1)	0.02
Drinks per day	0.9 (1.9)	1.4 (3.0)	-12.6***
Drinks per drinking day	3.8 (2.3)	5.0 (3.6)	-10.4***
Average eBAC (g/dl) ^b	.017 (.020)	.016 (.016)	2.1*
eBAC per drinking day (g/dl)	.078 (.071)	.056 (.059)	9.8***
Self-regulation ^c	41.6 (8.1)	41.4 (8.4)	0.1

Notes: eBAC = estimated blood alcohol concentration. ^aDating violence perpetration frequency refers to the average number of days participants reported perpetrating dating violence on the Timeline Followback (observed range: 0–22 days); ^baverage eBAC reflects the average across the entire 90-day assessment period, including nondrinking days; ^cself-regulation was assessed with the Brief Self-Control Scale, with higher scores indicative of better self-regulation (observed range: 16–61). **p* < .05; ****p* < .001.

eBAC, self-regulation, and sex (0 = *female*, 1 = *male*) as independent variables predicting dating violence perpetration. Next, we conducted a model in which we also included interactions between self-regulation and both average eBAC and daily eBAC. We also included interactions between sex and both average eBAC and daily eBAC to examine possible moderating effects of self-regulation and sex on the associations between alcohol intoxication and dating violence. An indicator variable for weekend days compared with weekdays was also included in all models.

Results

The majority of the sample (63.7%) perpetrated dating violence at least once during the 90-day assessment period. Across all participants, 334 events of dating violence perpetration were reported. Of these, alcohol was consumed before the occurrence of dating violence in 122 (36.5%) events. Descriptive statistics for the primary study variables are provided in Table 1. Men and women in this sample did not differ in their self-regulation. Although more women perpetrated dating violence than did men, women and men did not differ in terms of the frequency with which they perpetrated dating violence. In addition, men consumed a greater number of standard drinks; however, women achieved a greater eBAC, which adjusts for weight and sex differences in the metabolism of alcohol (Jones & Jones, 1976).

In the main-effects-only model (Table 2, Model 1), dating violence perpetration was more likely on weekends compared with weekdays. Daily eBAC was significantly associated with dating violence perpetration. A .01 increase in daily eBAC was associated with a 7% increase in odds of dating violence. Self-regulation was also significantly associated such that a 1-unit decrease in self-regulation was associated with a 3% increase in odds of dating violence.

Sex and average alcohol intoxication were not associated with dating violence perpetration.

Next, we examined sex and self-regulation as moderators of the association between average and daily eBAC and dating violence perpetration (Table 2, Model 2). There was a significant interaction between average and daily eBAC. As shown in Figure 1, increases in daily eBAC were associated with an increased likelihood of perpetrating dating violence; however, this association was stronger for those who had a low average eBAC (shown at 1 *SD* below the mean of average eBAC) compared with those who had a high average eBAC (shown at 1 *SD* above the mean of average eBAC). In addition, self-regulation moderated the association between average eBAC and dating violence (Figure 2).

For those who had a low average eBAC, the probability of perpetrating dating violence decreased as self-regulation increased, whereas among those who had a high average eBAC, the probability of perpetrating dating violence remained fairly constant regardless of self-regulation. Self-regulation did not moderate the association between daily alcohol intoxication and dating violence perpetration, and sex did not moderate the association between either average or daily alcohol intoxication and dating violence perpetration. Finally, we examined a model in which we trimmed the nonsignificant interaction terms (Table 2, Model 3) and found that results were consistent across models.

Discussion

This is the first known study to examine the influence of individual variability of alcohol intoxication on dating violence perpetration among college-aged men and women. Consistent with hypotheses, the results of the present study highlight the importance of individual variability in one's level of alcohol intoxication on dating violence perpetration.

TABLE 2. Generalized estimating equation models predicting dating violence perpetration

Variable	Model 1		Model 2		Model 3	
	<i>b</i>	OR [95% CI]	<i>b</i>	OR [95% CI]	<i>b</i>	OR [95% CI]
Male sex	-0.01	0.99 [0.79, 1.27]	0.05	1.05 [0.82, 1.35]	0.01	1.01 [0.79, 1.28]
Weekend	0.62***	1.87 [1.47, 2.37]	0.61***	1.84 [1.44, 2.33]	0.60***	1.81 [1.43, 2.31]
Average eBAC	0.01	1.01 [0.95, 1.08]	0.10**	1.11 [1.03, 1.20]	0.07*	1.08 [1.01, 1.15]
Daily eBAC	0.06***	1.07 [1.04, 1.09]	0.09***	1.09 [1.06, 1.13]	0.08***	1.09 [1.06, 1.11]
Self-regulation	-0.03***	0.97 [0.95, 0.98]	-0.03***	0.97 [0.95, 0.98]	-0.04***	0.97 [0.95, 0.98]
Average eBAC × Daily eBAC			-0.01**	0.99 [0.98, 0.996]	-0.01*	0.99 [0.98, 0.997]
Average eBAC × Self-Regulation			0.01**	1.01 [1.00, 1.02]	0.01*	1.01 [1.00, 1.02]
Daily eBAC × Self-Regulation			-0.001	0.999 [0.997, 1.002]		
Average eBAC × Male Sex			-0.08	0.92 [0.81, 1.05]		
Daily eBAC × Male Sex			-0.02	0.98 [0.94, 1.02]		
$\chi^2(df)$	121.17 (5)***		142.16 (10)***		137.42 (7)***	

Notes: OR = odds ratio; CI = confidence interval; eBAC = estimated blood alcohol concentration.

p* < .05; *p* < .01; ****p* < .001.

In support of the proximal effects model, increased drinking above one’s own average level of intoxication is associated with an increased likelihood of perpetrating dating violence. Further, results suggest that this positive association between daily increases in alcohol intoxication and the likelihood of dating violence perpetration was stronger for typically lighter drinkers, or those with a low average eBAC, compared with typically heavier drinkers, or those with a high average eBAC.

Overall, this pattern of results suggests that lighter drinkers may be less tolerant of the effects of alcohol or lack experience dealing with the effects of heavy drinking, placing them at increased risk of perpetrating dating violence when they consume alcohol at greater amounts than their average. It is also possible that these results could support the spurious model of alcohol and dating violence. That is, one’s typical drinking pattern as well as one’s daily deviation in

alcohol intoxication may be attributable to another factor that is also associated with dating violence perpetration that was not examined in the current study, such as stress (Wolitzky-Taylor et al., 2008) or relationship dissatisfaction (Moore et al., 2011).

Contrary to hypotheses, self-regulation did not moderate the association between daily alcohol intoxication and dating violence perpetration, but rather influenced the association between an individual’s average level of alcohol intoxication and dating violence perpetration. Specifically, for those who were lighter drinkers, the probability of perpetrating dating violence decreased as self-regulation increased. However, self-regulation was not associated with dating violence perpetration among individuals who were heavier drinkers. It appears as though self-regulation may provide a buffer against perpetrating dating violence among lighter drinkers, whereas the dating violence reported by heavier drinkers

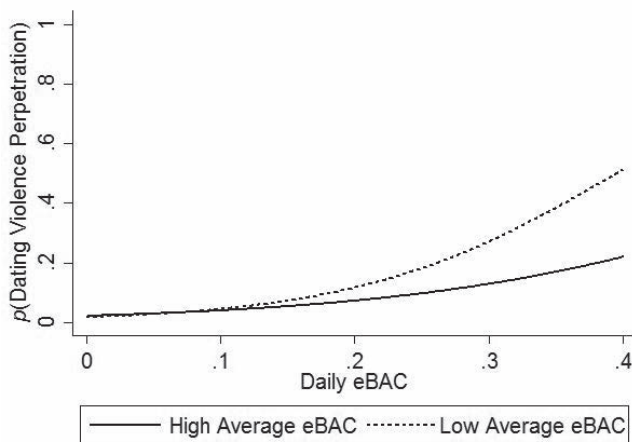


FIGURE 1. Predicted probability of dating violence perpetration as a function of daily estimated blood alcohol concentration (eBAC) and average eBAC from Model 3. To show estimates for specific eBAC values rather than for deviations from person-mean levels, estimates are displayed for probabilities at the average of person-mean eBAC. Average eBAC is plotted at 1 SD above (i.e., high average eBAC) and below (i.e., low average eBAC) the mean.

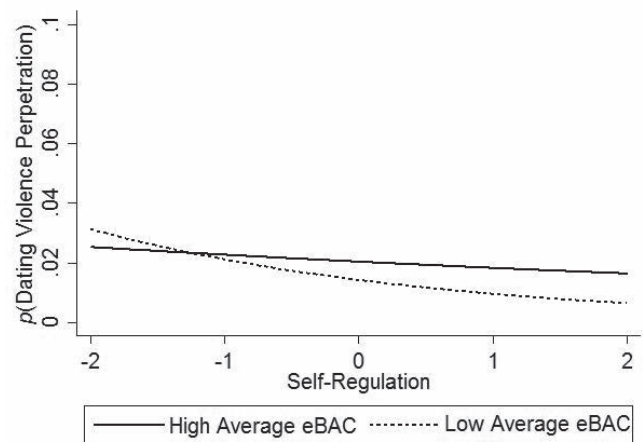


FIGURE 2. Predicted probability of dating violence perpetration as a function of self-regulation and average estimated blood alcohol concentration (eBAC) levels from Model 3. Estimates are shown at the mean of self-regulation as well as for 2 SD above and below the mean. Average eBAC is plotted at 1 SD above (i.e., high average eBAC) and below (i.e., low average eBAC) the mean.

may be influenced by other factors not examined in the current study. Although the present study cannot speak to what these other factors may be, antisocial traits and behaviors (Hines & Straus, 2007) and exposure to family violence and peer dating violence (McNaughton Reyes et al., 2012) have been associated with dating violence perpetration among heavier drinkers. In addition, our measure of self-regulation assessed an individual's typical ability to self-regulate and not what that person did or how successful he or she was at self-regulating on a given day.

Consistent with previous research (Moore et al., 2011; Rothman et al., 2011), women were more likely to report having perpetrated dating violence than men, although women and men did not differ in terms of their frequency of perpetration. Contrary to expectations, the association between alcohol intoxication and dating violence perpetration did not differ between men and women. Although Moore and colleagues found that men were more likely to perpetrate psychological dating violence on drinking days compared with women, they did not examine the level of intoxication achieved on those drinking days.

In one study using a general measure of aggression, men were found to have a stronger association between increases in daily alcohol intoxication and aggression perpetration compared with women (Quinn et al., 2013); however, dating violence may occur in different situations and contexts from other forms of aggression, which could neutralize the effect of one's level of alcohol intoxication on dating violence perpetration for men and women. It should be noted, however, that Testa and colleagues (2012) found that alcohol was less predictive of partner violence perpetration among women than men. Importantly, theirs was a cross-sectional study of married couples, suggesting that there may be differences in the effects of alcohol on partner violence perpetration between married versus dating women. For instance, married women may be less inhibited when it comes to acting aggressively compared with their female dating counterparts, and therefore alcohol may not be an important trigger for their aggressive behavior.

Clinical implications

Our results provide several important clinical implications. First, the effect of increases in daily alcohol intoxication above an individual's average level on dating violence perpetration highlights the importance of raising individuals' awareness of the consequences associated with deviating from their average level of intoxication, especially among those who are typically lighter drinkers. Given that a .01 increase in daily eBAC was associated with a 7% increase in odds of perpetrating dating violence, reducing the number of drinks consumed during heavy drinking episodes will significantly reduce the likelihood of perpetrating dating violence. To do this, individuals could be taught protective behavioral

strategies, such as alternating alcoholic beverages with non-alcoholic beverages, slowing the pace of drinking, or setting a drinking limit that they agree not to exceed (Larimer et al., 2007; Martens et al., 2004).

In addition, the fact that self-regulation was associated with a decreased likelihood of perpetrating dating violence among lighter drinkers but was not associated with dating violence among heavier drinkers suggests different intervention strategies to reduce dating violence based on an individual's typical pattern of drinking. Lighter drinkers may benefit most from a self-regulation intervention to reduce dating violence, whereas heavier drinkers may benefit most from an alcohol intervention to reduce their overall level of drinking. After their level of drinking has been reduced, they may then benefit from a self-regulation intervention.

Limitations and future directions

Given the study's inclusion criteria, results may not generalize beyond college-aged men and women in heterosexual dating relationships or to individuals who do not drink alcohol or who are problem drinkers. In addition, because of the low endorsement of physical violence, we combined both physical and psychological dating violence perpetration in this study. Although this low rate may be an accurate reflection of the participants' behavior, it may also be that participants underreported the occurrence of physical aggression because our assessment was an in-person interview. Another possible explanation is that we captured a sample at lower risk for perpetrating physical violence because we excluded problem drinkers. Therefore, future research should consider less restrictive drinking criteria in an attempt to recruit a higher risk sample and use other methods to assess dating violence such as online surveys.

In addition, our assessment of drinking and dating violence perpetration relied on retrospective self-report over a 90-day period. However, reports of alcohol consumption using the TLFB have been compared with a daily assessment via an interactive voice response system and have concluded that the TLFB underestimated alcohol consumption compared with the interactive voice response assessment (Searles et al., 2002). This possible underestimation of drinking using the TLFB suggests that associations between alcohol and dating violence perpetration in our study may only be strengthened using a method that assesses behavior closer to real time.

It should also be noted that reports of alcohol or dating violence perpetration may have been influenced by one's expectancies regarding the effects of alcohol on aggressive behavior. However, 49 events were reported in which alcohol was consumed after perpetrating dating violence. This may suggest that, although alcohol did not contribute to the individual's aggressive behavior, it may have been used to cope with the distress of the interpersonal conflict. In addi-

tion, the majority of dating violence occurred in the absence of alcohol. It has long been recognized that alcohol is not necessary for aggression to occur but, rather, is one factor that may contribute to dating violence.

Riggs and O'Leary (1989) proposed a comprehensive conceptual model of dating violence in which alcohol was one potential situational factor that could contribute to dating violence. In an empirical examination of this model, a partner's violent behavior, relationship length, and childhood abuse and neglect in addition to alcohol use contributed to dating violence perpetration (Luthra & Gidycz, 2006). These factors, along with other potential situational and contextual factors that may explain the violence that occurred in the absence of alcohol (e.g., reasons for violence, whether violence was perpetrated by both partners, which partner initiated violence), should be examined more thoroughly in future event-level studies. Nevertheless, it remains an important endeavor to investigate who is at greatest risk for alcohol-involved dating violence perpetration.

Conclusions

Results of this investigation provide support for the proximal effects model of alcohol use and dating violence perpetration and extend this model by highlighting the increased risk of perpetrating dating violence associated with increases in alcohol intoxication above an individual's average level of intoxication, especially among lighter drinkers. Therefore, when examining the proximal effects of alcohol on dating violence perpetration, it is important to consider not only an individual's level of intoxication for a given event but also the extent to which that event deviates from the individual's average level of intoxication. Findings also suggest that trait characteristics such as self-regulation may influence the association between alcohol and dating violence perpetration. These results highlight several clinical implications, including increasing an individual's awareness of the consequences associated with deviating from his or her average level of intoxication and reducing heavy drinking episodes among lighter drinkers. In addition, it may be beneficial to use different intervention strategies to reduce dating violence based on an individual's typical level of alcohol intoxication. Continued event-level research is needed to more fully understand the situational and contextual factors associated with dating violence perpetration.

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