

Effects of Administered Alcohol on Intimate Partner Interactions in a Conflict Resolution Paradigm

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ABSTRACT. Objective: Although couples' alcohol use has been associated with intimate partner aggression and poorer marital functioning, few studies have examined the proximal effects of alcohol on couple interactions. The current experimental study examined the effects of alcohol, administered independently to male and female intimate partners, on positive and negative interaction behaviors within a naturalistic conflict resolution paradigm. **Method:** Married and cohabiting couples ($n = 152$) were recruited from the community and each partner randomly assigned to receive either alcohol (target dose: .08 mg/kg) or no alcohol. They engaged in two 15-minute interactions regarding current disagreements in their relationship, one before and one after beverage administration. Videotaped interactions were coded by trained observers using the Rapid Marital Interaction Coding System, and positive and negative interaction behaviors were analyzed using the Actor-Partner Interdepen-

dence Model. **Results:** Participants displayed decreased negativity and increased positivity following alcohol consumption when their partners were sober but no differences in negativity or positivity when their partners also consumed alcohol. There were no gender differences. Although participants with a history of perpetrating intimate partner aggression displayed more negativity, prior aggression did not interact with beverage condition. **Conclusions:** The immediate effects of alcohol consumption on couple interaction behaviors appeared more positive than negative. Contrary to hypotheses, congruent partner drinking had neither particularly positive nor particularly negative effects. These unique findings represent a rare glimpse into the immediate consequences of alcohol consumption on couple interaction and stand in contrast to its delayed or long-term effects. (*J. Stud. Alcohol Drugs*, 75, 249–258, 2014)

ALCOHOL USE WITHIN MARRIAGE is associated with negative outcomes including dysfunction, dissolution (Marshal, 2003), and intimate partner aggression (Foran and O'Leary, 2008; Leonard, 1993; Murphy and Ting, 2010). Daily diary studies show that alcohol consumption increases the odds of perpetrating verbal and physical aggression later that day by both men and women (Moore et al., 2011; Testa and Derrick, 2013). However, alcohol use within relationships is also associated with positive outcomes and may have adaptive functions (Steinglass and Robertson, 1983). Couples with congruent as opposed to discrepant drinking patterns have greater marital satisfaction (Homish and Leonard, 2005), less decline in marital satisfaction over time (Homish and Leonard, 2007), and lower likelihood of divorce (Leonard et al., 2013). Drinking together as a couple and in similar amounts has positive effects on daily relationship functioning, whereas drinking apart from the partner results in negative effects on next-day relationship functioning (Levitt and Cooper, 2010).

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Experimental studies reveal that administered alcohol increases aggression toward a fictitious target (e.g., shock administration) following provocation (see Ito et al., 1996, for a review). Alcohol's effects on aggression are thought to reflect the proximal effects of alcohol on attention allocation (Giancola et al., 2010; Steele and Josephs, 1990), whereby intoxication restricts attention to more salient, provoking cues, rather than less salient, inhibitory cues. However, the relevance of these studies to aggression between intimate partners is unclear.

Few experimental studies have examined the proximal effects of administered alcohol on processes more closely related to intimate partner aggression. MacDonald et al (2000) found that men who received alcohol, compared with controls, reported more negative emotion regarding a previously nominated relationship conflict and perceived their partner more negatively. Using the Articulated Thoughts in Simulated Situations (ATSS) paradigm, Eckhardt (2007) found that martially violent men expressed more anger after alcohol compared with placebo. There were no alcohol effects for nonviolent men. Similarly, alcohol increased aggressive verbalizations among men and women high in but not those low in dispositional aggression (Eckhardt and Crane, 2008). Although these studies did not involve actual couple interaction, they suggest that alcohol consumption may increase aggression toward a partner, at least among those predisposed toward aggression.

Experimental studies examining actual couple interactions following alcohol consumption reveal mixed findings.

In these studies, couples discuss areas of actual disagreement, and interactions are coded according to a standard system (e.g., Marital Interaction Coding System [MICS], Fourth Edition; Heyman et al., 1995) that reveals the extent to which partners engage in positive and negative verbal behaviors. Alcohol consumption was associated with increased negativity for high (but not low) antisocial alcoholics (Jacob et al., 2001) and for couples in which both partners were alcoholic (Haber and Jacob, 1997) but not among normal controls (Jacob and Krahn, 1988). Positive effects of alcohol were observed in one small sample of alcoholic couples (Frankenstein et al., 1985). Interpretation of these studies is complicated by the fact that participants chose how much alcohol to drink, and alcoholics drank much more than nonalcoholics.

Leonard and Roberts (1998) used a similar conflict resolution paradigm among a sample of newlywed couples recruited from the community. Husbands were randomly assigned to receive a standard dose of alcohol (sufficient to raise breath alcohol concentration [BrAC] to .08%), placebo, or no alcohol. Although wives did not receive alcohol, both partners displayed more negativity when the husband drank. Husbands with a history of partner aggression displayed more negativity. However, alcohol and prior aggression did not interact—effects were additive. There was no effect of alcohol on positive behaviors; however, husbands who received alcohol engaged in increased problem solving, a neutral MICS code that includes problem description and questions.

In brief, alcohol administration studies involving couple interaction reveal a mixed pattern of results, neither clearly negative nor clearly positive. However, interpretation is complicated by the lack of standard alcohol dosage, use of small samples, and focus on male but not female alcohol consumption. The current study was designed to address these limitations by administering a standard dose of alcohol independently to male and female intimate partners and examining its effects on couple interaction within the conflict resolution paradigm. Because alcohol influences both the drinker's behavior and that of the partner (e.g., Leonard and Roberts, 1998), we considered these interdependent effects within the Actor–Partner Interdependence Model (APIM; Kenny et al., 2006). Guided by this model, observations or reports of each member of the dyad are considered interdependent and nested within couple, allowing us to examine the effects of the actor's drinking on actor's behavior and the effects of the partner's drinking on actor's behavior (Cook and Kenny, 2005).

The limited and mixed body of prior research makes it difficult to generate hypotheses regarding the effect of male and female partner alcohol consumption on interaction outcomes. Laboratory analog studies suggest that alcohol increases negativity (Eckhardt and Crane, 2008; Leonard and Roberts, 1998). These effects may be exacerbated when

both partners are drinking; however, to date no study has considered the effects of congruent drinking within a conflict resolution paradigm. On the other hand, congruent drinking within couples predicts positive next-day outcomes (Levitt and Cooper, 2010), and positive effects have been observed immediately following congruent drinking among groups (Sayette et al., 2012). Thus, couples may display more positive and less negative behaviors when both partners are drinking compared with when only one or neither is drinking. The design also permitted us to consider whether there are gender differences in the effects of alcohol. Alcohol has been more strongly associated with aggression among men than among women (Giancola et al., 2009; Quinn et al., 2013); however, these studies did not consider intimate partner aggression. Finally, we considered the role of prior relationship aggression as a moderator of alcohol-related aggression (Kachadourian et al., 2012), hypothesizing that previously aggressive participants would display more negativity after drinking than those with no history of aggression. We offered no specific hypotheses regarding the effects of prior aggression on positive behaviors.

Method

Participants

All procedures were approved by the University at Buffalo Social and Behavioral Sciences Institutional Review Board. Married and cohabiting heterosexual couples ($n = 152$) were recruited from the community in one of three ways. Most responded to brief screening questionnaires that were sent to approximately 20,000 randomly selected households in the Buffalo area thought to contain a couple in the intended age range ($n = 77$). Others were recruited through advertisements in a free weekly newspaper ($n = 28$) or on Facebook ($n = 47$) seeking couples, ages 21–45 years, who drink alcohol. Couples recruited by mail were older and more likely to be married than couples recruited through advertisements; however, they did not differ on relationship satisfaction, relationship aggression, drinking, or any substantive outcomes.

Couples who responded to advertisements or returned screening questionnaires and met initial eligibility criteria were screened by telephone. To be eligible, couples had to be cohabiting for at least a year or married, and both partners had to be between 21 and 45 years old. Both had to drink at least four drinks on an occasion at least monthly and be willing to drink up to six vodka drinks in the study. Couples were excluded if either partner had a medical condition or was taking medication for which alcohol was contraindicated (e.g., pregnancy, hypertension), or had ever received treatment for substance use or psychiatric disorders. Couples who met initial eligibility criteria were sent questionnaire booklets, separately to each partner, which included additional

screening measures and baseline measures. Couples were excluded if either partner scored 9 or higher on the Alcohol Dependence Scale (Skinner and Allen, 1982), reported daily use of marijuana, or reported extremely severe violence (e.g., use of weapon; injury requiring medical care). Partners were compensated \$20 each for return of the completed booklet. Couples who met eligibility criteria were scheduled at a time of their convenience for a laboratory session that could last up to 7 hours. They were asked to refrain from eating for 2 hours and from drinking alcohol or using other drugs for 24 hours before the appointment. Because all couples were to be transported home by taxi, they were asked to take public transportation or have someone drive them to the appointment.

Measures

Pre-experimental questionnaires included the Revised Conflict Tactics Scales (CTS-2; Straus et al., 1996) regarding aggression toward and received from their partner in the past year; the Dyadic Adjustment Scale (Spanier, 1976), a measure of relationship satisfaction; the Buss–Perry Aggression Inventory (Buss and Perry, 1992); and the trait anger subscale of the State–Trait Anger Expression Inventory (Spielberger, 1999). Alcohol expectancies were assessed using the Comprehensive Effects of Alcohol (Fromme et al., 1993). Quantity and frequency of alcohol use over the past 12 months and demographic variables also were assessed.

Primary outcome measures consisted of behavioral codes provided by trained observers using the Rapid Marital Interaction Coding System (RMICS; Heyman, 2004). The RMICS comprises five negative codes (psychological abuse, distress-maintaining attributions, hostility, dysphoric affect, withdrawal), one neutral code (problem description), and four positive codes (acceptance, relationship-enhancing attributions, self-disclosure, humor). The basic coding unit is the speaker turn or utterance; if a speaker turn lasts longer than 30 s, it is coded in 30-s intervals. The partner can also receive codes during each unit (e.g., for a nonverbal gesture). Coders assign only 1 of the 11 codes (per partner) to each unit; if 2 or more codes are present during a unit, a theoretically derived hierarchy (i.e., negative codes then positive codes then neutral codes) is used. Interrater agreement was acceptable (67%, average Cohen's $\kappa = .50$). Frequency of individual codes varied substantially (Table 1). Following prior convention (e.g., Heyman et al., 2009), we created a ratio of positive codes divided by all codes as our dependent measure of positivity. Negativity consisted of the ratio of negative codes divided by total codes (excluding dysphoric affect, which is self- rather than other-focused; Heyman et al., 2009). Because of the frequency of hostility and humor codes, negativity was highly correlated with hostility (r range: .89–.93) and positivity with humor (r range: .71–.74).

TABLE 1. Rapid Marital Interaction Coding System (RMICS) code frequencies observed during Time 1 (baseline) and Time 2 (experimental) interactions ($N = 304$)

Variable	Time 1 <i>M (SD)</i>	Time 2 <i>M (SD)</i>
Negative codes		
Psychological abuse	0.04 (0.33)	0.05 (0.40)
Distress-maintaining attributions	1.71 (2.38)	2.05 (3.00)
Hostility	8.21 (11.43)	10.95 (16.86)
Withdrawal	0.04 (0.23)	0.09 (0.50)
Dysphoric affect	0.06 (0.42)	0.25 (1.62)
Positive codes		
Acceptance	0.43 (0.97)	0.84 (1.77)
Relationship-enhancing attributions	5.25 (4.09)	5.22 (3.93)
Self-disclosure	2.43 (2.57)	2.39 (2.62)
Humor	9.21 (8.44)	9.96 (9.72)
Neutral code		
Problem description	47.27 (20.07)	47.42 (20.62)
Summary scores		
Negativity proportion ^a	0.13 (0.14)	0.15 (0.16)
Positivity proportion ^b	0.24 (0.12)	0.25 (0.13)

^aSum of negative codes divided by sum of all codes (negative, positive, neutral); ^bsum of positive codes divided by sum of all codes (negative, positive, neutral).

After each interaction, participants provided subjective ratings of their own and their partner's behaviors during the interaction (13 identical items for each). Principal components analysis of this measure revealed two factors: positive and negative behaviors. Positive items included listened, showed love and caring, tried to work out the problem, showed respect, smiled ($\alpha = .85$ actor, .89 partner). Negative items included criticized, interrupted, pushed buttons, argued, became hostile, shouted, withdrew or ignored, demanded change ($\alpha = .82$ actor, .87 partner). We created subjective measures of negative and positive behaviors in each interaction by averaging separately the eight negative items and the five positive items. The post-interaction questionnaires included 17 additional items regarding general perceptions of the discussion (e.g., how much conflict they experienced, how helpful it was in resolving conflict, how natural it felt), using 7-point scales (*not at all* to *very much*). Following the second interaction, 7 additional items assessed perceptions of whether alcohol was consumed by self and partner, perceived effects on the interaction, and subjective intoxication (ranging from 1 = *not at all* to 10 = *very intoxicated*).

Procedures

Laboratory sessions were conducted by two experimenters. After description of the study, partners were separated for informed consent procedures and for assessments that included weight, initial breath alcohol analysis, pregnancy tests for women, and tests of Executive Cognitive Functioning. Couples were then reunited and instructed to generate a list of current specific disagreements in their relationship (see Leonard and Roberts, 1998). After listing topics, partners

rated independently the amount of disagreement associated with each, from 1 (*very little*) to 100 (*a great deal*). The topic with the highest mean rating was discussed in the Time 2 (experimental) interaction and the next highest for the Time 1 (baseline) interaction. The most common disagreements involved finances, childrearing, communication, housework, and family/in-laws; only six involved disagreement over (husband's) drinking.

Instructions and procedures for the two 15-minute conflict-resolution interactions were identical. Couples were instructed to try to work out a solution to the disagreement, recognizing that they may not be able to do so in 15 minutes. For safety purposes, one experimenter monitored the interaction from the video control room and was able to intervene in the event that the interaction appeared to become excessively aggressive; this occurred only once. Couples were separated immediately after each interaction to complete post-interaction questionnaires.

Beverages were administered before the experimental interaction. Condition was randomly assigned, resulting in nearly equal numbers of couples assigned to the four conditions (40 both alcohol, 36 neither, 37 female only, 39 male only). Experimenters were blind to condition until this point. Alcoholic beverages consisted of 80 proof vodka mixed with cranberry juice in a 2.39 ml/kg ratio for men (2.22 ml/kg for women), with a target BrAC of .08%. Those in the no-alcohol condition drank an equivalent amount of juice. Drinks were mixed in front of the participant and presented in three to six glasses, depending on participant's weight. They were asked to drink each in about 5 minutes. Participants who received alcohol were given a breath alcohol analysis using an Alco-Sensor IV (Intoximeters, Inc., St. Louis, MO) starting 15 minutes after finishing the last drink. Partners were reunited when the partner(s) assigned to the alcohol condition had reached a BrAC of at least .06% or after 15 minutes if neither had received alcohol. Each partner was given a breath alcohol analysis and the correct BrAC reading displayed to both; there was no deception. Couples then completed the Time 2 interaction regarding the most serious topic of disagreement.

To diffuse any possible negative feelings following the conflict-resolution task, couples were led through a "Happy Times" discussion by one of the experimenters, in which they were encouraged to discuss positive events. If either partner had received alcohol, the couple was provided with a meal, movies, and magazines while they waited until BrAC dropped to .03%. Before compensation (\$90 to each partner if either received alcohol, \$45 each if neither did) and departure by taxi, partners were separated for a final debriefing in which they were asked whether they experienced any positive effects from the interaction, any negative effects, and whether they anticipated any negative effects. To further ensure participants' safety, each partner was contacted by telephone within 48 hours after the experiment to assess

whether there were any negative outcomes. Most participants viewed the laboratory experience as a positive one that provided a chance to talk uninterrupted about important topics. Very few negative outcomes were mentioned, and none was deemed serious.

Results

Sample characteristics

The sample was predominantly White (92.10%) and well educated ($M = 15.73$ years, $SD = 1.87$), with an average age of 32.33 ($SD = 6.64$) and median annual household income of U.S. \$60,000. Most were married (68.67%). Average length of marriage (or cohabitation) ranged from 0.4 to 22.4 years ($M = 6.11$, $SD = 5.20$ years), and relationship satisfaction was fairly high ($M = 114.7$ on a 0–151 scale, $SD = 12.66$). Men drank alcohol on 36.22% of days over the past 12 months and women on 25.65% of days, with an average of 4.56 ($SD = 2.89$) drinks per occasion for men and 3.14 ($SD = 1.32$) drinks per occasion for women. Within couples, partners' drinking frequency ($r = .55$, $p < .001$) and quantity ($r = .46$, $p < .001$) were correlated. Based on the CTS-2 reports of either partner, 47 men (31.33%) and 52 women (34.67%) had perpetrated at least one act of physical aggression toward their partner over the previous year and were classified as previously aggressive.

Descriptive data and manipulation checks

A 2 (actor alcohol) \times 2 (partner alcohol) \times 2 (gender) \times 2 (time) repeated-measures analysis of variance (ANOVA) on disagreement rating for conflict topics revealed no main effects for actor or partner alcohol condition, indicating that random assignment to condition was successful. As intended, Time 2 conflict topics were rated as involving more disagreement ($M = 75.02$, $SD = 22.82$) than Time 1 conflict topics ($M = 62.44$, $SD = 23.77$), $F(1, 284) = 96.28$, $p < .01$. Women rated topic areas as involving more disagreement than men, $F(1, 284) = 10.10$, $p < .01$, but the Gender \times Time interaction was not significant. On post-interaction subjective measures, participants reported experiencing more conflict in interaction 2 ($M = 3.46$ on a 7-point scale, $SD = 1.76$) than in interaction 1 ($M = 3.28$, $SD = 1.60$), $F(1, 291) = 13.12$, $p < .01$. Participants rated discussions as feeling natural ($M = 5.57$ on a 7-point scale, $SD = 1.28$) and similar to those that they have at home ($M = 5.46$, $SD = 1.41$), with no effects of time, gender, actor, or partner alcohol.

All participants answered the manipulation check questions regarding consumption of alcohol correctly. Participants who received alcohol ($n = 156$) had a mean BrAC of .071% ($SD = .015$) just before interaction 2 and .076% ($SD = .014$) after the interaction. A 2 (actor alcohol) \times 2 (gender) \times 2 (time) repeated-measures ANOVA revealed a main

TABLE 2. Observed proportions of negativity and positivity and correlations between male and female partners

	Male <i>M (SD)</i>	Female <i>M (SD)</i>	1.	2.	3.	4.
1. Time 1 negativity	0.10 (0.12)	0.15 (0.15)	.57***	-.39***	.41***	-.19*
2. Time 1 positivity	0.24 (0.12)	0.24 (0.12)	-.31***	.54***	-.35***	.48***
3. Time 2 negativity	0.13 (0.15)	0.17 (0.17)	.46***	-.27**	.66***	-.51***
4. Time 2 positivity	0.24 (0.13)	0.25 (0.13)	-.15	.41***	-.47***	.59***

Notes: Male correlations are below the diagonal. Female correlations are above the diagonal. Correlations between partners appear on the diagonal and are shaded.
* $p < .05$; ** $p < .01$; *** $p < .001$.

effect of time, $F(1, 148) = 48.76, p < .001$; but no other main effects or interactions. A 2 (actor alcohol) \times 2 (gender) ANOVA using post-interaction ratings of subjective intoxication revealed that women who received alcohol felt more intoxicated ($M = 6.86, SD = 1.93$) than men did ($M = 5.97, SD = 1.72$), $F(1,145) = 8.60, p < .01$. No other main effects or interactions were significant.

Observational and subjective measures

The primary observational dependent measure consisted of the proportion of positive interaction behaviors divided by total codes (positive, negative, neutral), and the proportion

of negative interaction behaviors divided by total codes (e.g., Heyman et al, 2009). As expected, partner positivity and negativity ratios within each interaction (on the diagonal) were correlated, and Time 1 and Time 2 scores were correlated within individual (Table 2). Participants' subjective perceptions of their own and their partner's behaviors were significantly correlated with coder ratings of actor negativity (r range: .42–.57) and positivity (r range: .22–.37) and partner negativity (r range: .41–.50) and positivity (r range: .25–.38).

Actors were classified as previously aggressive if either participant reported actor perpetration over the previous year on the CTS-2 and as nonaggressive if neither partner

TABLE 3. Observed and subjective ratings of negative and positive behaviors by actor history of previous relationship aggression

Variable	No previous relationship aggression <i>(n = 203)</i> <i>M (SD)</i>	Previous relationship aggression <i>(n = 101)</i> <i>M (SD)</i>	<i>F</i>	<i>p</i>
Observed behavior				
Negativity (proportion)				
Time 1	0.12 (0.13)	0.15 (0.14)	3.63	.06
Time 2	0.13 (0.14)	0.19 (0.19)	9.49	.002
Positivity (proportion)				
Time 1	0.25 (0.12)	0.23 (0.11)	1.58	.21
Time 2	0.25 (0.13)	0.23 (0.15)	1.77	.19
Subjective ratings of own behavior, <i>M (SD)</i>				
Negative behaviors				
Time 1	1.78 (0.76)	2.11 (0.80)	12.35	.001
Time 2	1.75 (0.76)	2.15 (0.95)	15.44	<.001
Positive behaviors				
Time 1	5.59 (0.95)	5.58 (1.21)	0.01	.91
Time 2	5.28 (1.26)	5.18 (1.29)	0.45	.50
Subjective ratings of partner behavior, <i>M (SD)</i>				
Negative behaviors				
Time 1	1.77 (0.76)	2.01 (0.85)	6.80	.01
Time 2	1.78(0.93)	2.23 (1.18)	13.37	<.001
Positive behaviors				
Time 1	5.38 (1.20)	5.47 (1.24)	0.41	.52
Time 2	5.03 (1.45)	4.77 (1.62)	2.00	.16

Notes: Subjective ratings of negative behavior consist of the mean of eight items (e.g., criticize, interrupt) regarding own and partner's negative behaviors in the interaction, rated on a scale ranging from 1 (not at all) to 7 (very much). Subjective ratings of positive behavior consist of the mean of 5 items assessing positive interaction behaviors (e.g., smile, show love and caring), rated on a scale ranging from 1 (not at all) to 7 (very much).

reported actor perpetration over the previous year. Actors with a history of relationship aggression displayed more negativity than nonaggressive actors (Table 3) but not less positivity, based on observer ratings. Similarly, previously aggressive participants rated their own behavior toward their partners and their partner's behavior toward them as more negative than did nonaggressive participants. There were no differences in their perceptions of positive behaviors and no gender differences in these effects.

Alcohol effects on observational measures

Substantive hypotheses were tested using multilevel analyses conducted using the Mixed procedure in SPSS Version 21 (IBM Corp., Armonk, NY). This accounted for dyadic covariance and allowed us to simultaneously model the effects of both actor and partner alcohol condition on actor behavioral outcomes (Kenny et al., 2006). Data conform to a hierarchical, two-level structure such that all 304 individual actors are nested within 152 couples at Level 2 (Laurenceau et al., 2005). Couple members were distinguishable by gender, the inclusion of which allowed for the estimation of gender main effects. Because there were no significant interactions involving gender, coefficients were pooled across men and women (Kashy and Donnellan, 2012; Kenny et al., 2006).

Actor alcohol condition, partner alcohol condition, actor prior aggression, and partner prior aggression were used to predict coder ratings of negative and positive behaviors in the experimental (Time 2) interaction, using an APIM analysis that controlled for Time 1 negativity (or positivity). We also included as covariates actor and partner relationship satisfaction, actor and partner frequency of heavy episodic drinking, and RMICS coding batch (to adjust for changes in code frequencies between the first and second batch). Relationship satisfaction was associated with all outcomes in the expected direction; Coding Batch and heavy episodic drinking were not significant in any. We considered several other potential covariates (e.g., marital status, recruitment

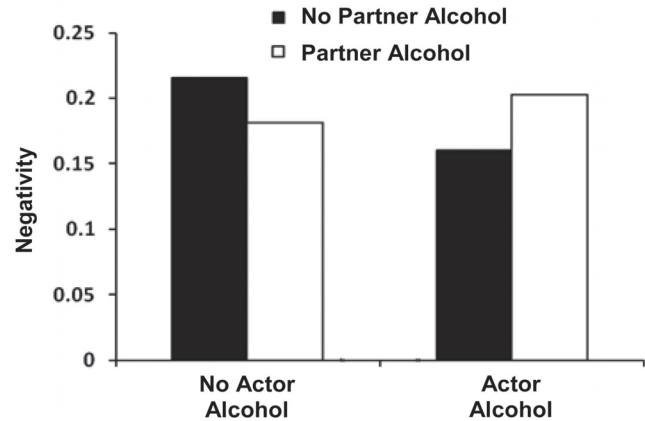


FIGURE 1. Proportion of negative behavior observed as a function of actor and partner alcohol condition

source), but because none were significant, in the interest of parsimony and model stability, we limited analyses to three covariates, main effects, and all possible two-way interactions among gender, actor alcohol, partner alcohol, actor prior aggression, and partner prior aggression. Nonsignificant interactions were removed from each final, trimmed model presented below. Simple slopes analyses were used to interpret significant interactions.

Negativity was significantly lower among actors who consumed alcohol; however, this main effect was qualified by a marginally significant two-way interaction between actor alcohol and partner alcohol ($b = 0.08, SE = 0.04, p < .06$). Actor alcohol reduced negativity when partner was sober ($b = -0.06, SE = 0.03, p = .03$) but not when partner consumed alcohol ($b = 0.02, SE = 0.02, p = .40$). No significant differences in actor negativity were observed across partner alcohol conditions among sober ($b = -0.03, SE = 0.03, p = .18$) or intoxicated actors ($b = 0.04, SE = 0.02, p = .09$). This interaction is displayed in Figure 1 and outcome data for each condition in Table 4.

TABLE 4. Observed and subjective ratings of negative and positive behaviors by alcohol condition at Time 2

Variable	Alcohol condition			
	Neither actor nor partner alcohol	Actor alcohol only	Partner alcohol only	Both actor and partner alcohol
Observed behaviors				
Negativity (proportion)	0.17 (0.15)	0.12 (0.14)	0.13 (0.16)	0.14 (0.15)
Positivity (proportion)	0.21 (0.11)	0.28 (0.13)	0.25 (0.13)	0.25 (0.15)
Subjective ratings				
Negative behaviors				
Self	2.03 (0.91)	1.77 (0.76)	1.84 (0.72)	1.90 (0.96)
Partner	1.96 (0.95)	1.79 (0.98)	1.99 (1.14)	1.98 (1.09)
Positive behaviors				
Self	5.12 (1.39)	5.21 (1.23)	5.38 (1.29)	5.30 (1.19)
Partner	4.78 (1.70)	4.96 (1.40)	5.02 (1.58)	5.02 (1.37)

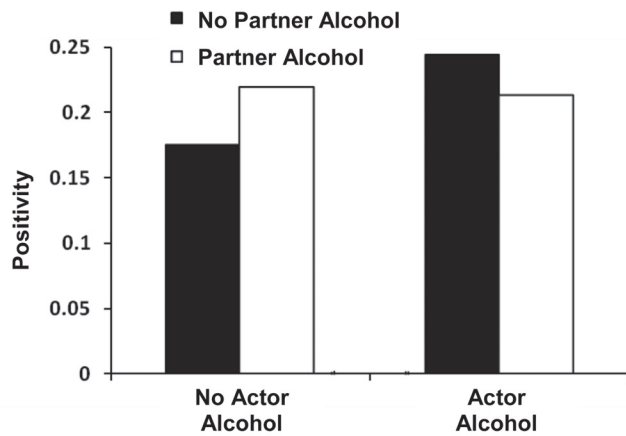


FIGURE 2. Proportion of positive behavior observed as a function of actor and partner alcohol condition

We hypothesized an Actor Prior Aggression \times Alcohol Interaction, such that alcohol would lead to greater increases in negativity for aggressive participants than nonaggressive participants. Aggressive actors displayed more negativity at Time 2 than nonaggressive actors ($b = 0.03$, $SE = 0.02$, $p = .06$). However, prior aggression did not interact with either actor ($b = -0.04$, $SE = 0.03$, $p = .12$) or partner ($b = -0.02$, $SE = 0.03$, $p = .47$) alcohol. The main effect of partner aggression history was not significant ($b = -0.01$, $SE = .02$, $p = .92$).

Alcohol effects on positivity mirrored those for negativity (Figure 2). Significant actor and partner alcohol effects were qualified by a significant two-way interaction between actor and partner alcohol ($b = -0.08$, $SE = 0.03$, $p = .02$). Partner alcohol condition moderated the relationship between actor alcohol condition and observed actor positivity such that alcohol was associated with greater positivity when partner was sober ($b = 0.07$, $SE = 0.02$, $p < .01$) but not when partner had consumed alcohol ($b = -0.01$, $SE = 0.02$, $p = .77$). Partner alcohol increased positivity among sober ($b = 0.04$, $SE = 0.02$, $p = .03$) but not intoxicated actors ($b = -0.03$, $SE = 0.02$, $p = .12$).

Alcohol effects on subjective measures

Parallel APIM analyses on participants' post-interaction ratings of their own and their partner's negative and positive behaviors revealed no main effects or interactions of actor or partner alcohol. However, actors with a history of relationship aggression had higher subjective ratings of their own negativity ($b = 2.31$, $SE = 0.89$, $p = .01$) and partner's negativity ($b = 2.21$, $SE = 1.01$, $p = .03$) compared with nonaggressive actors. Although actor aggression history was not associated with positivity ratings for self, actors with aggressive partners rated their own behavior more positively than actors with nonaggressive partners ($b = 1.44$, $SE = 0.76$, $p =$

.06). There were no gender differences in subjective ratings, with one exception: men perceived their partners as behaving more negatively than did women ($b = 2.53$, $SE = 0.674$, $p < .001$).

Supplemental analyses: Moderators of alcohol's effects

As described, we tested whether an actor's prior relationship aggression moderated the effects of alcohol on negativity but found no interaction and hence no evidence of moderation. Other potential moderators include trait anger (Giancola, 2002b), dispositional aggressivity (Giancola, 2002a), and alcohol expectancies (Quigley and Leonard, 2006). Thus, we considered whether trait anger (Spielberger, 1999), the Buss–Perry Physical Aggression subscale (Buss and Perry, 1992), or the Comprehensive Effects of Alcohol (Fromme et al., 1993) expectancies measures moderated the relationship between actor alcohol condition and negativity. None had a significant main effect on negativity, nor did any moderate the effects of alcohol on negativity or alter the patterns of results reported above.

Discussion

These results provide a rare glimpse into the immediate effects of alcohol consumption, by one or both partners, on couple conflict-resolution behaviors. Alcohol was associated with reduced negativity and increased positivity in couple behaviors as coded by trained objective observers, particularly in couples in which alcohol condition was incongruent. As expected, participants who had perpetrated relationship aggression in the past year displayed more negativity, providing additional evidence for the ecological validity of the conflict-resolution paradigm as an analog of partner aggression. However, contrary to hypotheses, the effects of alcohol on negativity did not differ for previously aggressive versus nonaggressive participants.

At first glance, these findings seem at odds with survey studies showing that heavy alcohol use predicts partner aggression (Foran and O'Leary, 2008; Leonard, 2008) and with daily diary studies demonstrating that drinking episodes increase the odds of subsequent partner aggression later that day (Moore et al., 2011; Testa and Derrick, 2013). The sample in the Testa and Derrick article consisted primarily of couples who participated in the current study, making the discrepancies all the more striking. However, our findings provide a different, and largely unexplored, view into the most immediate effects of alcohol on couple interaction processes. The increased positivity and decreased negativity immediately following a moderate dose of alcohol are consistent with recent studies. For example, Sayette et al. (2012) found that alcohol increased positive affect and decreased negative affect in interactions among groups of unacquainted people. Using event-contingent reporting of daily social in-

teractions, and Rot et al. (2008) found increased ratings of agreeableness in participants' reports of their own and others' behavior when alcohol was involved compared with when it was not. Although alcohol effects emerged using coder ratings of behavior in our study, participants did not report differences in their own or partner's behavior according to alcohol condition, suggesting that behavioral effects were modest and outside of awareness. Although we did not include a placebo condition, the absence of subjective effects of alcohol suggests that the observed alcohol effects were pharmacological and not reflective of expectancies.

The main effects of alcohol on reduced negativity and increased positivity were limited to conditions in which only one partner drank. When both partners drank, behavior did not differ from the no-alcohol condition. The interaction of actor and partner alcohol consumption was particularly unexpected and curious and appears at odds with studies showing that drinking together as opposed to drinking apart has positive effects on next-day couple functioning (Levitt and Cooper, 2010; Levitt et al., 2014). One possible explanation for these findings may be the fact that the incongruent drinking condition yielded an unusual situation for these couples: a conflict-resolution discussion while one but not the other partner is drinking. It may be that the decreased negativity and increased positivity under these conditions reflects less engagement or more distraction by the unusual experimental setting. It is also possible that the sober partner engaged in more accommodation of the intoxicated partner, which was not possible when both were intoxicated. Unfortunately, we cannot test this hypothesis given that partner outcomes within this paradigm are interdependent.

Our findings, which differ from those of Leonard and Roberts (1998), may reflect the characteristics of the sample. This study is the first to administer a standard dose of alcohol independently to male and female intimate partners. Thus, both partners were required to meet eligibility criteria regarding alcohol consumption: monthly consumption of four/five drinks on an occasion but not alcohol dependent or receiving treatment. In the general population, women are less likely than men to engage in heavy episodic drinking and more likely to abstain (Wiltsnack et al., 2009). Wives in Leonard and Roberts' (1998) study drank less than their male partners; however, women in this study drank more than the average woman and at more comparable levels with their male partners. We do not view these sample characteristics as a limitation, but they should be considered in interpreting findings. For example, these couples tend to drink socially and together (Levitt et al., 2014), and alcohol use is likely to be positively reinforcing (Levitt and Cooper, 2010; Levitt and Leonard, 2013). Thus, their experiences with alcohol differ from those of couples with more discrepant drinking patterns, particularly when one partner is alcoholic and alcohol is associated with unpleasant interactions.

The conflict-resolution paradigm was chosen as a more ecologically valid alternative to typical laboratory aggression tasks (e.g., administering shocks). However, unlike the Taylor Aggression Paradigm (e.g., Giancola and Parrott, 2008), the conflict-resolution paradigm lacks an instigating trigger or provocation. Moreover, a controlled laboratory study involving random assignment to drinking condition introduces its own lack of realism. Participants indicated, across condition, that the interactions felt natural and similar to those they have at home. However, during debriefing, many noted informally that they appreciated the opportunity to discuss important issues uninterrupted because they rarely have the time to do so at home. Perceiving a partner as refusing to listen or discuss an issue was a common precipitant of aggression in a qualitative analysis of marital aggression incidents among a community sample (Testa et al., 2010). However, this precipitant was removed from the laboratory situation because partners could not easily withdraw, leave the room, or refuse to discuss as they might at home (see Jacob et al., 2000). Moreover, the laboratory paradigm minimized competing demands (e.g., childcare and household tasks) and unpleasant triggering events (e.g., a bill arriving) that may contribute to depleted self-control, which in turn contributes to partner aggression (Finkel et al., 2009). Knowing that they were being observed may have led couples to display more socially desirable behavior than they might have otherwise. However, it is unlikely that social desirability differed by condition or contributed to the unexpected pattern of results.

Conclusions

In many ways, this study raises as many questions as it answers. Most research on alcohol and relationship aggression and functioning involves survey methods, with limited focus on alcohol's proximal effects. That findings did not readily conform to prior predictions reveals how little we know about alcohol's immediate effects on couple interaction processes. The generally positive effects that emerge after drinking, even when discussing an area of conflict, suggest how alcohol use within nonalcoholic, community couples can be reinforcing despite the fact that it increases the odds of subsequent verbal and physical aggression occurring later that day (Testa and Derrick, 2013). Couples may perceive alcohol's effects on relationship functioning as positive (as its immediate effects appear to be) and fail to recognize that drinking episodes increase the likelihood of conflict or aggression occurring later in the day. The negative effects of alcohol may emerge only in response to a provocation or stressor, yet we have incomplete understanding of what these are (Wilkinson and Hamerschlag, 2005). These findings challenge us to move beyond an alcohol-aggression paradigm in our quest to understand the complex role of alcohol in couple aggression and functioning.

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