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Abstract

To date, research identifying moderators of the alcohol–intimate partner aggression (IPA) relationship has focused almost exclusively on male-perpetrated aggression, without accounting for the dyadic processes of IPA. The current study examined hazardous alcohol use and impulse control difficulties as predictors of IPA among a sample of 73 heterosexual dating couples. Both actor and partner effects of these risk factors on physical and psychological aggression were examined. Results indicated that impulse control difficulties were an important actor and partner predictor of both physical and psychological aggression. Findings supported the multiple threshold model such that the interaction between impulse control difficulties and hazardous alcohol use significantly predicted physical aggression severity. These results suggest the importance of targeting impulse control difficulties and hazardous alcohol use in IPA treatment, as well as the advantages of examining risk factors of IPA within a dyadic rather than individual framework.

Keywords: intimate partner violence, alcohol, impulsivity, negative urgency, aggression

Introduction

> *Alcohol is ruining my life. I'm scared to know that I can get that drunk to the point where I cannot control how I act.*
>
> —George Huguely, a few months prior to murdering star University of Virginia lacrosse player Yeardley Love after a day of heavy drinking

Hazardous alcohol use, which involves frequent and/or heavy episodic drinking, symptoms of dependence, and problems caused by alcohol use, can have serious consequences on human behavior, with one of the most harmful outcomes being interpersonal aggression. Over half of violent offenders commit their crimes while under the influence of alcohol (Murdoch, Pihl, & Ross, 1990). Hazardous alcohol use is also consistently associated with higher rates of intimate partner aggression (IPA; see Foran & O'Leary, 2008a for a meta-analysis). IPA includes both physical IPA, which can result in bodily harm (e.g., slapping, punching, kicking), and psychological IPA, which does not result in bodily harm but includes acts intended to cause emotional harm or threat of harm to one's partner (e.g., insulting, degrading one's partner, or threatening to break up with one's partner; Cyr, McDuff & Wright, 2006; Murphy & Cascardi, 1999). University students are particularly vulnerable to both heavy drinking and IPA perpetration. Approximately 40% of college students report binge drinking (O'Malley & Johnston, 2002), and among college dating samples, past-year rates of experiencing physical and psychological partner aggression are 20–30% and 70–90%, respectively (Shorey, Cornelius, & Bell, 2008). Both physical and psychological IPA are associated with many detrimental mental health (Clements, Ogle, & Sabourin, 2005; Kaura & Lohman, 2007; Lawrence, Yoon, Langer, & Ro, 2009; Taft et al., 2006) and physical health outcomes (Amar & Gennaro, 2005; Coker et al., 2002; Straight, Harper, & Arias, 2003; Taft et al., 2006). Further, a clear linkage has been established between hazardous alcohol use and IPA among college dating students (see Shorey, Stuart, & Cornelius, 2011 for a review).

Hazardous alcohol use is theorized to affect aggression in part through alcohol's proximal psychopharmacological effects on perception and thought (Leonard & Quigley, 1999). Specifically, alcohol intoxication may impair cognitive functions and information processing, leading a person to misjudge social cues and possibly overreact to a perceived threat (Clements & Schumacher, 2010). Hazardous drinking may also increase risk for IPA through other problems that result from risky drinking patterns (e.g., couple conflict; Foran & O'Leary, 2008a). However, hazardous alcohol use does not universally lead to aggression. Individual differences impact the strength of this relationship such that drinking alone cannot be considered a necessary or even sufficient condition for the occurrence of IPA in all cases (Leonard, 1993).

Theorists suggest that alcohol is likely to increase the propensity for aggression and IPA among individuals who have certain additional risk factors (Fals-Stewart, Leonard, & Birchler, 2005; Fishbein, 1998; Giancola, 2000; Pernanen, 1991). For instance, the multiple threshold model suggests alcohol use interacts with risk factors for aggression, such as personality traits and coping styles, to predict IPA perpetration. Specifically, the multiple

threshold model suggests that thresholds exist that correspond to different levels of severity in aggressive behavior (e.g., non-severe IPA and severe IPA). Alcohol intoxication is said to lower thresholds for aggression. The amount and level of individual risk factors determine where an individual is in relation to the different thresholds. For instance, an individual may have a moderate level of a risk factor, which puts him/her just below the threshold for non-severe aggression. In contrast, another person may have extremely low levels of a risk factor, which puts them well below the non-severe aggression threshold. Thus, when intoxicated, someone who is normally just below the threshold for non-severe aggression would be likely to perpetrate aggression. Alternatively, the individual who was well below the threshold would not exceed the lowered threshold for aggression when intoxicated.

Empirical support for the threshold model comes from studies examining variables that interact with intoxication to strengthen the alcohol-aggression relationship. For instance, laboratory studies examining the effects of alcohol intoxication on interpersonal aggression find that individual difference factors such as aggressive personality (Giancola et al., 2012), trait anger (Parrott & Zeichner, 2002), and beliefs that consuming alcohol causes aggression (Chermack & Taylor, 1995) increase the likelihood of aggression perpetration when a person is intoxicated. In addition, risk factors such as marital dissatisfaction, husband hostility, husbands' belief in alcohol as an excuse for aggression (Leonard & Senchak, 1993), as well as high anger control and high jealousy (Foran & O'Leary, 2008b), interact with hazardous or problematic alcohol use to predict higher levels of male-perpetrated intimate partner physical aggression.

Impulse Control Difficulties and IPA

Impulsivity is a complex construct that has been defined and measured in various ways in studies of interpersonal aggression. A number of studies show that impulsivity-related problems predict IPA perpetration by both men and women (Cunradi, Todd, Duke, & Ames, 2009; Shorey, Brasfield, Febres, & Stuart, 2011a; Stuart & Holtzworth-Munroe, 2005). However, recent literature suggests that difficulties controlling impulses when experiencing negative emotion (i.e., impulse control difficulties) in particular (rather than general impulsivity) may be most potent in predicting both general aggression and IPA (Derefinko, DeWall, Metze, Walsh, & Lynam, 2011; Miller, Flory, Lynam, & Leukefeld, 2003; Miller, Zeichner, & Wilson, 2012). In contrast to general impulsivity, which can encompass aspects such as sensation-seeking, risk-taking, novelty seeking, adventuresome, and attention span, impulse control difficulties reflect an emotion-based disposition that manifests in a tendency to engage in rash action when experiencing negative emotion (Derefinko et al., 2011; Miller et al., 2003, 2012). Two recent studies found that greater impulse control difficulties are related to higher levels of IPA perpetration in college men and women (Gratz & Roemer, 2004; Shorey, Brasfield, Febres, & Stuart, 2011b). Further, in research comparing multiple facets of impulsivity (i.e., lack of premeditation, task perseverance, and sensation seeking), impulse control difficulties (termed negative urgency) were the sole predictor of IPA (Derefinko et al., 2011; Miller et al., 2003). Together, this work indicates that individuals who have a greater difficulty controlling impulsive behaviors when experiencing negative emotion may be closer to the threshold for perpetration of IPA.

Hazardous Alcohol Use and Impulse Control Difficulties: A Dangerous Combination?

As evidenced by this review, hazardous alcohol use and impulse control difficulties are each well-documented risk factors for general interpersonal aggression as well as IPA among both men and women. In addition, a number of studies have identified impulsivity and impulse control difficulties as predictors of alcohol use (Cyders & Smith, 2008; Littlefield, Sher,& Wood, 2009). However, past research suggests that impulsivity-related risk factors also act as moderators of the effects of alcohol on aggression, enhancing its relationship with aggression (e.g., Birkley, Giancola, & Lance, 2013; Giancola, 2000; Giancola, Godlaski, & Roth, 2012; Schumacher, Coffey, Leonard, O'Jile, & Landy, 2013). For instance, alcohol-administration studies have found that constructs such as behavioral regulation (Giancola et al., 2012) and impulsive antisociality (Birkley et al., 2013) predict intoxicated aggression. Further, a recent study of men seeking residential treatment for alcohol dependence demonstrated that general impulsivity moderates the association between daily drinking and IPA, such that men who reported greater general impulsivity were more likely to engage in IPA on a drinking day than men reporting less general impulsivity (Schumacher et al., 2013). While this study suggests *general* impulsivity moderates the alcohol-IPA relationship, it is unclear whether the rash, emotion-based decision making that characterizes impulse control difficulties, in particular, may compound the risk of partner aggression. One might expect, for example, that the aggression-inducing properties of alcohol would be exacerbated by difficulties with impulse control. We examine this possibility here in a sample of couples using a dyadic framework.

Current Study

In the present study, our goal is to examine the individual and joint influences of hazardous alcohol use and impulse control difficulties on partner aggression among college dating couples. In doing so, we sought to address several gaps in the extant literature. First, while past literature has explored the moderating role of general impulsivity in the alcohol-IPA relationship, we examine the moderating role of impulse control difficulties, which past research suggests may be the facet of impulsivity that is most important in predicting IPA (Derefinko et al., 2011; Miller et al., 2003). Second, although prior research has emphasized the perpetration of physical aggression, we felt it important to consider psychological aggression as well. Victims of IPA report that perceived psychological aggression is more harmful and has longer-lasting negative effects than physical aggression (see Williams, Richardson, Hammock, & Janit, 2012 for a review). At the same time, psychological aggression commonly precedes acts of physical aggression (O'Leary & Woodin, 2009) and is considered a gateway to acts of physical violence in relationships. Knowledge of its risk factors may therefore lead to interventions to interrupt this escalation in conflict.

The present study is also unique in its examination of the alcohol-aggression link with dating couples using a dyadic framework. This approach contrasts with past work that has instead focused on general aggression (i.e., toward a confederate or stranger) or, in the studies of IPA, has considered only unidirectional (e.g., male-to-female) aggression. However, findings that many instances of IPA are bidirectional (Renner & Whitney, 2012) highlight the need to consider dyadic processes underlying partner aggression. For instance, it is possible that an individual acting impulsively could lead to an escalation in conflict,

which in turn could increase the chances of experiencing IPA perpetration from a partner. For example, acting impulsively while experiencing negative emotion could include making an insulting remark one would normally restrain during a conflict with a partner or when sober. Thus, unlike prior work examining moderators of the alcohol-IPA relationship, the present study used data from both partners to account for the interactive nature of dyadic aggression.

Our overall prediction was that greater impulse control difficulties would interact with alcohol use to increase IPA perpetration. Through the use of the Actor-Partner Interdependence Model (APIM; Cook & Kenny, 2005) we were able to examine both actor effects (i.e., the unique effects of men's predictors on men's outcomes and women's predictors on women's outcomes) and partner effects (i.e., the unique effects of women's predictors on men's outcomes and men's predictors on women's outcomes). Past literature using a dyadic framework has found both gender similarities and gender differences in predictors of IPA (Marshall, Jones, & Feinberg, 2011). Thus, it is important to test whether there are gender differences among estimated paths predicting IPA. The APIM allows one to test this and whether partner paths are necessary. Using this approach, we tested the following hypotheses:

H1: We predicted actor effects, such that greater hazardous alcohol use and greater impulse control difficulties would each be related to greater IPA perpetration, among both men and women.

H2: We expected an actor effect, in which impulse control difficulties would moderate relations between alcohol and IPA such that among individuals with greater impulse control difficulties there would be a stronger positive relationship between hazardous alcohol use and IPA perpetration.

H3: We also expected several significant partner effects. We predicted that individuals' greater hazardous alcohol use and greater impulse control difficulties would be related to greater IPA perpetration in their partners (e.g., men's greater impulse control difficulties would be related to women's greater IPA perpetration). Finally, we expected that greater hazardous alcohol use and greater impulse control difficulties experienced by one partner would function in an interactive fashion, to increase IPA perpetration from the other partner (e.g., the relationship between women's hazardous alcohol use and men's IPA perpetration would be stronger among women with greater impulse control difficulties).

Methods

Participants

Seventy-three heterosexual couples (total $N = 146$) participated in the current study. One member of the couple was recruited through the undergraduate subject pool of a Midwestern university psychology department. To be eligible, participants had to attend a study session as a couple, be in a committed relationship for at least four months, be able to read

questionnaires in English, and be 18 years of age or older. Participants' reported ethnicity was 89% European American, 2.1% Asian or Pacific Islander, 3.4% mixed ethnicity, 1.4% Hispanic European American, 0.7% Hispanic mixed ethnicity, 0.7% others, 2.1% Hispanic other, and 0.7% reported no ethnicity. Participants had been dating an average of 21.6 months (SD = 18.4; range = 4–108). Participants' mean age was 19.7 (SD = 1.9, range = 18–27).

Measures

Hazardous alcohol use was assessed with the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The AUDIT is a 10-item measure. Although the AUDIT was designed as a screening measure to identify hazardous alcohol use, it has often been used by researchers as a continuous measure of hazardous or problematic alcohol use (e.g., Blow et al., 2013; Foran, Heyman, Slep, & Snarr, 2012; Gorka, Ali, & Daughters, 2012). The AUDIT assesses three aspects of hazardous drinking, which have all been linked to IPA (Foran & O'Leary, 2008a), and include quantity and frequency of drinking, symptoms of dependence, and problems caused by alcohol use. Each item is scored from 0 to 4 and total scores can range from 0 to 40. Higher scores indicate greater hazardous alcohol use. Similar to past research on alcohol and IPA (e.g., Foran et al., 2012), instead of dichotomizing participants into hazardous and nonhazardous drinkers we used a continuous severity measure of the AUDIT, which allowed us to include all information and variability of the AUDIT scores in analyses. The AUDIT has high internal consistency, can reliably identify patients who engage in hazardous drinking (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; Saunders et al., 1993), and has been shown to be a valid assessment of hazardous drinking in college samples (Fleming, Barry, & MacDonald, 1991; Kokotailo et al., 2004). In the current sample, the alpha for the AUDIT was .73.

Impulse control difficulties were assessed with the impulse control difficulties subscale of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). Participants rated how frequently each of the six items affected themselves on a 5-point scale ranging from "almost never" to "almost always." Each item assesses how well individuals control impulses and behaviors when they feel upset (e.g., "When I'm upset, I have difficulty controlling my behaviors"). Higher scores indicated greater difficulties with impulse control when experiencing negative emotion. The DERS and its subscales have exhibited good overall internal consistency, construct validity, and predictive validity (Gratz & Roemer, 2004). The alpha for the impulse control difficulties subscale in the current sample is .80.

Intimate partner physical and psychological aggression was assessed with the 12-item physical assault and the eight-item psychological aggression subscales of the Revised Conflict Tactics Scale (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Each item asks participants to rate the frequency of their own and their partners' aggressive behaviors toward one another during the past 6 months. Twelve couples were in a relationship less than 6 months so they reported on aggressive behaviors during the past 4 months. These couples' physical [$t(71) = -.53$, $p = .60$, $t(71) = -.31$, $p = .76$, for women and men, respectively] and psychological [$t(71) = 1.05$, $p = .30$, $t(71) = .42$, $p = .68$, for women and men respectively] aggression scores did not significantly differ from couples who had been together 6

months or longer. Items are rated on a 7-point scale from 0 (never) to 6 (more than 20 times). Scores were computed by summing the number of endorsed items, with higher scores reflecting more acts of partner aggression. This scoring method helps reduce inaccurate reporting due to memory limitations regarding behavior frequencies, because a person is more likely to accurately remember whether or not a behavior happened rather than how many times the behavior happened. Further, to avoid underreporting, we combined partners' reports for each item by using the higher frequency reported by either partner. Combining partners reports in this way is consistent with past research (Gordis, Margolin, & Vickerman, 2005; Marshall et al., 2011; Slep & O'Leary, 2005). We then summed across the items for each subscale. The current sample has an alpha of .74 for physical aggression and .72 for psychological aggression.

Procedure

Participants were recruited for a research study investigating communication, relationships, and life events, through the Experimetrix website, which is an online service that provides subject pool management. Every student enrolled in psychology courses offering course credit for research participation had access to the Experimetrix website. Students who were interested in participating and earning psychology course credit could sign up themselves and their intimate partner for the study. The member of the couple who signed up for the study received course credit for participation and the other member of the couple received either course credit or $10. After providing informed consent, participants completed questionnaires. The home institution's Institutional Review Board approved all procedures for this study.

Results

Data Description

Descriptive statistics and bivariate correlations among study variables are presented in table 1. Paired sample *t* tests were conducted in order to determine whether any differences existed between men and women on study variables. Men's hazardous alcohol use was significantly higher than women's hazardous alcohol use, $t(72) = -2.06$, $p < .05$. Consistent with past research demonstrating that women are more likely to use one or more acts of IPA and to use acts more frequently (see Archer, 2000 for a meta-analysis), women's physical and psychological aggression was significantly higher than men's physical and psychological aggression, $t(72) = 4.53$, $p < .01$ and $t(72) = 3.81$, $p < .01$, respectively. Couples reported that 58.9% of women and 50.7% of men perpetrated at least one act of physical aggression during the past 6 months. With regard to psychological aggression, 95.9% of couples reported at least one act by women and 94.5% of couples reported at least one act by men. Several significant bivariate relationships emerged as well. Men's hazardous alcohol use and impulse control difficulties were both related to men's and women's IPA perpetration. In addition, women's IPA and men's IPA were significantly related. Finally, men's impulse control difficulties were positively correlated with men's hazardous alcohol use.

Table 1. Descriptive Statistics and Correlations Among Study Variables

Measure	Mean (SD)	Range	1	2	3	4	5	6	7
1. Women's impulse control difficulties	9.25 (3.36)	6–21	—						
2. Women's hazardous alcohol use	7.32 (4.91)	0–22	.21	—					
3. Women's physical aggression	1.86[#] (2.16)	0–7	.21	.02	—				
4. Women's psychological aggression	3.64[#] (1.73)	0–8	.27*	.23[a]	.34**	—			
5. Men's impulse control difficulties	8.38 (2.44)	6–16	.19	.12	.32**	.36**	—		
6. Men's hazardous alcohol use	10.56[#] (6.44)	0–30	–.10	.19	.28*	.34**	.54**	—	
7. Men's physical aggression	1.05 (1.34)	0–6	.19	.08	.72**	.48**	.39**	.41**	—
8. Men's psychological aggression	3.26 (1.61)	0–7	.15	.14	.35**	.87**	.43**	.37**	.57**

Note: n = 73 for men and 73 for women

[#]Mean value is significantly higher than the other gender ($p < .05$)

[a]$p = .05$

*$p < .05$

**$p < .01$

Analytic Approach

To account for the interdependence of these dyadic data, we conducted analyses using the APIM (Cook & Kenny, 2005; Kashy & Kenny, 2000). The APIM simultaneously estimates the effects of individuals' predictors on their own aggression (actor effects) and their partners' aggression (partner effects). The APIM for the current study is depicted in figure 1. All analyses were conducted under maximum likelihood estimation with robust standard errors using Mplus v.7 software (Muthén & Muthén, 1998–2012).

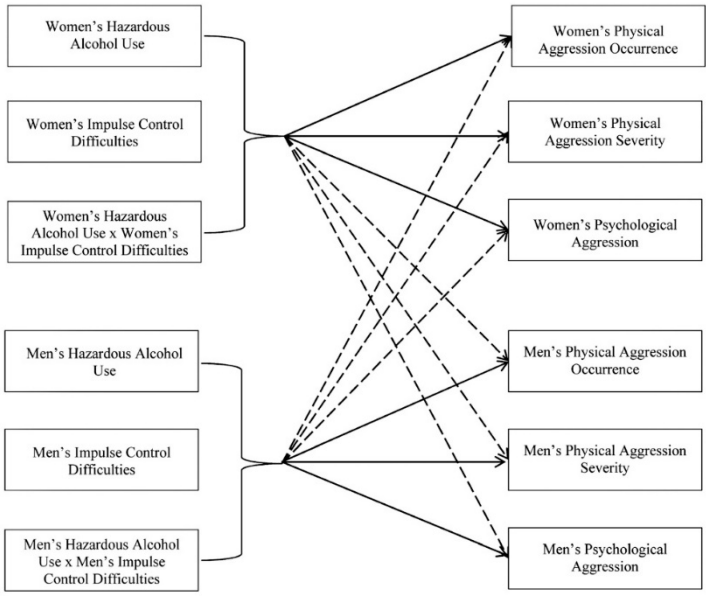

Figure 1. APIM estimated for study. Solid line = actor effect; dashed line = partner effect. Although not indicated, all predictors were allowed to correlate and each outcome's error was correlated between men's and women's responses.

The physical aggression outcome had a large number of 0s (representing individuals who had not perpetrated physical IPA) and a positive skew. This made the use of a general linear model, which assumes conditionally normal data distribution, problematic for the physical aggression outcome. We used a two-part model (Duan, Manning, Morris, & Newhouse, 1983; Manning et al., 1981; Olsen and Schafer, 2001), which is analogous to a hurdle model, to incorporate both a prediction of whether or not physical IPA occurred and a prediction of the amount of physical IPA among people who were physically aggressive. Specifically, this model fit all zeroes (vs. non-zeroes) in a logistic regression and then the nonzero physical IPA was modeled in a truncated regression with a log transformation. This part is truncated because it does not include the zeroes. For the current study, this allowed us to predict whether or not individuals were aggressive (physical aggression occurrence) as well as how aggressive individuals were among those who were aggressive (physical aggression severity). The psychological IPA measure was normally distributed, was not skewed, and did not evidence kurtosis. Therefore we used an identity link and normal distribution for this outcome.

For the current analyses, both impulse control difficulties and hazardous alcohol use were mean centered prior to creating interaction terms in order to maintain interpretability. Interaction effects were constructed by multiplying each individual's impulse control difficulties by his or her hazardous alcohol use. As mentioned, APIMs can include actor and partner specific predictors and outcomes. However, including gender-specific effects (i.e., separate effects for each partner/gender) and partner effects (e.g., men's predictor predicting women's outcome) may not always be necessary. A more parsimonious model

(fewer parameters) provides more power to estimate effects and may fit as well as a saturated model (i.e., with all parameters estimated). Therefore we investigated whether men's and women's paths should be equal or free to vary across partners and whether partner effects were necessary in the prediction of IPA. All nested model comparisons were carried out using rescaled likelihood ratio tests with degrees of freedom equal to the rescaled difference in the number of parameter between models (i.e., a rescaled –2LL test).

APIM Results

Results for the APIM are displayed in tables 2–4. Even though outcomes (i.e., physical aggression occurrence, physical aggression severity, and psychological aggression) were all included in one model, we have presented them in separate tables for easier reading. When gender differences occurred in the prediction of IPA, separate pathways were retained for each gender. In addition, partner effects were set to zero when they were not necessary in the prediction of IPA. These constraints are described in more detail further along. The final APIM with constraints did not fit differently from the saturated APIM, $-2\Delta LL(24) = 33.15$, $p = .10$. The final model's Akaike Information Criteria (AIC) was 764.61 and Bayesian Information Criteria (BIC) was 831.03, which were both lower than the saturated model, AIC = 780.16 and BIC = 901.55.

Table 2. Actor-Partner Interdependence Model Results for Physical Aggression Occurrence

	Physical Aggression Occurrence								
	W→W			M→M			Partner Effects		
Variable	*b*	*SE b*	*OR*	*b*	*SE b*	*OR*	*b*	*SE b*	*OR*
Main effects model:									
Hazardous alcohol use	.09	.09	1.09	.09	.09	1.09	—	—	—
Impulse control difficulties	.08	.17	1.08	.60*	.27	1.82	.40*	.19	1.49
Full model:									
Hazardous alcohol use	.12	.10	1.13	.12	.10	1.13	—	—	—
Impulse control difficulties	.05	.18	1.05	.72*	.29	2.05	.40*	.19	1.49
Hazardous alcohol use × impulse control difficulties	–.03	.02	0.97	–.03	.02	0.97	—	—	—

Note: $n = 73$ couples. Unstandardized path coefficients are reported. The interaction partner predictors of hazardous alcohol use and the interaction between hazardous alcohol use and impulse control difficulties were constrained to 0 in the prediction of physical aggression occurrence. The partner effect of impulse control difficulties, the actor effect of alcohol misuse, and the actor effect of the interaction between hazardous alcohol use and impulse control difficulties were constrained to be equal across partners.

*$p < .05$

Table 3. APIM Results for Physical Aggression Severity

	Physical Aggression Severity	
	Actor Effects	
Variable	*b*	*SE b*
Main effects model:		
Hazardous alcohol use	.004	.01
Impulse control difficulties	.05**	.02
Full model:		
Hazardous alcohol use	–.003	.01
Impulse control difficulties	.03*	.02
Hazardous alcohol use × impulse control difficulties	.005*	.00

Note: $n = 73$ couples. Unstandardized path coefficients are reported.
All partner effects were constrained to 0 and all actor effects were constrained to be equal across partners.
*$p < .05$
**$p < .01$

Table 4. APIM Results for Psychological Aggression

	Psychological Aggression			
	Actor Effects		Partner Effects	
Variable	*b*	*SE b*	*b*	*SE b*
Main effects model:				
Hazardous alcohol use	.03	.02	—	—
Impulse control difficulties	.14**	.04	.08*	.03
Full model:				
Hazardous alcohol use	.03[a]	.02	—	—
Impulse control difficulties	.14**	.04	.08*	.03
Hazardous alcohol use × impulse control difficulties	–.003	.03	—	—

Note: $n = 73$ couples. Unstandardized path coefficients are reported. The partner effects of hazardous alcohol use and the interaction between alcohol misuse and impulse control difficulties were constrained to 0. All actor effects were constrained to be equal across partners.
[a]$p = .055$
*$p < .05$
**$p < .01$

A model with predictors of physical aggression occurrence constrained between men and women and partner effects set to zero fitted significantly worse than the saturated model, $-2\Delta LL(9) = 26.49$, $p = .002$. Tests indicated that including a partner effect of impulse control difficulties on physical aggression occurrence significantly improved the model compared with the constrained model, $-2\Delta LL(1) = 6.66$, $p = .001$. Another test indicated that allowing the actor effect of impulse control difficulties on physical aggression occurrence to differ between men and women significantly improved the model compared with the constrained model, $-2\Delta LL(1) = 11.79$, $p < .001$. Therefore, the model included an estimated partner effect of impulse control difficulties on physical aggression occurrence and

an actor effect of impulse control difficulties on physical aggression occurrence that differed for men and women. A model with all men's and women's predictors of physical aggression severity constrained to be equal and partner effects set to zero was not significantly different than the saturated model, $-2\Delta LL(9) = 14.37$, $p = .11$. A model with the actor effects on psychological aggression constrained between men and women and partner effects on psychological aggression set to zero was not significantly different than the saturated model, $-2\Delta LL(9) = 13.78$, $p = .13$. However, tests indicated that including a partner effect of impulse control difficulties significantly improved fit from the more constrained model, $-2\Delta LL(1) = 10.10$, $p = .001$. Therefore we included a partner effect of impulse control difficulties.

In summary, in the final model, all effects were set to be equal for men and women, except for the actor effect of impulse control difficulties on physical IPA occurrence, which significantly differed for men and women. In addition, only the partner effects of impulse control difficulties on physical IPA occurrence and psychological IPA were determined to be necessary. These partner effects were also equal for men and women. The significant pathways of the final model are displayed in figure 2. Standardized coefficients are displayed in figure 2 to ease comparisons among predictors with smaller and larger scales. Unstandardized coefficients are presented in the tables and text.

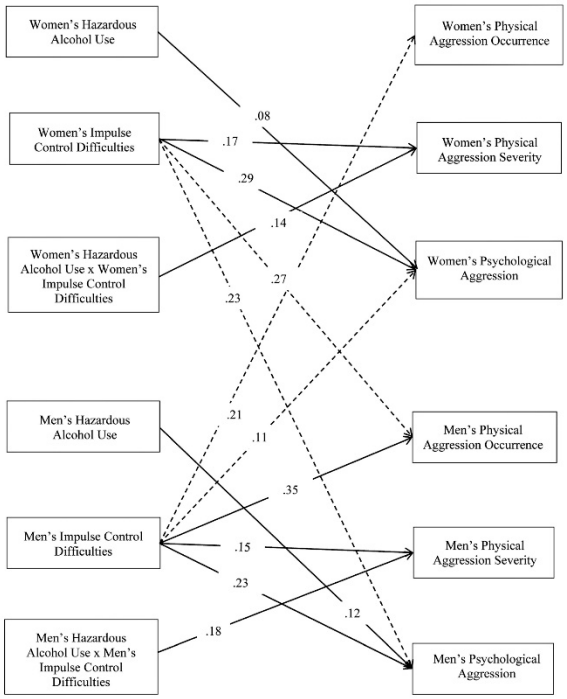

Figure 2. Results of the final APIM. Only significant pathways are displayed. Standardized coefficients are provided. Although not indicated, all predictors were allowed to correlate and each outcome's error was correlated between men's and women's responses.

Actor effects of hazardous alcohol use and impulse control difficulties (Hypothesis 1)
We estimated a model with no interaction terms in order to determine the main effects of hazardous alcohol use and impulse control difficulties. We expected greater hazardous alcohol use and greater impulse control difficulties to predict greater IPA perpetration. Men were more likely to perpetrate physical IPA if they had higher impulse control difficulties (b = .60, p = .02). However, women were not more likely to perpetrate physical IPA if they had higher impulse control difficulties (b = .08, p = .63). Among both men and women, the actor effect of impulse control difficulties was positively related to physical aggression perpetration severity (b = .05, p = .004) and psychological aggression (b = .14, p < .001). The actor main effect of hazardous alcohol use was not related to physical IPA occurrence, physical IPA severity, or psychological IPA.

Actor effects of hazardous alcohol use and impulse control difficulties interaction (Hypothesis 2)
The full model indicated that the actor effect of the interaction between impulse control difficulties and hazardous alcohol use was not significant in predicting the occurrence of physical aggression or psychological aggression, suggesting that the effect of hazardous alcohol use on these aggression outcomes did not differ among individuals at different levels of impulse control difficulties. For both men and women, the actor effect of the interaction between impulse control difficulties and hazardous alcohol use was significant (b = .01, p = .01) in predicting physical aggression severity. Relations between hazardous alcohol use and physical aggression severity became significantly more positive for every one-unit increase in impulse control difficulties. To help interpret this interaction, we plotted the hazardous alcohol use–IPA count regression line for the mean of impulse control difficulties, and 2 SDs above and below the mean of impulse control difficulties (see fig. 3). We also computed new effects to determine if simple regression lines were significantly different from zero. Analysis of the simple effects indicated that higher levels of hazardous alcohol use were associated with less physical perpetration among individuals who are 2 SDs below the mean on impulse control difficulties (b = –.03, p = .05). Hazardous alcohol use was not significantly related to IPA perpetration for people who were two standard deviations above the mean on impulse control difficulties, but the relationship showed a trend in the predicted direction (b = .02, p = .09).

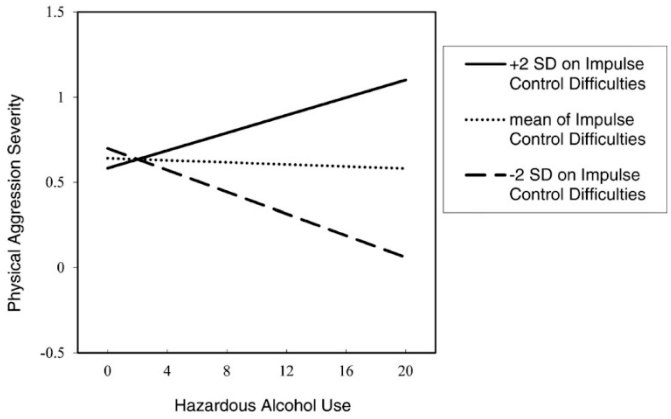

Figure 3. Interaction of hazardous alcohol use and impulse control difficulties on physical aggression severity.

Partner effects on aggression (Hypothesis 3)

As described, the partner effects of hazardous alcohol use and the interaction between hazardous alcohol use and impulse control difficulties were constrained to zero across aggression outcomes. The partner effect of impulse control difficulties positively predicted physical aggression occurrence (b = .40, p = .03), indicating that individuals were more likely to perpetrate physical aggression when their partners had greater impulse control difficulties. In addition, the partner effect of impulse control difficulties positively predicted psychological aggression (b = .08, p = .03), indicating that individuals perpetrated more psychological aggression when their partners had greater impulse control difficulties.

Discussion

The present study builds on prior work by utilizing a dyadic framework to examine the role of impulse control difficulties in moderating the alcohol-IPA relationship. Our examination of actor effects revealed that hazardous alcohol use and impulsivity played important but somewhat differing roles in predicting IPA. Additionally, consistent with the multiple threshold model, greater hazardous alcohol use and impulse control difficulties interacted to predict higher levels of physical aggression severity. Regarding partner effects, an individual's impulse control difficulties were associated with her or his partner's physical aggression occurrence and psychological aggression. The implications of these study findings, as well as the importance of examining dyadic processes in the study of IPA, are discussed in the following.

Impulse control difficulties emerged as an important individual predictor of IPA. Specifically, difficulties controlling impulsive behaviors when upset predicted the occurrence of physical IPA among men, and physical IPA severity and psychological IPA among both men and women. This finding is consistent with past research linking impulse control difficulties with higher levels of physical and psychological partner aggression among college men and women (Shorey, Brasfield, Febres, & Stuart, 2011b; Gratz & Roemer, 2004), and

suggests that experiencing intense negative affect is associated with a greater risk of aggression among individuals with impulse control problems. Specifically, when upset these individuals experience strong aggressive impulses toward their partner which they rashly act out upon. While impulse control difficulties was an important predictor of physical IPA severity and psychological IPA for both men and women, the one gender difference found suggests that men with greater impulse control difficulties are particularly at risk for perpetrating physical aggression.

Contrary to hypotheses, hazardous alcohol use did not have a significant main effect on IPA. However, when the interaction between hazardous alcohol use and impulse control difficulties was included in the final model, psychological aggression tended to increase with greater hazardous alcohol use. Proximal effects models of alcohol (Leonard & Quigley, 1999) suggest that alcohol's harmful effects on cognitive functioning may lead a person to misinterpret cues from his or her partner as threat or insults. This process may set the stage for a person to react in a manner that is psychologically abusive to a partner. This possibility is in line with an abundance of research linking alcohol to a wide range of negative social consequences, including IPA (e.g., Kachadourian, Taft, O'Farrell, Doron-Lamarca, & Murphy, 2012). The lack of other significant effects of hazardous alcohol use may be due to our use of a self-report assessment that measures hazardous alcohol use in general. This measure does not assess whether a person is intoxicated during incidents of IPA, limiting our ability to assess the proximal effects of alcohol.

The main tenet of the multiple threshold model is that the number and level of certain risk factors interact with hazardous alcohol use to differentially influence partner aggression. The current findings support this model by showing that associations between hazardous alcohol use and physical aggression were strengthened as individuals reported more impulse control difficulties. Conversely, greater hazardous alcohol use was associated with less physical aggression among individuals with more control over impulsive behaviors when upset. Presumably, having lower levels of impulse control difficulties resulted in these individuals having a higher threshold for aggression. Thus, engaging in greater hazardous alcohol use alone was not sufficient to trigger physical IPA, though difficulties with regulation of negative emotion may increase partner aggression when using alcohol hazardously. These findings are consistent with prior research showing that thresholds for the alcohol-IPA relationship differ with varying levels of risk factors (e.g., Foran & O'Leary, 2008b) and suggest that impulse control difficulties may enhance the alcohol-IPA relationship among both men and women.

In addition to actor effects, results revealed that partner characteristics play a significant part in the expression of IPA. Individuals whose partners had greater impulse control difficulties perpetrated more psychological aggression and were more likely to engage in physical aggression than those whose partners had fewer difficulties. Because of the interactional nature of couple conflict, an individual's disposition to respond rashly when experiencing negative affect can potentially elicit aggressive behavior from a partner. For example, during couple conflict, individuals who are unable to control their negative impulses may engage in an increasing pattern of verbal provocations toward a partner who in turn may respond with complimentary negative remarks, setting off an escalating cycle of verbalizations that can culminate in aggression (Sabourin, Infante, & Rudd, 1993). These

significant partner effects further support researchers' assertions of the importance of examining IPA within a dyadic system (Capaldi, Shortt, & Kim, 2005; Moffitt, Robins, & Caspi, 2006; O'Leary & Smith Slep, 2012). Partner effects were not found, however, for hazardous alcohol use or the interaction between hazardous alcohol use and impulse control difficulties. Our measure of alcohol use assessed hazardous alcohol use, including quantity and frequency of drinking, symptoms of dependence, and problems caused by alcohol use. However, the proposed hypotheses suggest a process in which episodes of IPA occur close in time to the consumption of alcohol (i.e., when the individual is intoxicated), particularly among individuals high on the risky trait of impulse control difficulties. Although consistent with this possibility, the current results do not allow us to establish the temporal sequencing implied by this process or to establish the role of intoxication or impulsivity in causing IPA. Therefore, it is important for future work to examine moderating variables of the alcohol-IPA relationship in couples using an experimental approach.

Limitations of the present study should be noted. First, our sample of couples was primarily college students of European-American descent. Future studies should examine couples who are more demographically diverse, because research suggests that the alcohol-IPA relationship may be more prominent in ethnic minorities (Caetano, Cunradi, Schafer, & Clark, 2000). Second, there is a possibility that individuals self-selected into the study during recruitment, creating differences between individuals who did and did not elect to participate. However, we attempted to minimize the possibility by using nondescript language in the recruitment ad. As mentioned, the current study employed cross-sectional self-report measures to examine individual and dyadic characteristics, which did not allow us to tie alcohol use to IPA episodes. Finally, future studies should also examine hazardous alcohol use and impulse control difficulties as predictors of aggression among clinical samples, who have higher levels of risk factors. Such a study may allow researchers to explore the differing thresholds of the multiple threshold model (i.e., thresholds for nonsevere and severe IPA).

The present study adds to knowledge about the alcohol-IPA relationship by examining impulse control as a moderating factor. Further, we employed a couple-based framework, which models a more accurate depiction of IPA processes. The APIM used in the current study permits the modeling of dyadic process of IPA by examining both actor and partner effects. Our significant partner effects suggest the importance of using dyadic models in future research examining IPA among couples. Results suggest that targeting hazardous alcohol use in the treatment of IPA is important, particularly for individuals who experience impulse control difficulties. Additionally, findings of partner effects indicate that it may be important to treat both members of a couple when dealing with IPA, rather than focusing solely on individual partners. Consistent with previous research (O'Leary, Smith Slep, & O'Leary, 2007; White, Merrill, & Koss, 2001), the current study found more gender similarities than gender differences in the prediction of IPA. This suggests that the risk factors examined here work similarly across men and women and that treatments may be able to have commonalities across genders. In particular, this study highlights the importance of targeting impulse control difficulties in treatment for IPA. Findings demonstrated that being able to control impulses when experiencing negative emotion serves as

a buffer for IPA perpetration, even when misusing alcohol. Teaching distress tolerance skills in treatment has been shown to help individuals respond adaptively when experiencing negative emotion (Cyders & Smith, 2008). Such skills could be useful in reducing the occurrence of IPA. Future work could examine whether teaching distress tolerance skills to couples, particularly targeting impulse control difficulties, in fact reduces IPA perpetration.

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