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The Effects of Alcohol Intoxication and Cognitive Emotion Regulation Strategies on Lab-  
Based Partner Aggression

Laura E. Watkins

A DISSERTATION

Presented to the Faculty of  
The Graduate College at the University of Nebraska  
In Partial Fulfillment of the Requirements  
For the degree of Doctor of Philosophy

Major: Psychology

Under the Supervision of Professor David DiLillo

Lincoln, Nebraska

May, 2014

THE EFFECTS OF ALCOHOL INTOXICATION AND COGNITIVE EMOTION  
REGULATION STRATEGIES ON LAB-BASED PARTNER AGGRESSION

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University of Nebraska, 2015

Adviser: David DiLillo

Intimate partner aggression (IPA) is a serious national health concern that affects an alarming number of individuals and can lead to substantial psychological and physical suffering. Situational risk factors that arise in the immediate context of IPA reflect state-like influences that trigger aggression. Because these factors are more variable and fluctuate according to the situation, they are potentially promising targets for prevention and intervention efforts (e.g., through cognitive and behavioral interventions). Within this realm, two factors in particular appear to play a prominent role in the etiology of IPA: alcohol intoxication and cognitive emotion regulation strategies. In contrast to prior correlational work, the present study experimentally manipulated alcohol consumption and emotion regulatory strategies to assess their individual and combined effects on IPA, which was measured both observationally and through self-report. It was expected that both alcohol intoxication and anger rumination would increase IPA perpetration, whereas reappraisal would result in decreased IPA perpetration. Further, intoxication and emotion regulation strategies were expected to have interactive effects on IPA perpetration such that rumination would enhance associations between alcohol intoxication and aggression, whereas reappraisal would attenuate the relationship between alcohol and IPA perpetration. Hypotheses for the study were partially supported. Findings show that participants in the alcohol condition generally displayed greater IPA than participants in

the placebo condition. Emotion regulation strategy condition was not found to affect IPA. When examining only the effects of alcohol and emotion regulation strategy condition, emotion strategy use did not moderate the relationship between alcohol intoxication and IPA. However, alcohol and emotion regulation strategy conditions were found to interact with trait levels of rumination and reappraisal to predict IPA. The implications of these results, future directions for research, and implications for IPA intervention and prevention strategies are discussed.

## **DEDICATION**

To my mother – I am grateful for her wisdom, strength, and unwavering love and support.

## ACKNOWLEDGEMENTS

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## LIST OF MULTIMEDIA OBJECTS

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## CHAPTER 1: INTRODUCTION

Intimate partner aggression (IPA) is a significant public health problem, which inflicts both physical and psychological harm to victims and costs billions of dollars per year due to healthcare expenditures and loss of productivity. These harmful consequences underscore the need for an in-depth understanding of the etiological factors that contribute to IPA perpetration. Attempts to identify the risk factors for IPA have largely focused on individual demographic and dispositional characteristics that may predispose someone to perpetrate aggression. While this work provides invaluable information, studies of broad risk factors are limited in their ability to identify the specific circumstances that may prompt an individual to aggress against a partner. By contrast, situational risk factors arise in the immediate context of IPA and reflect more state-like influences that trigger aggression. Because these factors are more variable and fluctuate according to the situation, they are potentially promising targets for prevention and intervention (e.g., through cognitive and behavioral interventions). Within this realm, two factors in particular appear to play a prominent role in the etiology of IPA: alcohol intoxication and cognitive emotion regulation strategies. In contrast to prior correlational work, the current study uses an experimental manipulation of alcohol consumption and emotion regulatory strategies to assess their individual and combined effects on IPA, measured both observationally and through self-report.

### **Definition and Scope of IPA perpetration**

IPA is a broad construct that includes any physical, verbal, or sexual act of aggression intended to cause harm between spouses or dating partners (Centers for Disease Control and Prevention [CDC], 2006). The focus of the current study is on physical acts of

IPA, which can include acts such as hitting, kicking, pushing, and slapping an intimate partner. The term “aggression” is used here instead of “violence” (i.e., intimate partner violence [IPV]). Violence refers to a smaller set of more severe acts than aggression (Anderson & Bushman, 2002). Further, violence has been defined as aggression that has the goal of extreme harm and does not include all forms of harmful physical acts, while aggression encompasses a wider range of behaviors including both minor level behaviors (e.g., slapping) and more severe acts, such as choking (see Anderson & Bushman, 2002). Because the current study is not focused exclusively on more severe physical acts, aggression is the more appropriate term.

As noted above, IPA occurs with alarming frequency, causes much harm to victims, and costs the United States billions of dollars per year due to healthcare costs and loss of productivity (Brown, Finkelstein, & Mercy, 2008; National Center for Injury Prevention and Control, 2003). Population studies estimate that past-year IPA rates among couples range from 12% to 30% (Caetano, Cunradi, Schafer, & Clark, 2000; Smith et al., 2002; Straus & Gelles, 1990). Women perpetrate IPA at rates equal to or slightly higher than men (see Archer, 2000 for a meta-analysis), but men perpetrators are more likely to inflict physical harm upon their partners. Men and women of college dating samples perpetrate IPA at similar rates as well (Harned, 2002; Katz, Kuffel, & Coblentz, 2002; Straus, 2004). Although most research examining IPA has focused on heterosexual couples, IPA also occurs among heterosexual and same sex couples at similar rates (McClennen, 2005). Further, researchers agree that it is important to systematically examine IPA perpetration among both genders (Holtzworth-Munroe, 2005; Johnson, 2006; Straus, 2006) and among both heterosexual and same-sex couples (Fahmy & Fradella, 2014; McClennen, 2005).

University students are particularly at risk for IPA, with past-year prevalence rates ranging from approximately 20% to 50% (Cogan & Fennell, 2007; Forke, Myers, Catalozzi, & Schwartz, 2008; Riggs & O'Leary, 1996; Straus, 2004). Several factors may lead university students to be at risk for IPA. The transition to college may influence risk for aggression, because students many times leave home social support systems and receive less parental monitoring, which both have been associated with increased risk for aggression (Banyard, Cross, Modecki, 2006; Howard, Qui, & Boekeloo, 2003). Further, immaturity, lack of experience with intimate relationships, and new-found autonomy in the absence of parental monitoring may lead university students to be at greater risk for IPA (Tjaden & Thoennes, 2000). Not only are university students at greater risk of IPA, they also experience many deleterious effects, including increased physical problems such as bodily injuries (Amar & Gennaro, 2005) and mental health problems (e.g., depression, anxiety, somatization, and distress; Clements, Ogle, & Sabourin, 2005; Kaura & Lohman, 2007; Simonelli & Ingram, 1998). The high prevalence and suffering associated with IPA among university students makes research examining risk factors and potential intervention targets among both men and women essential.

### **IPA Perpetration: The Importance of Situational Risk Factors**

Researchers have devoted significant effort to elucidating risk factors for IPA perpetration. This work has largely focused on individual demographic and dispositional characteristics that may predispose someone to perpetrate partner aggression. A typical approach in this area is to compare men who have perpetrated IPA to men who have not perpetrated IPA. This work has revealed, for example, that demographic characteristics such as younger age, lower socioeconomic status, and unemployment are related to an

increase risk of IPA perpetration (Holtzworth-Munroe, Smutzler, & Bates, 1997). In addition, men who have perpetrated IPA are likely to have psychological characteristics such as greater anger and hostility, elevations in borderline and antisocial traits, and greater symptoms of PTSD and depression as compared to men who have not perpetrated IPA (Riggs, Caulfield, & Street, 2000). Many of these characteristics remain relatively stable over time and can be present when IPA is present or absent (Bell & Naugle, 2008).

Identifying demographic and dispositional risk factors provides invaluable information on which individuals are more likely to be aggressive towards their partners. However, these risk factors do not provide information about the specific circumstances that may prompt an individual to aggress against a partner (O'Leary & Slep, 2006). For example, an individual with high levels of antisocial traits (Person A) may be more likely to perpetrate IPA than an individual with low levels of these traits (Person B). However, Person A may only perpetrate aggression after a stressful day or only after consuming alcohol, or Person A may never perpetrate aggression. Thus, dispositional factors alone may be poor predictors of behaviors in specific situations (Gazzaniga & Heatherton, 2006; Mischel, 1968; Ross & Nisbett, 1991), particularly behaviors like IPA that are highly dependent on the situation. Further, even if someone has dispositional factors that put him or her at risk of IPA, this does not mean this person will be aggressive. In addition, because demographic and dispositional factors' stable nature can make them difficult to modify, formulating interventions that effectively target these factors is particularly challenging. Therefore, although studies of self-reported static conditions are useful in identifying the general characteristics of those who commit IPA (O'Leary & Slep, 2006), they say little about the *processes* leading to aggression.

In contrast to more static variables that are often the focus in IPA research, situational risk factors arise in the immediate context of IPA and reflect more state-like influences that trigger aggression. Identifying these risk factors can elucidate in which situations a person is more likely to be aggressive. Further, because these factors are more variable and fluctuate according to the situation, they are potentially promising targets for prevention and intervention (e.g., through cognitive and behavioral interventions). Because of their temporal proximity to IPA, situational factors are theorized to have greater impact on IPA than dispositional characteristics (Bell & Naugle, 2008). Researchers have suggested that a variety of state-like factors may contribute to IPA (e.g., blameful attributions, anger, distress; Bell & Naugle, 2008; Finkel, 2007; Finkel & Eckhardt, 2013). Models of IPA suggest that while dispositional risk factors are related to IPA in general, situational factors provide the more immediate context for IPA to occur (Bell & Naugle, 2008; Finkel, 2007). For example, although higher trait anger may be related to risk of IPA, it is the experience of anger or inability to regulate anger in specific situations that is likely to trigger an IPA event. Thus, although the perpetrator is always accountable for the aggressive act, partner aggression is the product of a complex interactive, interpersonal, and situational process. Perpetrators of IPA act in-the-moment, based on their current emotions and cognitions. As such, investigations carefully examining situational factors in which this IPA arises are needed. Research using purely self-report methods to measure risk factors is limited in its ability to do this.

Two situational factors in particular appear to play a prominent role in the etiology of IPA: alcohol intoxication (Leonard, 2005) and cognitive emotion regulatory strategies (Berzenski & Yates, 2010; Gratz, Paulson, Jakupcak, & Tull, 2009; McNulty & Hellmuth,

2008). The present study is designed to further illuminate the proximal effects of alcohol and the emotion regulatory strategies of anger rumination and reappraisal on IPA perpetration. This investigation uses a lab-based experimental approach to shed light on the role of these variables in contributing to *in vivo* partner aggression.

### **Alcohol and IPA Perpetration**

The relationship between alcohol and general human aggression has been thoroughly established in research literature. Findings from a variety of disciplines, such as criminology, sociology, and psychology, have reliably found a positive relationship between alcohol use and aggression. The *National Crime Victimization Survey's* data indicate that alcohol was present during the time of offense in 39%-45% of murders, 32%-40% of sexual assaults, and 45%-46% of physical assaults (Greenfeld & Henneberg, 2001). Further, 63% of violent offenders committed their crime while under the influence of alcohol (Murdoch, Pihl, & Ross, 1990). Similar to other forms of aggression, alcohol was present at the time of 63% of acts of intimate partner aggression (Greenfeld & Henneberg). In addition, problem drinking and alcohol use have consistently been found to be associated with higher rates of self- or partner-reported IPA among both men and women (see Foran & O'Leary, 2008 for a meta-analytic review).

**Theoretical models of the alcohol-IPA relationship.** While the link between alcohol and IPA has been repeatedly demonstrated, theoretical explanations for this link have been debated. Models for the alcohol-IPA relationship can be divided into three different types: 1) spurious effects models; 2) indirect effects models; and 3) proximal effects models (Leonard & Quigley, 1999). The spurious model suggests that the relationship between alcohol and IPA is due to other variables that influence both



drinking and aggression (e.g., impulsivity; age), instead of there being a direct link between alcohol and IPA (Foran & O'Leary, 2008). However, research largely does not support this model, with drinking still being associated with IPA, even after controlling for other factors, such as age, education, and socioeconomic status (Leonard, Bromet, Parkinson, Day, & Ryan, 1985; Leonard & Senchak, 1993; Pan, Neidig, & O'Leary, 1994).

The indirect effects model suggests that alcohol has a causal relationship with IPA, which is mediated by other variables, such as relationship satisfaction. This model suggests that alcohol use creates an environment that sets the stage for arguments and relationship dissatisfaction among couples, which in turn makes IPA more likely. However, past work also does not fully support this model, because even when controlling for relationship satisfaction or relationship discord, the relationship between alcohol and IPA remains (Fals-Stewart, 2003; Fals-Stewart, Leonard, & Birchler, 2005; McKenry, Julian, & Gavazzi, 1995).

Finally, the proximal effects model suggests that alcohol intoxication facilitates IPA directly due to the psychopharmacological effects of alcohol on perception and thought. One of the best supported theories of the proximal effects of alcohol intoxication on behaviors is the alcohol myopia model (AMM; Steele & Josephs, 1990). Although the AMM is a general model used to explain the effects of alcohol on people's behaviors while intoxicated, it has been invoked extensively in the alcohol-aggression literature (e.g., Giancola, 2000; Giancola, Josephs, Parrott & Duke, 2010). According to this model, the psychopharmacological effects of alcohol intoxication narrow one's attentional capacity, resulting in problematic processing of external cues (Steele & Josephs,

1990). Specifically, alcohol intoxication is thought to result in attentional myopia, which restricts the range of internal and external cues that are perceived and processed (Giancola et al., 2010; Steele & Josephs, 1990). The AMM suggests that alcohol intoxication not only restricts the range of cues that one can perceive, but also reduces the ability to process and extract meaning from the cues and information that is perceived (Steele and Josephs, 1990). In other words, myopia is a state of shortsightedness, where the immediate and most salient aspects of a situation have a disproportionate influence on behavior (Steele & Josephs, 1990). For example, if intoxicated individuals are confronted with a hostile situation, they will be more likely to focus on the salient provoking cues rather than aggression-inhibiting cues (e.g., potential consequences of their behavior), leading to an increase risk for aggressive behavior (Giancola et al., 2010). This myopic processing during a state of intoxication may lead individuals to never fully process or perceive inhibitory cues, thereby increasing the chances of aggressive behavior. The AMM has empirical support in the alcohol and aggression literature. Intoxicated participants who are exposed to violence inhibiting cues (e.g., peaceful images) are significantly less aggressive than intoxicated participants who are exposed to violence-promoting cues (i.e., violent scenes from popular movies; Giancola, Duke, & Ritz, 2011). Additionally, intoxicated men whose attention is distracted from an aggression task are significantly less aggressive than intoxicated men who are not distracted (Gallagher & Parrott, 2011).

**Empirical support for proximal effects of alcohol on IPA.** Consistent with proximal effects models, general aggression literature provides strong support for alcohol intoxication increasing interpersonal aggression (e.g., toward an unknown confederate;

Bushman & Cooper, 1990; Chermack & Giancola, 1997; Exum, 2006). Numerous experimental studies have examined the effects of alcohol intoxication on interpersonal aggression. Typically in these studies, participants are randomly assigned to an alcohol or a no-alcohol condition. The no-alcohol condition can either be a placebo drink, in which participants are told they are consuming alcohol, but really do not, or participants are informed that they have received a non-alcoholic beverage. Studies typically assess physical aggression with analogue aggression tasks, such as a teacher-learner task (Buss, 1961), a competitive reaction time task (Taylor, 1967) or a variation of one of these two procedures. In these tasks participants are told they are either teaching or playing against another participant, who in fact is a confederate. The true participant is able to control the intensity and duration of shock or white noise given to the confederate, either for making an incorrect response (e.g., on the teacher-learning task) or losing a reaction time trial. These studies compare levels of aggression in the alcohol group to the group that did not receive alcohol. Research overwhelmingly demonstrates that individuals who are intoxicated are more aggressive than individuals who did not consume alcohol (see Bushman & Cooper, 1990 and Exum, 2006 for reviews).

While research has established a proximal link between alcohol intoxication and general aggression, studies examining the proximal effects of alcohol on IPA perpetration are limited. However, several findings in the IPA literature support the possibility that alcohol intoxication has proximal effects on IPA perpetration. Men receiving treatment for alcohol problems report IPA perpetration rates in the past year approximately five to eight times higher than demographically similar men without alcohol problems (Chermack, Fuller, & Blow, 2000; O'Farrell & Murphy, 1995). In addition, reductions in

drinking following alcohol treatment are associated with corresponding declines in IPA (O'Farrell, Fals-Stewart, Murphy, & Murphy, 2003). Likewise, research has linked alcohol intoxication to behaviors related to IPA perpetration. For example, men who are intoxicated express more negativity during conflict discussions with their wives than men who have not consumed alcohol (Leonard & Roberts, 1998). Further, men who have a history of IPA perpetration and consume alcohol have greater aggressive verbalizations during anger-arousing scenarios (Eckhardt, 2007).

Finally, several recent studies have used daily diary methods to demonstrate the proximal link between alcohol and IPA. For instance, men indicated they were more likely to perpetrate IPA on days that they consumed alcohol (Fals-Stewart, 2003). Similarly, among a sample of college women, alcohol use was associated with increased likelihood of perpetrating psychological and physical IPA on the same day (Shorey, Moore, & McNulty, 2013). Additionally, in a community sample of couples, alcohol consumption was associated with perpetration of verbal and physical IPA the same day (Testa & Derrick, 2014). Testa and Derrick also demonstrated a temporal relationship between alcohol use and IPA by establishing that the likelihood of IPA perpetration increased when alcohol was consumed in the previous four hours. These studies provide the strongest evidence that alcohol has a proximal effect on IPA. Nevertheless, as noted by Fals-Stewart, the co-occurrence of alcohol and IPA in daily diary studies is correlational and does not establish a causal connection between intoxication and IPA. Further, most daily diary studies do not include precise information on the timing of aggressive episodes, or the timing, duration, and amount of alcohol consumption. These limitations suggest the need for research

further examining the proximal effects of alcohol intoxication on IPA perpetration, in which alcohol consumption is randomly assigned and IPA is assessed in the laboratory.

### **Emotion, Emotion Regulatory Strategies, and IPA**

Another important situational risk factor for IPA is immediate emotional processes. Berkowitz's (1990) cognitive neoassociationistic (CN) model of aggression suggests that experiencing negative emotion, including distress, anger, and annoyance, may result in aggression because both negative emotion and aggression are connected via a common associative network. This network includes aggression-related thoughts, feelings, memories, and physiological reactions and is activated when an individual experiences negative affect, setting in motion "fight" responses and increasing propensity for aggressive behavior. The CN model further posits that the experience of more prolonged and intense negative emotion potentiates aggression by increasing the likelihood that this network will be activated. In support of the CN model, several experimental studies have demonstrated a positive relationship between negative affect and aggression (Pedersen, 2006; Verona & Curtin, 2006). In addition, increases in negative emotion during couple conflict are positively related to IPA perpetration as measured with an analogue aggression task (Watkins, DiLillo, Hoffman, & Templin, 2013).

In more recent writings on the CN model, instead of focusing on the broad construct of negative emotion, Berkowitz (2012) has highlighted the specific role of anger. Anger is theorized to be related to an approach motivational system, which is unlike other negative emotions such as anxiety and fear that are related to an avoidance motivational system (Carver & Harmon-Jones, 2009). The approach system organizes behavior related to moving towards desired rewards or goals, while the avoidance system organizes

behavior related to evading threats or punishments. The emotional state of anger is often related to action towards a goal such as removing frustrating stimulus (Harmon-Jones, Peterson, Harmon-Jones, 2010). Berkowitz (2012) further suggests that anger is related to *aggressive* oriented approach motivation, particularly among individuals who are high in trait anger. In effect, anger motivates one to remove the anger stimulus, which may involve the use of aggression (Berkowitz, 2012).

Similar to findings connecting negative emotion to aggression, anger has been linked to IPA. Research demonstrates that IPA perpetrators as compared to individuals who have not perpetrated IPA have higher trait and state levels of anger and hostility on self-report and observational measures (see Eckhardt, Barbour, & Stuart, 1997; Norlander & Eckhardt, 2005; Schumacher, Felbau-Kohn, Smith-Slep, & Heyman, 2001 for reviews). In addition, lab-based studies examining participants' responses during anger provoking scenarios involving intimate partners, find that IPA perpetrators articulate more aggressive verbalization than non-aggressive individuals (Barbour, Eckhardt, Davison, & Kassonov, 1998; Eckhardt, Jamison, & Watts, 2002). In a daily diary study, higher proximal anger was also related to a greater probability of perpetrating IPA among a sample of undergraduate students (Elkins, Moore, McNulty, Kivisto, & Handsel, 2013). Together, these findings suggest that negative emotion, and anger specifically, may be proximal risk factors for IPA perpetration.

Use of cognitive emotion regulatory strategies in response to an anger-eliciting event may influence individual's experience of negative emotion and anger and may also influence the risk for aggression. As a construct, emotion regulation refers broadly to attempts made by individuals to alter the experience of an emotion in some way (Gross &

Thompson, 2007). For instance, emotion regulation can reduce, intensify, or maintain an emotion (Gross & Thompson, 2007). The concept of emotion regulation encompasses a heterogeneous set of processes that include attempts to change or regulate emotional cues, experiences, actions, verbal responses, and/or non-verbal expressions (Gross & Thompson, 2007; Linehan et al., 2007). The dysregulation of emotion is associated with impulsive aggression (Davidson, Putnam, & Larson, 2000; Strüber, Lück & Roth, 2008) and the dysregulation of negative emotion specifically has been linked to IPA perpetration (McNulty & Hellmuth, 2008). In addition, research demonstrates that greater difficulties with emotion regulation are related to greater IPA perpetration among both men and women (Berzenski & Yates, 2010; Gratz et al., 2009; Shorey, Brasfield, Febres, & Stuart, 2011; Shorey, Cornelius, & Idema, 2011; Watkins, Maldonado, & DiLillo, in press). Specifically, individuals who have greater difficulties controlling impulses when upset and report more limited strategies in managing negative emotions also report perpetrating greater IPA perpetration (Gratz & Roemer, 2004; Shorey, Cornelius et al., 2011; Watkins et al, in press). Further, women who were arrested for intimate partner violence report uncontrolled negative emotion during partner conflict as a common reason for perpetrating violence against their partner (Stuart, Moore, Gordon, Hellmuth, Ramsey, & Kahler, 2006). Taken together, these findings suggest that difficulties regulating negative emotion and anger are risk factors for IPA. Thus, in-the-moment use of emotion regulation strategies in response to an anger-eliciting event is likely to impact IPA perpetration.

Although individuals develop relatively stable patterns of emotion regulation, they are also able to engage in specific strategies in response to a particular situation

(Gross & Thompson, 2007). Emotion regulation strategies can occur at different points on the continuum of emotional processing. For instance, antecedent-focused strategies are enacted early in the emotion generative process and influence emotional response tendencies before an emotion has been fully activated. Response-focused strategies occur later and influence emotional response tendencies after they have been activated (Gross, 1998, 2002). Many emotion regulation strategies have been studied, but two prominent strategies with direct relevance to anger and IPA are rumination and reappraisal.

**Rumination.** Rumination is an antecedent-focused process, in which individuals concentrate on emotional features of a situation before emotions are fully generated (Webb, Miles, & Sheeran, 2012). Attempts to regulate responses to anger through rumination (see Rusting & Nolen-Hoeksema, 1998) include focusing on anger-inducing memories, reexperiencing anger responses, and thoughts of revenge (Caprara, 1986; Denson, Pedersen, & Miller, 2006; Sukhodolsky, Golub, & Cromwell, 2001). The CN model suggests anger rumination may prime individuals for aggressive behavior. The aggressive network may be activated through rumination's repeated access of negative, angry, and aggressive thoughts. Trait anger rumination is related to greater feelings of hostility (Anestis, Anestis, Selby, & Joiner, 2009), anger experience, anger expression, and negative affectivity (Sukhodolsky et al., 2001). State rumination also affects anger, such that when individuals are instructed to ruminate after thinking of a past anger-eliciting event, they experience greater anger (Ray et al., 2008) and maintain their anger levels longer (Denson, Moulds, & Grisham, 2012) than individuals who do not ruminate. Taken together, both trait rumination and instruction to ruminate appear to prolong anger experience, which



according to the CN model, heightens the chances of the aggressive network being activated.

In addition to links between rumination and greater anger experience, findings also support the relationship between rumination and aggression. Trait rumination is related to increased self-reported verbal and physical aggression (Anestis et al., 2009). Meta-analytic findings show that rumination significantly predicts general interpersonal aggression in frustrating situations (Bettencourt, Talley, Benjamin, & Valentine, 2006). For example, trait rumination has been positively linked to the intensity and duration of shocks ostensibly given to a stranger (Verona, 2005). Further, receiving instruction to ruminate about an anger-eliciting event is associated with increased aggression toward strangers in several laboratory paradigms (Bushman, 2002; Bushman, et al., 2005; Denson, Pedersen, Friese, Hahm, & Roberts, 2011; Pedersen, Denson, Goss, Vasquez, Kelley, & Miller, 2011). In one such study (Bushman, 2002), participants received negative feedback from a confederate on an essay they had written and were then instructed to think either about the individual who angered them or about becoming physically fit while hitting a punching bag. When subsequently given the opportunity to aggress against the confederate, those who ruminated were significantly more aggressive than those in the distraction group (i.e., those who thought about becoming physically fit). In another study (Denson et al., 2011), participants were either provoked by the experimenter or not (e.g., via negative or neutral feedback) and then asked to ruminate or engage in distraction for 20 minutes. Afterwards, participants were given the opportunity to aggress against the experimenter by giving him a poor evaluation. When provoked, rumination was related to increased aggression as compared to distraction. Finally,

greater rumination about one's intimate relationship is related to higher self-reported aggression against objects during relationship conflict (e.g., hitting or throwing objects; Carson & Cupach, 2000) and greater trait rumination is related to more frequent IPA (Sotelo & Babcock, 2013). These findings linking rumination to greater aggression suggest rumination is an important risk factor for IPA perpetration

**Reappraisal.** Similar to rumination, reappraisal is an antecedent-focused strategy, which occurs before the full onset of an emotion (Gross, 1998; Gross, 2002). However, in contrast to rumination, reappraisal involves actively seeking alternate interpretations of the meaning or self-relevance of an emotion-eliciting event (Gross & John, 2003). Reappraisal has the potential to decrease risk for IPA by attenuating the experience of negative emotion and anger. The tendency to use reappraisal has been associated with positive interpersonal outcomes, such as sharing emotions with others and having closer relationships with friends (Gross & John, 2003). Receiving simple instructions to reappraise in response to a stressor has been linked to less negative emotion experience and greater mood repair success (John & Gross, 2004). In prior research, instructions to reappraise have been given in several different ways. Participants may be asked to reappraise an emotional response, reappraise an emotional stimulus, reappraise via perspective taking, or a mixture of these three methods (Webb et al., 2012). Reappraising an emotional response occurs when participants are instructed to interpret the central emotion in a certain way (e.g., participants may be asked to not judge their emotion). Reappraising an emotional stimulus typically consists of participants being instructed to reinterpret the source of the emotion (e.g., participants may be asked to view the emotional stimulus in a positive way). Reappraisal through perspective taking involves participants changing the impact of an emotional

stimulus by changing their view to a more objective perspective. Although, overall, reappraisal strategies are effective in regulating emotion, reappraisal through perspective taking and reappraisal of the emotional stimulus appear to be more effective than reappraisal of the emotional response (Webb et al., 2012).

Both trait and instructed reappraisal have been linked to increased positive outcomes in response to interpersonal provocation. Individuals who are high in trait reappraisal report less anger and negative emotion and show less cardiovascular reactivity in response to interpersonal provocation as compared to individuals who are low in trait reappraisal (Mauss, Cook, Chen, & Gross, 2007; Memedovic, Grisham, Denson, & Moulds, 2010). Research examining reappraisal via perspective taking has demonstrated that individuals who are instructed to reappraise an anger-eliciting event report less anger experience than individuals who are instructed to ruminate (Ray et al., 2008). Although no known study has examined the effects of reappraisal via perspective taking on aggression, recent experimental research has found links between use of reappraisal of the emotional stimulus and reduced aggression. For example, IPA perpetrators who were asked to use reappraisal articulated fewer aggressive verbalizations than non IPA perpetrators (Maldonado et al., 2014), and individuals who were instructed to use reappraisal allocated less hot sauce to a confederate than individuals who were instructed to suppress their emotion (Scott, DiLillo, Maldonado, & Watkins, 2014). Jointly, these findings suggest that reappraisal may lessen the likelihood that emotion-aggression networks will be activated, which in turn will attenuate the risk for IPA perpetration. The current study aims to examine the effects of reappraisal via perspective taking on IPA perpetration.

## **Moderating IPA Perpetration: Interactions Between Alcohol and Emotion Regulatory Strategies**

The evidence described above suggests direct empirical linkages between both alcohol intoxication and cognitive efforts at emotion regulation in predicting IPA. In addition to these main effects, however, both the AMM and CN model suggest that the effects of emotion regulatory strategies could interact with alcohol intoxication to further facilitate or attenuate the risk for interpersonal aggression. The AMM suggests that both external and internal situational factors and cues influence the effects of alcohol on aggression (Steele & Josephs, 1990). These cues vary between situations and individuals. Emotion regulatory strategies are internal processes that may enhance or decrease negative affect and impact whether provoking cues are perceived. Furthermore, the CN model suggests that increased attention towards negative affect results in activating aggression networks. Both rumination and reappraisal likely moderate the influence of alcohol on aggression.

**Rumination.** Ruminating about an anger-provoking event is an internal process that may enhance both negative affect and bring provoking cues to the forefront of an individual's cognitive focus. According to the AMM, this enhanced attention towards provoking cues when intoxicated will make one more likely to be aggressive. In addition, the CN model suggests that this increased negative emotion and enhanced attention towards provoking cues activates emotion-aggression networks. Initial support for these possible interactions comes from findings that both trait and state rumination interact with alcohol to predict aggression (Borders, Barnwell, & Earleywine, 2007; Borders & Giancola, 2011). Specifically, individuals who self-report ruminating more frequently and

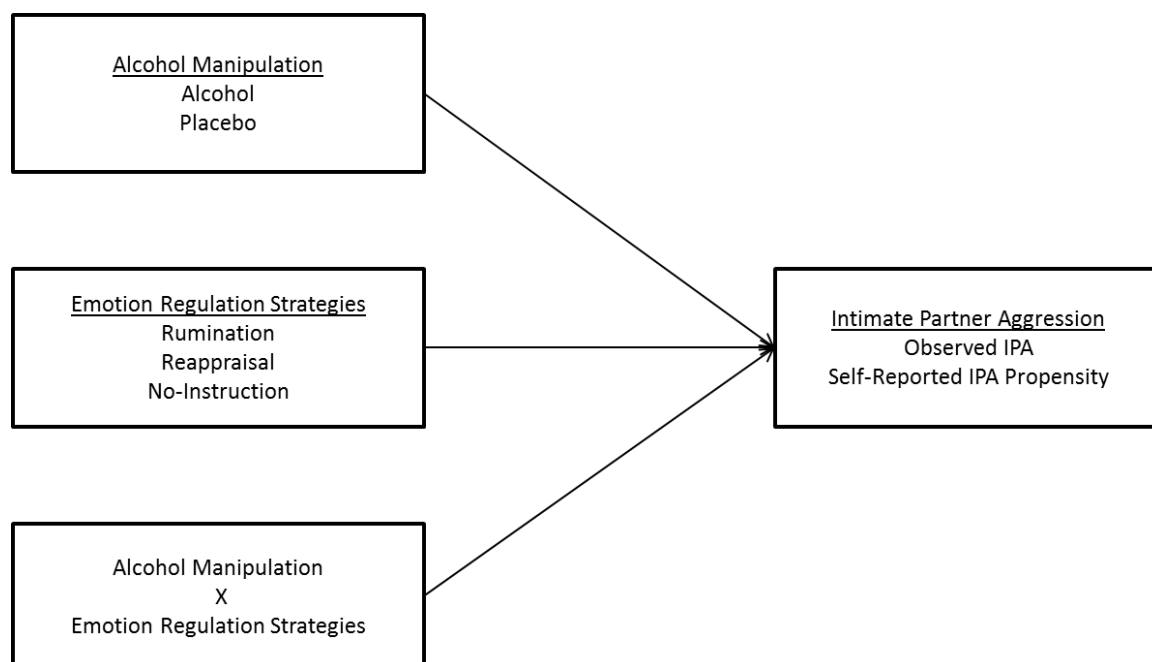
report drinking more heavily in the past six months are also more likely to report that they have behaved aggressively after drinking (e.g., pushed or shoved someone, pulled someone's hair) during that period (Borders et al., 2007). Further, results from an experimental study suggest that the relationship between alcohol intoxication and aggression towards a confederate is stronger for individuals who are higher on trait rumination and those who have higher state rumination (Borders & Giancola, 2011). Taken together, these empirical findings suggest that rumination may increase the chances of aggression and IPA perpetration when one is intoxicated.

**Reappraisal.** In contrast to rumination, reappraisal may mitigate the effect of alcohol on IPA because of its emphasis on interpreting an angering event in a new and less negative way, and its focus on non-provoking cues. According to the AMM, focusing on non-provoking cues will make an individual less likely to be aggressive. Further, the CN model suggests that if an individual experiences less negative affect, then the aggressive network is less likely to be activated and therefore that person is less likely to act aggressively. While it appears that no empirical work has examined the interactive effects of reappraisal and alcohol on aggression, the theoretical models discussed above suggest that reappraisal will attenuate the effects of alcohol intoxication on aggression.

### **Summary and Aims of the Proposed Study**

Although the link between alcohol use and history of IPA, assessed through self-report, has been well established, studies examining the proximal effects of *in vivo* alcohol intoxication on observed partner aggression are limited. Similarly, while certain cognitive emotion regulatory attempts have been shown to affect interpersonal aggression, research is needed to examine the effects of these strategies on IPA perpetration *in vivo*. Finally,

theory and prior empirical work suggests the potential interactive effects of these variables on IPA perpetration, such that rumination may be expected to increase—and reappraisal attenuate—the effects of alcohol intoxication on IPA. Therefore, the purpose of the present project (as depicted in Figure 1.1) is to empirically test the individual and interactive effects of alcohol intoxication, rumination, and reappraisal on IPA perpetration among couples, as measured by an analogue aggression task and a self-report assessment of IPA propensity.



*Figure 1.1.* Conceptual model depicting hypothesized relationships between current study variables.

The present investigation employs an experimental design that will foster a better understanding of the individual and joint influences of these risk factors on IPA perpetration, while at the same time providing knowledge that has the potential to inform the development of intervention and prevention strategies. The specific aims and corresponding hypotheses of this investigation are as follows:

**Aim 1: Examine effects of alcohol intoxication on *in vivo* partner aggression.** The first aim of this study is addressed by Hypothesis 1: Participants assigned to an alcohol intoxication condition will demonstrate increased IPA perpetration compared to participants who do not consume alcohol.

**Aim 2: Examine effects of *in vivo* rumination and reappraisal on partner aggression.** Aim 2 of this study will be examined with Hypothesis 2: Participants assigned to ruminate about an unresolved event in which they became very angry with their partner will demonstrate increased IPA perpetration compared to participants using reappraisal and uninstructed participants; and Hypothesis 3: Participants assigned to use reappraisal will demonstrate decreased IPA perpetration compared to uninstructed participants.

**Aim 3: Evaluate the role of rumination and reappraisal in moderating the effects of alcohol intoxication on partner aggression.** This aim will be addressed by Hypothesis 4: Rumination will moderate associations between alcohol intoxication and aggression such that the effects of alcohol on IPA will be *enhanced* by the use of rumination; and Hypothesis 5: Reappraisal will moderate associations between alcohol intoxication and aggression such that the effects of alcohol on IPA will be *attenuated* by the use of reappraisal.

## CHAPTER 2: METHOD

### Overall Design

This investigation employed a 2 (alcohol, placebo)  $\times$  3 (rumination, reappraisal, uninstructed) between-subjects, multilevel design to examine the influence of acute alcohol intoxication and emotion regulatory strategies in contributing to two IPA outcomes: a behavioral measure of partner aggression and self-reported IPA among a sample of dating couples. Participants were randomized individually to an alcohol condition, and then mirroring procedures used by Ray et al. (2008), asked to recall a past angering event with their partner using a randomly assigned emotion regulation strategy. *In vivo* partner aggression was assessed using a competitive reaction time game (Bushman 1995; Taylor, 1967; Watkins et al., 2013), in which participants were able to allocate a self-selected duration and volume of white noise, ostensibly to be heard by their intimate partner. Participants also completed a self-report measure of IPA propensity.

### Participants

Participants were 69 couples recruited from the University of Nebraska-Lincoln (UNL; total  $N = 138$ ). One of these participants was excluded from all analyses due to becoming ill in the middle of the study. Thus the sample used in analyses included 137 participants (68 women and 69 men). In order to participate, individuals had to be at least 21 years old (legal drinking age), report at least social drinking (defined as two or more drinks at least twice a month), and be in a committed dating relationship of at least four months. One member of each couple was a UNL student.

Because of risks associated with alcohol consumption and IPA research, the following exclusion criteria were employed (for similar criteria see Eckhardt, 2007;



Giancola and colleagues, 2002, 2004, 2009): (a) current/past alcohol dependence, alcohol-related treatment, or hospitalization due to alcohol use; (b) current harmful and hazardous drinking as indicated by a score of 10 or greater on the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993); (c) any past serious head injuries (as indicated by HELPS Brain Injury Screening Tool; Picard, Scarisbrick & Paluck, 1991); (d) serious psychological symptoms; (e) abstinence from alcohol use; (f) a condition or medication use in which alcohol consumption is medically contraindicated; (g) presence of a positive breath alcohol concentration (BrAC) upon arrival; (h) a positive on a urine pregnancy test administered upon arrival; (i) if either member of a couple indicated two or more severe acts of physical aggression in the previous year (e.g., beating up partner).

Participants were an average age of 23.4 years ( $SD = 2.5$ , range = 21 – 32) and had been in a relationship for an average of 32.0 months ( $SD = 23.3$ , range = 4 – 102). Participants described their relationship as dating (44.9%), dating and living together (24.6%), engaged (10.1%), or married or marriage-like (19.7%). The largest proportion of participants were seniors (37.2%), 0.7% were freshmen, 10.2% were juniors, 23.4% were graduate students, and 27% were not students. The majority of participants described themselves as straight (94.2%), 1.5% identified as lesbian, 2.9% identified as gay (male), and 1.5% identified as bisexual. Regarding race and ethnicity, 9.5% of participants identified as Latino, Hispanic, or Spanish, 2.2% identified as African American or Black, 0.7% identified as American Indian, Native American, or Alaskan Native, 5.8% identified as Asian or Pacific Islander, 87% identified as White, and 3.6% identified as “other”

(participants were allowed to pick more than one category so percentages may exceed 100%).

### **Lab Tasks and Measures**

**Alcohol administration.** Alcohol administration procedures were modeled on those used by Giancola and colleagues (2002, 2004, 2009). Participants were randomly assigned to drink an alcohol or a placebo beverage. Men who received alcohol were administered a dose of 0.8 grams per kilogram of 95% pure grain alcohol mixed at a 1:5 ratio with orange juice not from concentrate. Because of gender differences in body fat composition, women were given a dose of 0.72 grams per kilogram of alcohol. Placebo beverages contained orange juice and a small amount of alcohol. Specifically, four milliliters of alcohol were added to each placebo beverage and alcohol was sprayed on the rim of the placebo beverage glass. Participants were given 20 minutes for beverage consumption. Because of individual differences in alcohol absorption rates, participants in the alcohol condition waited 15 to 30 minutes after finishing their drinks before starting the next task. Specifically, if participants' BrAC was at a level of 0.07% or above 15 minutes after finishing their drinks, they were given the cognitive emotion regulation strategy instructions (described below). If participants had not reached a level of 0.07% 15 minutes after finishing their drinks, they were given additional time to absorb the alcohol. Among this group, participants' BrAC was taken at 22 minutes after finishing their drinks, and if necessary, 30 minutes after finishing their drinks. Thirty minutes after finishing drinks, all participants in the alcohol group were given the cognitive emotion regulation strategy instructions. Because alcohol placebo manipulations have been found to be effective for only approximately 30 minutes after beverage consumption (Bradlyn & Young 1983), the

placebo group was given the emotion regulation strategy instructions immediately after drink consumption.

Before and after the competitive reaction time game, participants rated how intoxicated they were on a scale from 0 (*not drunk at all*) to 11 (*more drunk than I have ever been*). After the competitive reaction time task participants also rated how impaired they were from 0 (*no impairment*) to 10 (*strong impairment*). Although placebo drinks were prepared to taste as if they contained alcohol, they were not nearly as potent in smell or taste as the alcoholic beverages. To determine if participants in the placebo and alcohol condition found the alcoholic beverages to taste differently, they rated the taste of the beverages on two items. One item was a scale from 1 (*very unpleasant*) to 4 (*very pleasant*) and the other was a scale from 1 (*very bad*) to 5 (*very good*). These two items were summed to provide a beverage rating score. Because the experience of unpleasant stimuli has been related to aggression (Anderson, 2001), if the two groups are found to differ on the taste ratings, this variable will be included as a control variable in analyses.

**Cognitive emotion regulation strategy manipulation.** Using procedures described by Ray et al. (2008), participants identified an unresolved event or issue in their relationship in which they became very angry with their partner (angering event). A trained research assistant gave instructions for identifying the angering event and, if needed, assisted the participant with determining an appropriate event. After alcohol administration (described above), each participant was randomly assigned to a rumination, reappraisal, or an uninstructed condition. In each condition, participants were instructed to think about the previously identified angering event for two minutes and to type out what they were thinking. The rumination condition participants were told to “think about [the

event] from your own perspective and turn it over and over in your mind. Focus on those things that initially made you feel and respond the way you did” (Ray et al., 2008). The reappraisal condition participants were asked to “think about [the event] from a different perspective from the one you used earlier. For example, you might try to see this event from the perspective of an impartial observer” (Ray et al., 2008). Finally, the uninstructed condition participants were asked to think about the event with no further instructions.

Two manipulation checks were employed to ensure that: a) recalling the event was successful in inducing negative mood and anger, and; b) participants adhered to the emotion regulation strategy instructions. Participants completed a modified version of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), consisting of fifteen negative and positive emotion adjectives (see Appendix A). Participants completed these ratings before and after event recall. Changes in positive affect and negative affect, from pre- to post-event recall were examined. Specific changes in anger were also examined by producing an anger summary score with the five adjectives “angry,” “hostile,” “irritable,” “disgusted,” and “annoyed.” This is consistent with past research examining IPA (Eckhardt & Jamison, 2002; Eckhardt, Jamison, & Watts, 2002; Maldonado, DiLillo, & Hoffman, 2014). These adjectives have been shown to form a distinguishable anger factor when negative mood adjectives are factor analyzed (e.g., Watson & Clark, 1992). Consistent with procedures used by Ray et al. (2008), participants also rated the extent to which they thought about the event from their own perspective, and, from another person’s perspective on a 5-point Likert scale.

In addition, to provide descriptive information on the anger event, participants were asked how unresolved the event was on a scale from 1 (*very slightly*) to 5 (*extremely*) and

they were asked to provide mood ratings on how they had felt when the anger event occurred. These ratings were completed upon identification of the anger event and before participants were assigned to emotion regulation strategies.

**IPA assessment.** IPA was measured with both an *in vivo* analogue aggression task and a self-report measure of IPA propensity (described below). The analogue aggression task allows for the direct observation of aggression directed toward a partner. This is advantageous over self-reported past IPA, because self-report is more likely to be influenced by social desirability and poor recall. The inclusion of the self-report measure of IPA propensity complements the observational measure by providing a face valid assessment of IPA in the moment. This is in contrast to the analogue aggression task, in which participants are not told that aggression is being measured.

***Analogue aggression task.*** *In vivo* intimate partner aggression was measured with a competitive computer reaction time task based on the Taylor Aggression Paradigm (Taylor, 1967). The Taylor Aggression Paradigm and other similar laboratory paradigms have received strong support as reliable and valid measures of aggressive behavior for both men and women (Anderson & Bushman, 1997; Giancola & Chermack, 1998; Hoaken & Phil, 2000). Empirical and meta-analytic studies have found results from this paradigm to be correlated with self-report measures of aggression (e.g., Carlson et al., 1989; Giancola & Zeichner, 1995). Further, the present version of the Taylor paradigm has been used in many prior studies as a measure of interpersonal aggression (e.g., Bushman, 1995; Bushman & Baumeister, 1998; DeWall et al., 2007) and in one study examining IPA (Watkins et al., 2013).

Consistent with other studies of interpersonal aggression (e.g., Bushman, 1995; Bushman & Baumeister, 1998; DeWall et al., 2007), participants were informed that the computer task is a reaction time game that they play against their intimate partner. Participants were not actually playing their partner, however. Instead, the computer game was programmed to respond to each person in the same way. Participants were instructed to complete a series of trials in which they press a button as quickly as possible after an onscreen stimulus changes color. Before each trial, participants designate a length (from 0 to 5 seconds) and volume (a level ranging from 0 to 10) of white noise to ostensibly be blasted over the headphones of their partner if they win and their partner loses. The noise levels range from 1 (60 decibels) to 10 (105 decibels) in 5-decibel increments. The 105 decibel level is uncomfortable to hear, but does not cause pain and is not harmful. Participants also have the option of choosing 0, which produces no sound and gives a non-aggressive alternative.

Consistent with previous work (Bushman & Baumeister, 1998; Watkins et al., 2013), two aggression variables were created by averaging the noise intensity and noise duration from the first trial and the second trial. The first trial has been shown to provide the best measure of *unprovoked* aggression because participants have not yet received a blast of white noise from their ostensible opponent (Bushman & Baumeister, 1998; Twenge et al., 2001). The second trial is a measure of *provoked* aggression because it occurs following a blast perceived to come from the participant's intimate partner. The second trial is the best measure of provoked aggression because it is the only trial in which all participants respond to having received the maximum intensity and duration of white noise.

***IPA propensity.*** Participants also completed a modified version of the Proximal Antecedents of Violent Episodes (PAVE; Babcock et al., 2004; see Appendix A). The PAVE asks participants to indicate on scale from 1 (*not at all likely*) to 6 (*extremely likely*) how likely they are to become physically aggressive towards their partner in response to 20 conflict situations (e.g., “My partner threatens to leave me”). Higher scores indicate greater endorsement of physical aggression. Rather than assessing these tendencies in general, the PAVE instructions were modified to instruct participants to respond as if each situation was occurring at the present moment. The PAVE has high internal consistency reliability and adequate convergent and discriminant validity (Babcock et al., 2004). In addition, aggressive men were consistently found to report more aggression on the PAVE than nonaggressive men (Babcock et al., 2004). The PAVE has an alpha of .95 in the current study.

**Measurement of related constructs.** The lab tasks and measures listed above are used to examine primary study hypotheses. Below are constructs that have bearing on the primary measures. These measures are being assessed to enable comparison to other IPA studies and for use as covariates during analyses to evaluate whether cognitive strategies moderate the relationship between alcohol intoxication and partner aggression beyond variance that is accounted for by covariates.

***History of IPA.*** History of IPA perpetration was assessed with the 12-item Physical Assault subscale from the Revised Conflict Tactics Scale – Revised (CTS2; Straus et al, 1996; see Appendix A). The CTS2 is used to facilitate comparison to other studies of IPA and as a predictor of lab-based aggression (particularly interacting with the primary study independent variables). Participants indicated the frequency at which they

perpetrated each aggressive behavior against their partner during the previous six months from 1 (*never*) to 8 (*more than 20 times*). The number of endorsed items was summed to create an IPA score, with higher values indicating more acts of IPA. The CTS2 has adequate reliability and good construct validity (Newton, Connelly, & Landsverk, 2001; Straus et al., 1996) and is the most widely used measure of IPA perpetration (Langhinrichsen-Rohling, 2005). The alpha for the current sample is .69.

***Trait rumination.*** The Anger Rumination Scale (ARS; Sukhodolsky et al., 2001; see Appendix A) was used to assess trait rumination. The ARS measures individuals' tendency to focus on angry moods, remember past anger experiences, and think about the causes and consequences of anger episodes. Participants are instructed to respond to each of 19 items on a scale from 1 (*almost never*) to 4 (*almost always*). The items are summed to form a scale score, with higher values indicating greater rumination. Example items from the ARS are "I analyze events that make me angry" and "I keep thinking about events that angered me for a long time." The ARS has adequate internal consistency and test-retest reliability (Sukhodolsky et al., 2001). The internal consistency in the current sample is .90.

***Trait reappraisal.*** Trait reappraisal was measured with the six-item reappraisal subscale of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003; see Appendix A). Participants are instructed to indicate how much they agree with each item on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The subscale includes items such as, "When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about." The ERQ has good internal consistency and test-retest



reliability (Gross & John, 2003; John & Gross, 2004). The alpha for the current sample is .73.

**Demographic and screening measures.** Participants completed a demographic measure assessing age, education, ethnicity, race, and relationship status and length (see Appendix A). They will also complete the following measures (see Appendix A) that are not a part of the primary study hypotheses but will be administered for the purpose of screening participants and determining study eligibility: the AUDIT (Saunders et al., 1993; see Phone Screen); a question about attention deficit hyperactivity disorder status; the HELPS Brain Injury Screening Tool; (Picard et al., 1991); and sixteen items from the CTS2.

### **Procedure**

All procedures were approved by the University of Nebraska – Lincoln Institutional Review Board (see approval letter in Appendix B).

**Recruitment.** Several methods were used to recruit student participants from UNL. First, participants were recruited through the Department of Psychology with an online tool that allows undergraduate psychology students to sign up for voluntary participation in research studies. Second, participants were recruited through campus-wide flyers and in-person appearances at student organizations and classes. Third, participants were recruited online through advertisements on Facebook, a popular social media website among university students and the “Etcetera jobs” section of Craigslist, an electronic database of classified advertisements. Finally, the office of Registration and Records provided a list of emails of student who were over 21 years of age (the approved age range for participation in our research study). In total, 9,873 emails were sent to potential

participants over the course of 10 months. A total of 209 couples were screened over the phone. Of the 209 couples, 87 were eligible to participate based on the initial phone screen. Ten of these 87 couples never scheduled a session, five couples canceled and did not reschedule, two couples decided not to participate during informed consent, and one couple was determined to no longer be eligible during the laboratory eligibility screening.

All recruitment methods stated that the study was about alcohol, emotional processes, and relationships. Participants had the option of receiving extra course credit or compensation (\$10 per hour) as incentives for their participation.

**Phone Screen.** Participants who expressed interest in the study were telephone screened to assess initial eligibility (see Appendix A). The phone screen assessed eligibility in several areas. Participants were asked to provide their age over the phone. They were asked about past alcohol or drug dependence diagnoses and past drug or alcohol treatment and hospitalization. Participants also reported on any medical conditions and all prescription and/or nonprescription medications, how often they take the medication, and the doses. A list of medications that have harmful interactions with alcohol consumption was used as guidelines for excluding participants (NIAAA, 2007). In addition, when a participant reported taking a medication that was not listed and the safety of the medication was unknown, the study's Medical Advisor (Kathleen Grant, M.D.) was consulted with to determine whether to exclude the individual from participation. Participants were asked to report on past and current psychiatric disorders and about their current drinking habits (to assess whether they are social drinkers). Participants were administered the AUDIT over the phone, and seven items assessing severe partner IPA from the CTS2 (Straus et al., 1996). Individuals who scored 10 or

greater on the AUDIT or reported two or more instances of severe aggression were excluded from the study. Participants were asked if they were pregnant over the phone. Those who said yes were told they were ineligible. Those who said no were informed that they would be asked to complete a pregnancy test at the lab visit because the study involves alcohol consumption, which could be harmful to a fetus. Both members of a couple had to complete the phone screen before they were told whether they were eligible and, if eligible, before they could be scheduled. If one partner did not meet eligibility criteria or decided not to participate, the couple was informed that they did not meet eligibility criteria.

**Data collection procedure.** Couples who met the initial inclusion criteria were scheduled for a single lab visit. Participants were asked to refrain from drinking alcohol and recreational drug use 24 hours prior to their scheduled appointment, and to refrain from eating four hours prior to the appointment. All eligible couples were informed over the phone that they may be asked to consume alcohol. Further, participants were told that they must have their own transportation to the laboratory. However, because the study involved the consumption of alcohol, they were told to either arrange to have someone pick them up or that we would provide a taxi for them to get home. The participants were told that if they walked to the building, they would have to arrange to have someone pick them up or escort them back to their residence.

Upon arrival, partners were taken to separate rooms and provided informed consent (see Appendix C for Informed Consent Form). BrAC was then assessed using a breathalyzer to ensure baseline sobriety. No participants had a positive BrAC upon study arrival. Participants were asked to show study personnel a photo ID indicating their date

of birth and were asked to give the experimenter their car keys. Participants were informed that the keys would be returned to them at the conclusion of the study (once they reach a BrAC of 0.03 and passed a field sobriety test). Female participants completed a urine pregnancy test (Clearview HCG) at this time. According to the manufacturer's specifications this test is sensitive to 25mIU/ml, provides results in three minutes, and is over 99% accurate. No participants had a positive pregnancy test. After the BrAC and pregnancy tests, a trained research assistant verbally reviewed the phone screen with participants to make sure it was still accurate. A trained research assistant then assessed past serious head injuries, with the HELPS Brain Injury Screening Tool, which reflects recommendations by the Centers for Disease Control for identifying brain injuries (Picard et al., 1991). No participants reported a possible serious brain injury, which would have been indicated by endorsing the following three items: 1) an event that could have caused brain injury; 2) a period of loss of consciousness or of being dazed and confused; and 3) the presence of two or more chronic problems that were not present before the injury.

During the study session, if one partner was determined to not meet eligibility criteria or decided not to participate, the couple was informed that they did not meet eligibility criteria. Couples who did meet eligibility criteria then completed self-report measures, including the demographic measure, the ARS (Sukhodolsky et al., 2001), the ERQ (Gross & John, 2003), and the CTS2 (Straus et al, 1996).

Participants were then given instructions for identifying the anger-eliciting event. Following drink administration and the absorption period, participants were instructed to recall the anger-eliciting event for two minutes with instructions to utilize their assigned

cognitive emotion regulation strategy. Immediately following this recall, participants completed the analogue aggression task and then the self-report IPA propensity measure. The analogue aggression task was first because it is the primary aggression variable and could have been compromised by the IPA propensity measure coming first.

*Debriefing and assessment of sobriety.* After completion of data collection, participants watched two film clips that have been found to increase feelings of contentment (Gross & Levenson, 1995). Then, all participants were asked about their experience and thoughts about the study. Specifically, a trained research assistant asked participants about the reaction time task (e.g., “Do you think your partner tried hard to win on the reaction time task?”, “Do you think the task is a good measure of reaction time?”) and what participants thought the study was about. These questions were asked to determine if participants believed they were playing their partner during the competitive reaction time task and to determine if participants thought the study was about aggression. Participants were then fully debriefed, verbally and in writing (see Appendix D), about the purposes of the study. They were provided an opportunity to ask questions about the study as well. All participants who received alcohol were reminded they would remain in the laboratory until their BrAC dropped to 0.03% (National Advisory Council on Alcohol Abuse and Alcoholism, 2005) and they could pass a field sobriety test. During this sobering period, participants were provided food, water, and comedy movies and television shows to watch. Once participants who consumed alcohol reached a BrAC of 0.03% or lower, they either had a friend pick them up (by car or on foot) or they took a taxi that the study provided for them. Participants who received alcohol were fully debriefed a second time once their BrAC reached 0.03%.

## Data Analysis

**Preliminary analyses.** All data were double-checked for data entry errors and analyzed to assure that statistical distribution assumptions were met. Descriptive analyses were conducted to examine sample characteristics on demographic and other study variables. Bivariate correlations among study variables were also examined.

**Manipulation check.** To ensure that recall of the anger-event produced a significant increase in negative emotion and anger and a decrease in positive emotion, pre- and post-recall mood rating scores were compared using paired samples *t*-tests. This analysis was conducted initially for the entire sample, and again for each emotion regulation strategy condition. To ensure that participants followed the emotion regulation strategy instructions, responses to the *in vivo* strategy-use question were compared across the three randomly assigned groups.

**Specific Aims 1 to 3.** Both members of each couple assigned their partner white noise and reported the likelihood of perpetrating aggression against their partner. These outcome variable observations, one from each member of a given couple, violate the ordinary least squares regression assumption of independence, which rules out the conventional analysis of variance approach (ANOVA). As such, multilevel modeling (MLM; Kenny, Kashy, Cook, 2006; Kenny, Kashy, & Bolger, 1998; Raudenbush & Bryk, 2002) was used to examine the effects of alcohol and emotion regulation strategy manipulation on aggression variables. In the case of dyadic data, MLM treats the data from each partner as nested scores within a group that has an *n* of 2. The degree of nonindependence between outcomes was estimated as a covariance with a compound symmetry covariance structure (Campbell & Kashy, 2002; Kenny et al., 2006). Multilevel

models for normally distributed residuals were estimated using maximum likelihood within SAS PROC MIXED. The Satterthwaite method was used to estimate denominator degrees of freedom.

Because the two independent variables (alcohol and emotion regulation conditions) are categorical, they were dummy-coded to conduct group comparisons. Two dummy codes were computed from the emotion regulation strategy assignment group variable that reflect the comparisons between 1) the uninstructed group and the rumination group 2) the uninstructed group and the reappraisal group. Two interaction terms, between a) the uninstructed-rumination dummy coded variable and the alcohol condition dummy coded variable and b) the uninstructed-reappraisal dummy coded variable and the alcohol condition dummy coded variable were computed. The significance of model parameters not directly given in the models was evaluated by requesting additional model-implied effects (e.g., reappraisal vs. rumination). MLM allows the testing of both main effects and interactive effects of study variables on IPA. Three separate models were tested, one with the first trial of the reaction time game as the dependent variable, the second with the second trial of the reaction time game, and the third with the IPA self-report measure as the dependent variable. For each main effect and interaction effect the coefficient, the Wald test  $p$ -values were examined to determine variable significance in the model. To describe effect size, the current study used a total  $R^2$ , which was calculated as the square of the correlation between the actual outcomes and the outcomes predicted by the model fixed effects.

*Hypothesis 1* states that participants who are assigned to an alcohol intoxication condition would demonstrate greater IPA perpetration compared to participants who did

not consume alcohol. To test this hypothesis, the main effect of alcohol assignment group (alcohol, placebo) on IPA was examined. *Hypotheses 2 and 3* state that the rumination group would demonstrate the greatest amount of partner aggression, followed by the uninstructed group and the reappraisal group (i.e., rumination > uninstructed > reappraisal). To test this hypothesis, the main effect of emotion strategy assignment group (rumination, reappraisal, or uninstructed) on IPA was tested. *Hypotheses 4 and 5* state that alcohol and emotion regulation strategy conditions would interact such that rumination would enhance the effects of alcohol intoxication on IPA and reappraisal would attenuate the effects of alcohol intoxication on IPA. To test this hypothesis, the interaction between alcohol condition and emotion regulation strategy condition on IPA was tested.

Finally, although not a primary focus, gender, past IPA perpetration, trait rumination, and trait reappraisal were examined as potential predictors of lab aggression. Although existing models do not suggest systematic differences in risk factors for men and women in IPA perpetration (e.g., O'Leary et al., 2007; Riggs & O'Leary, 1996; White et al., 2001), general aggression literature has suggested some differences among genders in levels of perpetration (e.g., Exum, 2006). Therefore, potential gender effects were explored by examining main and interactive effects of gender in each model. Because prior IPA, trait rumination, and trait reappraisal may be related to observed aggression interactions between each of primary independent variables (drinking and cognitive emotion regulation strategies) and these covariates were examined as predictors of observed IPA and IPA propensity. For these analyses, all covariates were centered so that 0 was a meaningful value and interactions would be interpretable. Because gender is categorical, it was dummy-coded as men = 0 and women = 1. For IPA, 0 represented no IPA during



the past six months. Trait reappraisal, trait rumination, and beverage rating were all centered so that 0 equaled their mean. Non-significant, unnecessary interactive effects were discarded one-at-a-time.

## CHAPTER 3: RESULTS

### Preliminary Analyses

The first trial of the reaction time game exhibited a normal distribution and no excess skew or kurtosis. The second trial of the reaction time game was censored from above, such that about one-fifth of the sample had the highest possible value of 10, indicating that the use of methods that assume a normal distribution of residuals would be biased. Thus, a multilevel censored regression model was used, which is a generalization of the standard Tobit model. This model quantifies the proportion of the sample that was unable to assume any value higher than the censoring limit of 10. The multilevel censored model was estimated using maximum likelihood via numerical integration within SAS PROC NLMIXED, because this procedure allows one to fit generalized multilevel models. The PAVE exhibited a skewed distribution and was log-transformed, which sufficiently reduced positive skewness and kurtosis.

Participants' thoughts and suspiciousness about the study were examined to determine exclusion from study analyses. Twenty-two participants indicated they became suspicious at some point during the reaction time game that they were not playing their partner. These participants were asked when they became suspicious about the game and the majority reported "about halfway." However, six participants reported they did not think they were playing their partner after completion of the first trial. Thus, these participants' second trial was not used in analyses. One participant indicated not following the emotion regulation directions and thus was not used in analyses examining emotion regulation effects. Although some participants indicated they thought the study was about aggression ( $n = 11$ ), they were not excluded from analyses, because this

question was at the end of the study and the study contained many questions clearly about aggression. In addition, these participants' aggression scores on the reaction time game trials did not significantly differ from other participants ( $t[135] = 0.13, p = .90$  for Trial 1 and  $t[129] = 1.34, p = .18$  for Trial 2). Descriptive statistics were computed for all study variables and are described below.

**Alcohol-related variables.** Sixty-eight participants were randomly assigned to the alcohol condition (35 women), while 69 participants were assigned to the placebo condition (33 women). Descriptives for alcohol-related variables are presented in Table 3.1. Participants in the alcohol group reported feeling significantly more intoxicated after anger event recall,  $t(135) = -11.90, p < .001$ , and after the reaction time game,  $t(135) = -9.96, p < .001$ , than the participants in the placebo group. The alcohol group also reported significantly greater impairment during the reaction time game,  $t(135) = -6.49, p < .001$ . Participants in the placebo group reported that their drinks tasted significantly better than participants in the alcohol group,  $t(135) = 7.14, p < .001$ . Because the beverage rating was significantly different across groups, this variable was included in the covariate analyses below. All participants in the alcohol condition reached a peak measured BrAC of over .07%. The average BrAC in the alcohol group was .090% ( $SD = 0.018$ ) before the anger event recall and .097% ( $SD = 0.018$ ) after the reaction time game. Men's and women's mean BrAC did not differ before the anger event recall (men's mean = 0.089%, women's mean = 0.090%;  $t[66] = 0.26, p = .79$ ) or after the reaction time game (men's mean = 0.098%, women's mean = 0.097%,  $t[66] = -0.26, p = .80$ ).

Table 3.1

*Descriptives for Alcohol-Related Variables*

Variable	Alcohol ( $n = 68$ )			Placebo ( $n = 69$ )		
	M	SD	Range	M	SD	Range
Intoxication after Event Recall	4.07	1.97	1 - 9	1.00	0.86	0 - 3
Intoxication after Reaction						
Time Game	3.82	1.94	0 - 8	1.16	1.08	0 - 4
Impairment Rating	4.63	2.05	0 - 10	1.51	1.44	0 - 6
Beverage Taste	2.19	0.72	1 - 3.5	3.01	0.62	1.5 - 4

**Emotion regulation.** Forty-four participants were randomly assigned to the rumination condition (25 women), 49 were assigned to the reappraisal condition (23 women), and 44 were assigned to the uninstructed condition (20 women). Participants rated the event they chose at a mean of 2.60 ( $SD = 1.08$ ) on the unresolved scale, indicating an average moderate level of being unresolved. This rating did not differ between emotion regulation conditions,  $F(2,133)=0.18$ ,  $p = .83$ . Participants reported that they had felt an average negative affect of 26.13 ( $SD = 6.17$ ), anger affect of 19.40 ( $SD = 4.71$ ), and positive affect of 8.56 ( $SD = 3.37$ ) at the time the anger event originally occurred. These means did not differ across emotion regulation strategy conditions for negative affect,  $F(2,133) = 1.03$ ,  $p = .36$ , anger affect  $F(2,133) = 0.02$ ,  $p = .97$ , or positive affect,  $F(2,133) = 0.21$ ,  $p = .81$ . Changes in emotion due to anger event recall are described below.

**Aggression variables.** Descriptives for aggression variables are presented in Table 3.2. The mean for Trial 1 of the reaction time task was 2.84 and the mean for Trial 2 was 4.99. These means were slightly lower than means previously found (Trial 1 mean

= 3.59, Trial 2 mean = 6.39) among a college sample of couples (Watkins et al., 2013). The PAVE mean was 30.84, which is similar to past research using the modified version (Panuzio, 2011). Men's and women's means did not differ significantly on Trial 1,  $t(135) = 1.79, p = .08$ , Trial 2,  $t(129) = 0.25, p = .80$ , or IPA propensity,  $t(135) = -1.31, p = .19$ .

**Covariates.** Descriptives for covariates are presented in Table 3.2. Participants reported that 7.2% of men and 16.2% of women perpetrated at least one act of physical IPA during the prior six months. These rates appear to be lower than what is typically found among undergraduate students (e.g., 20 - 30%; Shorey, Cornelius, & Bell, 2008) and slightly lower than a representative U.S. sample in which more than one in five couples report experiencing an act of IPA in the past year (Schafer, Caetano, & Clark, 1998). The mean number of acts perpetrated was 0.15 and men's and women's means did not differ significantly,  $t(135) = -1.682, p = .10$ . The mean ARS score was 33.16, which is comparable to past university samples (Sukhodolsky et al., 2001). Men's and women's ARS means did not differ significantly,  $t(135) = -0.11, p = .91$ . The current sample had a mean of 31.48 on the ERQ reappraisal subscale. The reported mean for trait reappraisal is consistent with levels reported in past studies (Gross & John, 2003; Magar, Phillips, & Hosie, 2008). Women's trait reappraisal (mean = 32.28) was higher than men's trait reappraisal (mean = 30.68),  $t(135) = -1.98, p = .05$ .

Table 3.2

*Descriptives for Study Variables*

Variable	<i>M</i>	<i>SD</i>	Range
Aggression variables			

Trial 1	2.84	0.16	0 - 10
Trial 2	4.99	0.30	0 - 10
IPA propensity	30.84	14.39	20 - 86
Covariates			
IPA history	0.15	0.47	0 - 3
Trait rumination	33.16	9.44	19 - 62
Trait reappraisal	31.48	4.78	20 - 42

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*Note.* IPA = Intimate partner aggression.

**Bivariate correlations.** Correlations between aggression variables and covariates are displayed in Table 3.3. Correlations for the total sample are presented in the top half of Table 3.3. Correlations are presented separately by gender in the lower half of Table 3.3. In the lower half, men's correlations are presented above the diagonal and women's correlations are presented below the diagonal. For the total sample, Trial 1 was positively related to Trial 2 and trait rumination, and negatively related to trait reappraisal. Trial 2 was positively related to IPA propensity and trait rumination, and negatively associated with trait reappraisal. Similar to Trial 1 and Trial 2, IPA propensity was positively associated with trait rumination and negatively related to trait reappraisal. IPA history was positively related to trait rumination. Trait rumination and trait reappraisal were negatively associated. In general, women's correlations were similar to the total sample, however, among men, the only significant correlation found was between Trial 1 IPA and Trial 2 IPA.

Table 3.3

*Bivariate Correlations Among Aggression Variables and Covariates.*

Variable	1	2	3	4	5	6
<b>Total Sample</b>						
1. Trial 1 IPA	--					
2. Trial 2 IPA	.49***	--				
3. IPA Propensity	.09	.18*	--			
4. IPA History	-.02	-.07	.13	--		
5. Trait Rumination	.18*	.20*	.23**	.20*	--	
6. Trait Reappraisal	-.19*	-.18*	-.23**	-.11	-.31***	--
<b>Separated by Gender</b>						
1. Trial 1 IPA	--	.35**	.08	.06	.19	-.13
2. Trial 2 IPA	.67***	--	.23	.03	.13	-.10
3. IPA Propensity	.14	.13	--	.01	.18	-.22
4. IPA History	-.04	-.13	.18	--	.03	.08
5. Trait Rumination	.19	.26*	.28*	.30*	--	-.22
6. Trait Reappraisal	-.22	-.25*	-.28*	-.27*	-.40*	--

*Note.* IPA = intimate partner aggression. When separated by gender, correlations for men are presented above the diagonal and correlations for women are presented below the diagonal.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### **Manipulation Check**

To ensure that recall of the anger-event produced the desired changes in emotions, pre- and post-recall negative, positive, and anger mood rating scores were compared with paired samples  $t$ -tests. These analyses were conducted initially for the entire sample, and

then for each emotion regulation strategy condition. The results of these analyses are presented in Table 3.4. When examining the total sample, emotion displayed the expected changes. Specifically, positive affect was significantly lower, negative affect was significantly higher, and anger affect was significantly higher at post-event recall. However, different patterns of emotion change were found across emotion regulation condition groups. Positive affect significantly decreased during the event-recall for individuals in the rumination condition and the uninstructed condition. Contrary to expectations, positive affect also significantly decreased among individuals in the reappraisal condition. Negative affect significantly increased in only the rumination group. In addition, only individuals in the rumination and uninstructed conditions displayed a significant increase in anger.

Further, to ensure that participants followed the emotion regulation strategy instructions, responses to the *in vivo* strategy-use question were compared across the three randomly assigned groups. Higher scores on this item indicate taking someone else's perspective during event recall, and lower scores indicated taking one's own perspective. The perspective mean significantly differed among the three groups,  $F(2, 133) = 42.947, p < .001$ . Post hoc comparisons using Fisher's least significant difference (LSD) test revealed that the reappraisal group mean ( $M = 3.49, SD = 0.82$ ) was significantly higher than the rumination group mean ( $M = 1.95, SD = 0.83$ ) and the uninstructed group mean ( $M=2.26, SD = 0.90$ ), but that the rumination and uninstructed group means did not significantly differ.

### **Specific Aims 1 to 3**



Table 3.4

*Mood Manipulation Check*

Affect Rating	Pre-Event Recall		Post-Event Recall		<i>t</i> (df)	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Total Sample ( <i>N</i> = 137)						
Positive Affect	19.28	3.68	16.95	5.23	5.67 (136)	< .001
Negative Affect	11.54	2.66	12.36	4.07	2.26 (136)	= 0.03
Anger Affect	5.88	1.64	6.75	2.53	-3.85 (136)	< .001
Rumination Only ( <i>n</i> = 44)						
Positive Affect	19.18	3.94	15.98	5.77	5.72 (43)	< .001
Negative Affect	11.32	3.10	12.73	3.92	-2.21 (43)	= 0.03
Anger Affect	5.96	1.94	7.18	2.82	-2.57(43)	= 0.01
Reappraisal Only ( <i>n</i> = 49)						
Positive Affect	19.61	3.09	17.33	4.99	3.05 (48)	< 0.01
Negative Affect	11.67	2.44	12.18	4.21	-0.81 (48)	= 0.42
Anger Affect	5.84	1.18	6.49	2.42	-1.80 (48)	= 0.08
Uninstructed Only ( <i>n</i> = 44)						
Positive Affect	19.16	3.95	17.37	4.90	2.43 (42)	= 0.02
Negative Affect	11.56	2.46	12.19	4.17	-1.00 (42)	= 0.32
Anger Affect	5.84	1.80	6.58	2.35	-2.25 (42)	= 0.03

**Aim 1: Effects of alcohol intoxication on IPA.** Results for Specific Aims 1 to 3 are displayed in Table 3.5. *Hypothesis 1* stated that participants who were assigned to the alcohol intoxication condition would demonstrate greater IPA perpetration compared to participants who did not consume alcohol. The alcohol and placebo groups did not differ in their aggression on Trial 1 of the reaction time task. Yet, consistent with hypotheses, for Trial 2, participants in the alcohol group allotted 1.97 ( $p < .01$ ) greater noise levels than the participants in the placebo group. In addition, participants in the alcohol group tended to score 0.12 ( $p = .05$ ) higher on the log of the IPA propensity measure.

**Aim 2: Effects of emotion regulation strategies on IPA.** *Hypothesis 2* and *3* stated that the rumination group would demonstrate the greatest amount of IPA, followed by the uninstructed group and the reappraisal group (i.e., rumination > uninstructed > reappraisal). Contrary to hypotheses, emotion regulation strategies did not impact IPA. In other words, the rumination, reappraisal, and uninstructed groups did not differ in their amount of IPA on Trial 1, Trial 2, or IPA propensity.

**Aim 3: The role of rumination and reappraisal in moderating the effects of alcohol intoxication on IPA.** *Hypothesis 4* and *5* stated that alcohol and emotion regulation strategy conditions would interact such that rumination would enhance the effects of alcohol intoxication on IPA and reappraisal would attenuate the effects of alcohol intoxication on IPA. Contrary to hypotheses, alcohol and emotion regulation strategy conditions did not interact to predict IPA. These models accounted for 2.4% of the variance of Trial 1, 17.8% of the variance of Trial 2, and 6.5% of the variance of IPA propensity.

### **Covariate Analyses**

Table 3.5

*Parameters for Models Predicting Trial 1, Trial 2, and IPA Propensity*

Predictor	Trial 1			Trial 2			IPA Propensity			
	<i>Est</i>	<i>SE</i>	<i>p</i>	<i>Est</i>	<i>SE</i>	<i>p</i>	<i>Est</i>	<i>SE</i>	<i>p</i>	
Alcohol Model										
Placebo vs. Alcohol	0.41	0.31	.18	1.97	0.74	.01	0.12	0.06	.05	
Emotion Regulation Model										
Uninstructed vs. Reappraisal	0.34	0.38	.38	0.52	0.93	.58	-0.08	0.07	.25	
Uninstructed vs. Rumination	0.50	0.40	.21	0.97	0.91	.29	-0.13	0.08	.08	
Reappraisal vs. Rumination <sup>a</sup>	0.17	0.38	.66	0.46	0.91	.62	-0.05	0.07	.50	
Alcohol and Emotion Regulation Model										
Placebo vs. Alcohol	0.43	0.55	.43	1.97	1.35	.15	0.11	0.10	.28	
Uninstructed vs. Reappraisal	0.24	0.53	.65	0.37	1.22	.76	-0.13	0.10	.20	
Uninstructed vs. Rumination	0.65	0.56	.24	1.00	1.25	.43	-0.09	0.10	.37	
Reappraisal vs. Rumination <sup>a</sup>	0.41	0.53	.44	0.63	1.21	.60	0.04	0.10	.72	
Placebo vs. Alcohol * Uninstructed vs. Reappraisal	0.20	0.76	.79	0.41	1.86	.83	0.10	0.14	.47	
Placebo vs. Alcohol * Uninstructed vs. Rumination	-0.30	0.78	.70	-0.07	1.86	.97	-0.07	0.15	.62	
Placebo vs. Alcohol * Reappraisal vs. Rumination <sup>a</sup>	-0.50	0.75	.57	-0.48	1.77	.78	-0.18	0.14	.22	

Note. IPA = intimate partner aggression. <sup>a</sup>These effects were not given directly in the models and were estimated by requesting additional model-implied effects

Next, the main effect of gender, beverage rating, past IPA perpetration, trait reappraisal, and trait rumination, as well as the interactions between these covariates and each of the primary IVs in predicting aggression were modeled. Non-significant, unnecessary interactive effects were discarded one-at-a-time. To continue to control for covariates, their main effects were retained in the models. To ease readability, these results are presented by outcome (i.e., Trial 1, Trial 2, and IPA propensity).

**Trial 1.** First, a model was estimated with all covariates and interactions between covariates and each of primary independent variables. Non-significant, unnecessary interactive effects were discarded. Only trait reappraisal was found to significantly interact with the primary IVs. Main effects of the other covariates were kept in the model in order to continue to control for these variables. The final model parameters for Trial 1 are displayed in Table 3.6. This model accounted for 19.3% of the variance in Trial 1. Two significant covariate main effects were found. Specifically, the effect of gender was significant, indicating that women were expected to be less aggressive than men by 0.77 ( $p = .02$ ). In addition the effect of trait rumination was significant, indicating that for every one unit increase in trait rumination, Trial 1 IPA was expected to increase by 0.04 ( $p = .02$ ).

A trending ( $p = .05$ ) negative three-way interaction was found between alcohol intoxication, emotion regulation strategy condition (specifically uninstructed vs. rumination), and trait reappraisal. This interaction of  $-0.31$  revealed that the interaction of alcohol intoxication by uninstructed-rumination was more negative as trait reappraisal increased. Specifically, the interaction of alcohol intoxication by uninstructed-rumination was non-significantly positive when experiencing one standard deviation

below the mean of trait reappraisal ( $Estimate = 1.63, p = .14$ ), and this interaction was non-significantly negative when experiencing one standard deviation above the mean of trait reappraisal,  $Estimate = -1.37, p = .18$ .

Table 3.6

*Parameters for Trial 1 Model with Covariates*

Predictors	<i>Est</i>	<i>SE</i>	<i>p</i>
<i>Primary IVs</i>			
Placebo vs. Alcohol	0.42	0.52	0.42
Uninstructed vs. Reappraisal	0.11	0.51	0.82
Uninstructed vs. Rumination	0.61	0.53	0.25
Placebo vs. Alcohol * Uninstructed vs. Reappraisal	0.53	0.73	0.47
Placebo vs. Alcohol * Uninstructed vs. Rumination	0.13	0.75	0.86
<i>Covariates</i>			
Gender	-0.77	0.32	0.02
Beverage Rating	0.30	0.23	0.20
IPA history	-0.33	0.34	0.33
Trait Reappraisal	-0.07	0.08	0.37
Trait Rumination	0.04	0.02	0.02
<i>Interactions Between Primary IVs and Trait Reappraisal</i>			
Placebo vs. Alcohol * Trait Reappraisal	0.13	0.10	0.22
Uninstructed vs. Reappraisal * Trait Reappraisal	-0.04	0.12	0.76
Uninstructed vs. Rumination * Trait Reappraisal	0.04	0.12	0.76

Placebo vs. Alcohol * Uninstructed vs. Reappraisal *	0.05	0.15	0.72
Trait Reappraisal			
Placebo vs. Alcohol * Uninstructed vs. Rumination *	-0.31	0.16	0.05
Trait Reappraisal			

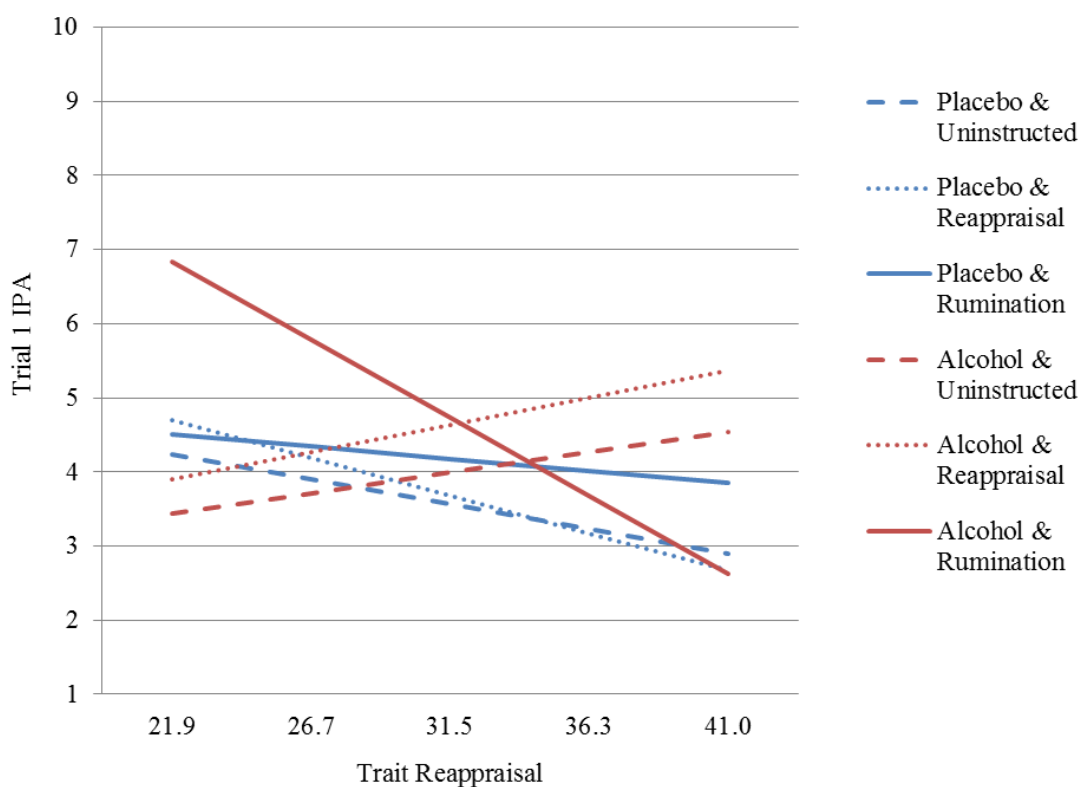
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*Note.* IPA = intimate partner aggression.

Figure 3.1 depicts the three-way interaction between alcohol intoxication, emotion regulation strategy condition, and trait reappraisal. The placebo condition is depicted by blue lines and the alcohol condition is depicted with red lines. The uninstructed group is represented with dashed lines, the reappraisal group with dotted lines, and the rumination group with solid lines. The midpoint on the x-axis is the mean of trait reappraisal (31.5) and values to the left of the middle are one standard deviation (26.7) and two standard deviations below the mean (21.9), while values to the right are one standard deviation (36.3) and two standard deviations above the mean (41.0).

To further illustrate this three-way interaction, simple effects of trait reappraisal were also estimated. These analyses indicated that trait reappraisal was only significantly related to IPA on Trial 1 among individuals who were in both the alcohol and rumination condition. Specifically, the effect of trait reappraisal was not significant in the placebo and uninstructed group ( $Estimate = -0.07, p = .37$ ), the placebo and reappraisal group ( $Estimate = -0.11, p = .24$ ), the placebo and rumination group ( $Estimate = -0.03, p = .69$ ), the alcohol and uninstructed group ( $Estimate = 0.06, p = .41$ ), or the alcohol and reappraisal group ( $Estimate = 0.08, p = .29$ ). However, among the alcohol and rumination group, for every one-unit increase in trait reappraisal, Trial 1 IPA was expected to decrease by 0.22 ( $p > .01$ ). Also, as can be seen in Figure 3.1, the highest

estimated IPA on Trial 1 is in the alcohol and rumination group among individuals with low trait reappraisal.



*Figure 3.1.* Interaction between alcohol condition, emotion regulation condition, and trait reappraisal predicting Trial 1.

**Trial 2.** The final model parameters predicting Trial 2 after removing non-significant interactive effects are presented in Table 3.7. This model accounted for 18.3% of the variance in Trial 2. A significant positive three-way interaction was found between alcohol intoxication, emotion regulation condition, and trait rumination. This interaction of 0.46 revealed that the interaction of alcohol intoxication by uninstructed-rumination was significantly more positive as trait rumination increases. Specifically, the interaction of alcohol intoxication by uninstructed-rumination was non-significantly negative when experiencing one standard deviation below the mean of trait rumination

(*Estimate* = -3.72, *p* = .15), and this interaction was non-significantly positive when experiencing one standard deviation above the mean of trait rumination, *Estimate* = 5.02, *p* = .07.

Table 3.7

*Parameters for Trial 2 Model with Covariates*

Predictors	<i>Est</i>	<i>SE</i>	<i>p</i>
<i>Primary Ivs</i>			
Placebo vs. Alcohol	1.82	1.31	0.17
Uninstructed vs. Reappraisal	0.46	1.22	0.71
Uninstructed vs. Rumination	1.45	1.27	0.26
Placebo vs. Alcohol * Uninstructed vs. Reappraisal	0.55	1.87	0.77
Placebo vs. Alcohol * Uninstructed vs. Rumination	0.65	1.90	0.73
<i>Covariates</i>			
Gender	-0.48	0.76	0.53
Beverage Rating	0.11	0.58	0.85
IPA history	-1.50	0.83	0.07
Trait Reappraisal	-0.11	0.08	0.19
Trait Rumination	0.23	0.10	0.02
<i>Interactions between primary IVs and Trait Reappraisal</i>			
Placebo vs. Alcohol * Trait Rumination	-0.29	0.14	0.04
Uninstructed vs. Reappraisal * Trait Rumination	-0.18	0.13	0.16
Uninstructed vs. Rumination * Trait Rumination	-0.11	0.13	0.40



Placebo vs. Alcohol * Uninstructed vs. Reappraisal * Trait Rumination	0.22	0.19	0.25
Placebo vs. Alcohol * Uninstructed vs. Rumination * Trait Rumination	0.46	0.21	0.03

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*Note.* IPA = Intimate partner aggression.

Figure 3.2 depicts the three way interaction between alcohol condition, emotion regulation strategy condition, and trait rumination. The conditions are depicted with same color and line scheme as Figure 3.1. Because, two standard deviations below the trait rumination mean was not in the sample's range of values and three standard deviation above the mean was in the sample's range of values, the trait rumination mean is the second value from the left in Figure 3.2. Values increase by 1 standard deviation away from the mean. Simple effects of trait rumination were estimated to further illustrate the three-way interaction. Among individuals who were in the placebo and uninstructed group, trait rumination positively predicted IPA on Trial 2 (*Estimate* = .24,  $p = .02$ ). The effect of trait rumination was not significant in the placebo and reappraisal group (*Estimate* = 0.05,  $p = .57$ ), the placebo and rumination group (*Estimate* = 0.12,  $p = .20$ ), the alcohol and uninstructed group (*Estimate* = -0.06,  $p = .52$ ), or the alcohol and reappraisal group (*Estimate* = -0.02,  $p = .10$ ). Trait rumination did significantly predict Trial 2 IPA among the alcohol and rumination group, such that for every one-unit increase in trait rumination, Trial 2 IPA was expected to increase by 0.29 ( $p = .02$ ).

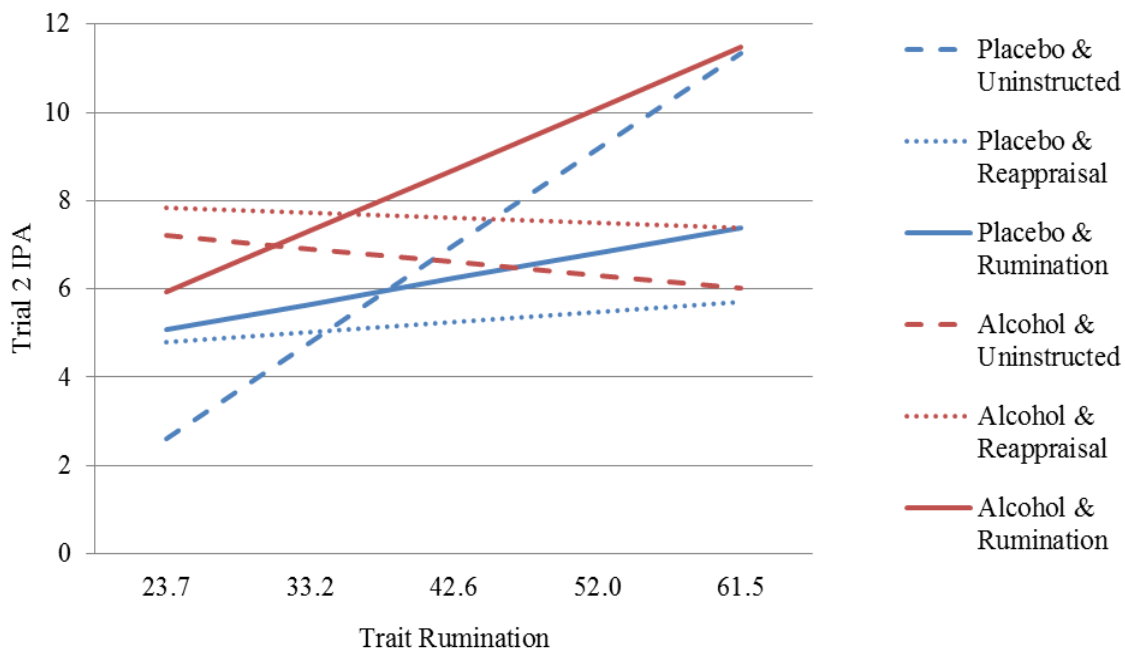


Figure 3.2. Interaction between alcohol condition, emotion regulation condition, and trait rumination predicting Trial 2.

**IPA propensity.** The final model parameters predicting IPA propensity after removing non-significant interactive effects are displayed in Table 3.8. This model accounted for 24.8% of the variance in IPA propensity. Both gender and trait reappraisal had significant main effects on IPA propensity. Specifically, women were expected to report a greater log of IPA propensity by 0.16 ( $p = .01$ ) than men. As trait reappraisal increases the log of IPA propensity was expected to decrease ( $Estimate = -0.02, p = .01$ ). Three significant three-way interactions predicting IPA propensity were found. First, a negative three-way interaction ( $Estimate = -1.09, p = .02$ ) between alcohol intoxication, uninstructed-rumination, and IPA history was found indicating that the interaction of alcohol intoxication by uninstructed-rumination was significantly more negative as IPA history increases. Specifically, the interaction of alcohol by uninstructed-rumination was

non-significantly negative when perpetrating no IPA ( $Estimate = -0.09, p = .39$ ) and significantly negative when experiencing one act of IPA ( $Estimate = -1.41, p < .01$ ). In addition, a negative three-way interaction between alcohol intoxication, uninstructed-reappraisal, and IPA history emerged ( $Estimate = -1.37, p = .01$ ), indicating that as IPA increases the interaction of alcohol intoxication by ruminating becomes significantly more negative. Specifically, the interaction of alcohol intoxication by uninstructed-reappraisal was non-significantly positive when perpetrating no IPA ( $Estimate = 0.14, p = .32$ ) and significantly negative when experiencing one act of IPA ( $Estimate = -1.23, p < .01$ ). Finally, a positive interaction of 0.03 ( $p = .03$ ) between alcohol intoxication, uninstructed-reappraisal, and trait rumination was found. This finding indicates that the interaction of alcohol intoxication by uninstructed-reappraisal was significantly more positive as trait rumination increases. Specifically, the interaction of alcohol intoxication by uninstructed-reappraisal was non-significantly negative when experiencing one standard deviation below the mean of trait rumination ( $Estimate = -0.18, p = .35$ ), and this interaction was significantly positive when experiencing one standard deviation above the mean of trait rumination,  $Estimate = 0.46, p = .03$ .

Table 3.8

*Parameters for IPA Propensity Model with Covariates*

Predictors	Est	SE	p
<i>Primary IVs</i>			
Placebo vs. Alcohol	0.06	0.10	0.60
Uninstructed vs. Reappraisal	-0.15	0.10	0.15
Uninstructed vs. Rumination	-0.09	0.11	0.39

Placebo vs. Alcohol * Uninstructed vs. Reappraisal	0.14	0.14	0.32
Placebo vs. Alcohol * Uninstructed vs. Rumination	-0.04	0.15	0.77
<i>Covariates</i>			
Gender	0.16	0.06	0.01
Beverage Rating	-0.01	0.04	0.75
IPA history	-0.13	0.23	0.56
Trait Reappraisal	-0.02	0.01	0.01
Trait Rumination	0.02	0.01	0.06
<i>Interactions between Primary IVs and IPA history</i>			
Placebo vs. Alcohol * IPA history	0.91	0.39	0.02
Uninstructed vs. Reappraisal * IPA history	0.50	0.33	0.13
Uninstructed vs. Rumination * IPA history	0.21	0.25	0.40
Placebo vs. Alcohol * Uninstructed vs. Reappraisal * IPA history	-1.37	0.48	0.01
Placebo vs. Alcohol * Uninstructed vs. Rumination * IPA history	-1.09	0.46	0.02
<i>Interactions between Primary IVs and Trait Rumination</i>			
Placebo vs. Alcohol * Trait Rumination	-0.01	0.01	0.22
Uninstructed vs. Reappraisal * Trait Rumination	-0.02	0.01	0.09
Uninstructed vs. Rumination * Trait Rumination	-0.01	0.01	0.22
Placebo vs. Alcohol * Uninstructed vs. Reappraisal * Trait Rumination	0.03	0.02	0.03

Placebo vs. Alcohol * Uninstructed vs. Rumination * Trait	0.01	0.02	0.41
Rumination			

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*Note.* IPA = intimate partner aggression

Simple effects of IPA history were estimated to further illustrate the three-way interactions between IPA history, alcohol intoxication, and emotion regulation strategy condition. These analyses demonstrated that the effect of history of IPA was not significant in the placebo and uninstructed group ( $Estimate = -0.13, p = .56$ ), the placebo and reappraisal group ( $Estimate = 0.37, p = .12$ ), the placebo and rumination group ( $Estimate = 0.08, p = .42$ ), the alcohol and reappraisal group ( $Estimate = -0.09, p = .44$ ), or the alcohol and rumination group ( $Estimate = -0.10, p = .60$ ). However, among the alcohol and uninstructed group, for every one-unit increase in history of IPA, the log of IPA propensity was expected to increase by 0.77 ( $p = .02$ ).

Figure 3.3 depicts the three-way interaction between trait rumination, alcohol condition, and emotion regulation strategy condition. The conditions are depicted with same color and line scheme as Figure 3.1 and 3.2, and the same trait rumination values are used on the x-axis as in Figure 3.2. The IPA propensity predicted scores are shown in the original scale value (i.e., not in the value of the log of IPA propensity).

Simple effects of trait rumination were estimated to further illustrate the three-way interaction between. Although trending, trait rumination did not significantly predict IPA propensity in the placebo and uninstructed group ( $Estimate = 0.017, p = .06$ ). Trait rumination also did not predict IPA propensity in the placebo and reappraisal group ( $Estimate = -0.002, p = .75$ ), the placebo and rumination group ( $Estimate = 0.003, p = .73$ ), the alcohol and uninstructed group ( $Estimate = 0.002, p = .76$ ), or the alcohol and

rumination group ( $Estimate = 0.001, p = .87$ ). Trait rumination significantly predicted IPA propensity among the alcohol and reappraisal group, such that for every one-unit increase in trait rumination, the log of IPA propensity was expected to increase by 0.017 ( $p = .03$ ).

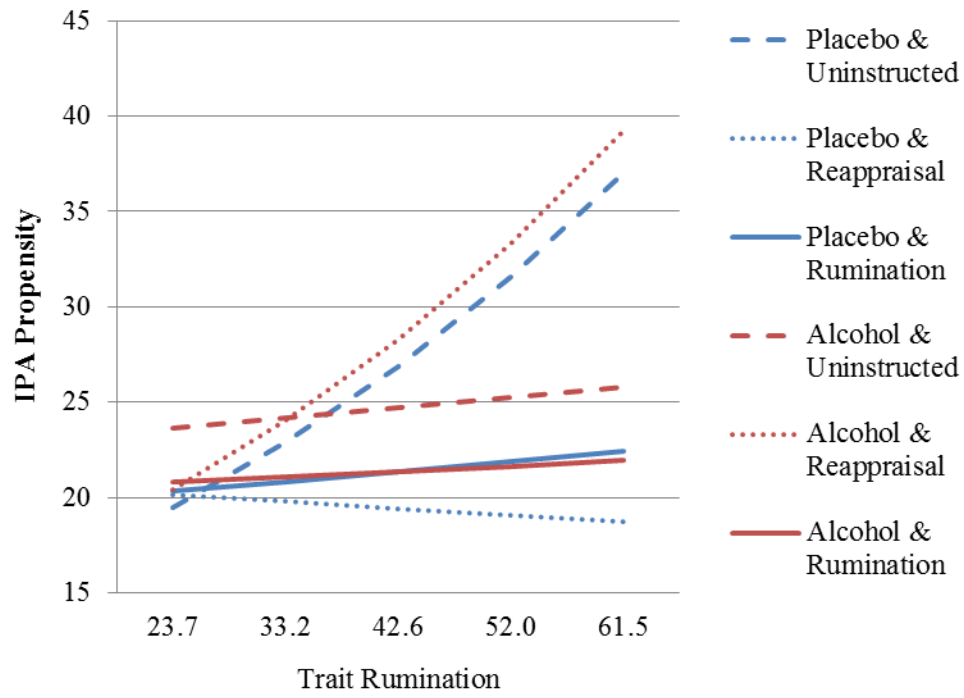


Figure 3.3. Interaction between alcohol condition, emotion regulation condition, and trait rumination predicting IPA propensity.

## CHAPTER 4: DISCUSSION

The present study had the primary goal of examining the proximal effects of alcohol intoxication and the emotion regulatory strategies of anger rumination and reappraisal on IPA perpetration. Within this goal there were three primary aims. The first aim was to examine the effects of alcohol intoxication on lab-based IPA. The second aim was to examine the effects of *in vivo* rumination and reappraisal on IPA. The third aim was to evaluate the role of rumination and reappraisal in moderating the effects of alcohol intoxication on IPA. The findings related to each of these aims, limitations of the current study, directions for future research, and clinical implications are discussed below.

### **Descriptive and Manipulation Check Findings**

Before discussing results related to the specific aims, a review of descriptive and manipulation check findings is merited. Descriptive findings for alcohol-related variables generally were as expected and consistent with past research. Participants in the alcohol group reported feeling more intoxicated and impaired than individuals in the placebo group. This significant difference between groups is consistent with prior research examining alcohol and aggression in the lab (e.g., Giancola, Godlaski, & Roth, 2012; Giancola, Parrott et al., 2012; Eckhardt, 2007). When using a high-alcohol dose beverage compared to a placebo beverage among experienced drinkers, subjective experiences of intoxication and impairment cannot be expected to be equivalent between alcohol and placebo conditions (Giancola, Godlaski et al., 2012). Participants in the alcohol condition also reported that their drinks tasted worse and more unpleasant than participants in the placebo condition. Published research on alcohol and aggression does

not appear to have reported data comparing participants' beverage taste ratings in placebo and alcohol conditions, making it difficult to place these findings in a greater context. Yet, the significant difference in taste ratings should be expected given the large difference in the amount of alcohol in the drinks administered to the alcohol condition and placebo condition. Finally, in the alcohol condition, participants' mean BrAC of .090% before the anger event recall and .097% after the reaction time game was in the expected range for the dose of alcohol used in this study (Duke, Giancola, Morris, Holt, & Gunn, 2010) and did not differ by gender. Together, these findings suggest the alcohol manipulation worked as expected.

One goal of the current study was to examine the effects of randomly assigned emotion regulation strategies during anger-event recall on subsequent IPA. Overall, the anger-event recall appears to have had the expected effect on participants' mood. Specifically, participants' negative and anger emotion generally increased and positive emotion generally decreased. These findings suggest that thinking about a past conflict with one's partner for two minutes is an effective method for producing changes in emotion. The patterns of emotion change also differed among emotion regulation conditions. The rumination condition displayed expected changes in emotion with negative and anger affect increasing and positive affect decreasing. The reappraisal condition did not show changes in negative affect or anger affect, but did demonstrate decreases in positive affect, suggesting that the reappraisal instructions may have helped participants to regulate their negative emotion and anger during anger-event recall, but that these instructions did not impact positive emotion. The lack of impact on positive emotion may be because participants were instructed to reappraise via perspective taking



(i.e., considering the situation from the perspective on an impartial observer) rather than being instructed to reappraise the emotional stimulus, which would have encouraged participants to see the event in a more positive light. The uninstructed condition displayed increases in anger affect and decreases in positive affect, but did not show changes in negative affect. These changes in emotion seem consistent with thinking about a past anger event.

In addition, some expected differences in ratings of perspective taking were found between emotion regulation conditions. Specifically, compared to individuals in the rumination and uninstructed conditions, those in the reappraisal group reported using a different perspective from their own. This finding suggests that individuals in the reappraisal condition effectively took the perspective of someone other than themselves. The difference in perspective taking between the rumination and reappraisal groups is consistent with past research (Ray et al., 2008). Although the mean of the individuals in the rumination condition indicated they reported using their own perspective slightly more than individuals in the uninstructed condition, this difference was not significant. Participants in both the rumination and uninstructed conditions appeared to mostly take their own perspective when recalling the anger-event. This finding intuitively makes sense; if an individual is instructed to think about a past personal event, he or she would most likely think about it from his or her own perspective.

The present study used an analogue IPA task and a self-report assessment of IPA propensity to measure IPA perpetration. The means of Trial 1 and Trial 2 of the lab-based measure were slightly lower than means previously found among a sample of couples (Watkins et al., 2013). This difference could be due to several reasons. First, as

discussed in more detail below, couples in the current study reported a lower history of IPA than typical university samples (Shorey et al., 2008). Thus, the couples in the current sample may not have been as aggressive as the couples examined in prior research. Although, the lab-based IPA levels were lower than expected, the self-reported IPA propensity levels were consistent with prior research using this measure (Panuzio, 2011). In the current study, men's and women's levels of IPA did not significantly differ, which is consistent with past research demonstrating similar rates of IPA across men and women (Harned, 2002; Katz, Kuffel, & Coblenz, 2002; Straus, 2004). The similar levels of IPA among men and women found here support assertions of the importance of investigating IPA perpetrated by both men and women (Straus, 2011).

Descriptives for the covariates were mostly consistent with past research, except for levels of past IPA perpetration. Mean levels of both trait reappraisal and trait rumination levels were similar to means found in past research (Gross & John, 2003; Magar, Phillips, & Hosie, 2008; Sukhodolsky et al., 2001). In the current sample, women tended to report using reappraisal more than men, which is consistent with previous research (Nolen-Hoeksema & Aldao, 2011). Although women have reported using general rumination (i.e., not specifically anger focused) more than men (Nolen-Hoeksema & Aldao, 2011), past research examining *anger* rumination has found no gender differences (Sukhodolsky et al., 2001). As mentioned above, IPA rates in the current study (7.2% for men and 16.2% for women) for the past six months were lower than past-year prevalence rates among undergraduate students (e.g., 20 - 30%; Shorey, Cornelius, & Bell, 2008) and some representative U.S. samples (e.g., over 20%; Schafer, Caetano, & Clark, 1998). Lower IPA rates in comparison to these previous samples

could be due to the current study measuring IPA over six months instead of 12 months. However, prior research examining rates of IPA over six months among university students has found much higher rates than found here (e.g., 50.7% to 58.9% and 28.8%; Watkins, Maldonado, & DiLillo, in press; Maldonado et al., 2014). It seems likely that the comparatively low rates found here are due to the extensive exclusion criteria of the current study. Specifically, the study excluded individuals who reported more than one severe act of IPA during the prior year. The study also excluded individuals who reported problematic levels of alcohol use. These two exclusion criteria may have greatly limited the number of couples we were able to recruit with a history of IPA.

Although interrelationships among study variables were mostly as expected, some variables that were expected to be related were not. First, as expected, Trial 1, Trial 2, and IPA propensity were positively related to trait rumination and negatively related to reappraisal. In addition, Trial 1 and Trial 2 were positively associated and Trial 2 and IPA propensity were positively associated. However, unexpectedly, Trial 1 aggression was not related to IPA propensity, and none of the IPA variables measured in the lab were associated with IPA history. The lack of relationship between IPA history and lab measures is concerning and suggests that either individuals are not reporting IPA history accurately or the lab measures of IPA are measuring something other than physical IPA (e.g., psychological aggression, competitiveness). As discussed in more detail below, establishing a valid observational measure of IPA is an important future direction for the field. Further, when examining genders separately, only men's Trial 1 and Trial 2 were significantly associated. Findings based on examining men and women separately may be limited by the smaller sample size. Another possibility is that the assessments used in

the current study may be better at measuring constructs among women than men. Future research with larger sample sizes is needed to further explore potential differences in genders

### **Alcohol and IPA perpetration**

The hypothesis that individuals in the alcohol condition would display greater IPA than individuals in the placebo condition was partially supported. Specifically, individuals in the alcohol condition displayed greater IPA on Trial 2 of the analogue aggression task and tended to show greater IPA propensity as compared to individuals in the placebo condition. These findings are consistent with the proximal effects model of alcohol, which suggests that the psychopharmacological effects of alcohol directly facilitate IPA (Leonard & Quigley, 1999). Further, these findings are consistent with previous research demonstrating that individuals who are intoxicated are more aggressive towards strangers than individuals who did not consume alcohol (see Bushman & Cooper, 1990; Exum, 2006 for reviews), findings that problem drinking and alcohol use are associated with higher rates of self- or partner-reported IPA among both men and women (see Foran & O'Leary, 2008), and daily diary studies demonstrating a relationship between daily alcohol use and IPA (Fals-Stewart, 2003; Shorey et al, 2013; Testa & Derrick, 2014). The current study adds to this literature by supporting the proximal causal relationship between alcohol intoxication and IPA. This study appears to be the first to assess the alcohol-IPA relationship by randomly assigning individuals to alcohol and placebo conditions and then measuring *in vivo* IPA.

The hypothesis that alcohol intoxication leads to greater IPA was not supported when examining the Trial 1 of the analogue aggression task. The first trial occurs before

participants have received a blast of white noise from their ostensible opponent and has been called unprovoked aggression (Bushman & Baumeister, 1998; Twenge et al., 2001). Thus, although participants' negative and anger affect increased during the anger-event recall, this may not have been a salient enough provocation for participants to aggress against their partners. Findings that alcohol had an effect on the second trial, which occurs after receiving the loudest and longest blast possible, suggest that this additional provocation may have influenced the individuals in the alcohol group to perpetrate IPA on the second trial. While these findings across the first two trials were unexpected, they are consistent with the AMM, which suggests that alcohol restricts the range of cues that one can perceive, and reduces the ability to process and extract meaning from the cues and information that is perceived (Steele and Josephs, 1990). Participants in the alcohol condition may have experienced a state of shortsightedness in which the salient aspect of the blast received on the first trial disproportionately influenced their behavior on the subsequent trial.

### **Emotion Regulation Strategies and IPA Perpetration**

Contrary to hypotheses, main effects of instructed emotion regulation strategy use did not emerge. Specifically, individuals did not differ in their levels of IPA across the uninstructed, reappraisal, and rumination conditions. The lack of relationship between rumination and IPA contrasts with prior studies, which have consistently found a link between instructed rumination and in-lab aggression against a stranger (Bushman, 2002; Bushman, et al., 2005; Denson et al., 2011; Denson, White, & Warburton, 2009; Pedersen et al., 2011). However, the current study differs from previous research in some important ways. First, the current study examined IPA among a sample of couples

instead of aggression inflicted against a stranger. Thus, one possibility is that instructed rumination does not impact IPA the same as general aggression. However, because trait rumination has been linked to IPA (Sotelo & Babcock, 2013) and instructed rumination has consistently been linked to aggression, more research is needed to evaluate the potential relationship between instructed rumination and IPA. Second, the current study used emotion regulation strategy instructions that were used previously in a study examining the differential effects of rumination and reappraisal on anger experience and physiological responding (Ray et al., 2008). These rumination instructions were different from most prior research examining the relationship between rumination and aggression. Specifically, in studies examining aggression against a stranger, participants are typically instructed to ruminate for 20 minutes or longer (Bushman, 2002; Bushman, et al., 2005; Denson et al., 2011; Pedersen et al., 2011). Thus, although the period of two-minutes was enough time to elicit emotion changes, it may not have been long enough to influence aggressive behaviors. Last, in past rumination and lab-based aggression research, participants are typically provoked during the experiment (e.g., through negative feedback from a confederate or experimenter), followed by instructions to ruminate about the provoker or provoking incident, and subsequently are given the opportunity to aggress (e.g., Bushman, 2002; Denson et al., 2011). In the current study, participants ruminated about a past conflict with their partner, and although they were asked to pick a recent conflict, it still could have occurred anywhere from a few days to a few weeks prior. Thus, in the current study the provoking/anger event occurred more distally than the provoking events in past rumination-aggression research. Ruminating about a very recent provoking event may be more likely to influence IPA.

Instructed reappraisal was also unrelated to IPA in the current study. Although little research has examined the effect of instructed reappraisal on aggression, two studies have found that it is related to less aggression. Scott et al. (2014) found that individuals who were instructed to use reappraisal allocated less hot sauce to a confederate than individuals who were instructed to suppress. Maldonado et al. (2014) found that IPA perpetrators instructed to use reappraisal articulated fewer aggressive verbalizations than did non IPA perpetrators. Both of these studies had participants reappraise an emotional stimulus, such as thinking about a negative event in a more positive way, whereas the current study used reappraisal through perspective taking. Although past research found that both reappraisal through perspective taking and reappraisal of the emotional stimulus are generally effective emotion regulation strategies (Webb et al., 2012), one possibility for the lack of relationship between reappraisal and IPA in the present study is that reappraising an emotional stimulus may be more effective than reappraisal via perspective taking in reducing aggression in particular.

Another possibility for the lack of relationship between instructed emotion regulation strategies and IPA is that in-the-moment use of cognitive emotion regulation strategies may be overridden by trait levels of emotion regulation. In other words, the link between instructed emotion regulation may interact with trait emotion regulation to predict IPA. Thus, it is possible that among individuals in the rumination condition, IPA is greater only for those who are high in trait rumination or low on trait reappraisal. Some of the covariate analyses, which examined potential moderating relationships between instructed- and trait-emotion regulation, support this notion. These findings are discussed in detail below.

### **Moderating IPA Perpetration: Alcohol and Emotion Regulatory Strategies**

When examining the effects of alcohol and emotion regulatory strategies without including covariates, the hypothesis that alcohol and emotion regulation strategy conditions would interact such that rumination would enhance the effects of alcohol intoxication on IPA and reappraisal would attenuate the effects of alcohol intoxication on IPA was unsupported. These findings contrast with past findings that both trait and state rumination to interact with alcohol to predict aggression (Borders, Barnwell, & Earleywine, 2007; Borders & Giancola, 2011). However, it appears no previous studies have examined the effect of the interaction between *instructed* rumination and alcohol intoxication on aggression. Thus, one possibility is that alcohol interacts with self-reported state and trait rumination, but not instructed rumination. In addition, it appears that no empirical work has examined the interactive effects of reappraisal and alcohol on aggression. Therefore, it is difficult to place these findings into a broader context. Nevertheless, because emotion regulation strategies were not related to IPA, it is not surprising that these strategies also did not significantly interact with alcohol intoxication.

### **Considering the Roles of Gender, Trait Emotion Regulation, and IPA History**

Although no interaction between alcohol and emotion regulation strategies emerged when examining their effects on IPA alone, some significant main effects and interactions emerged when gender, trait emotion regulation, and IPA history were included in the models. However as discussed in more detail below, these effects differed somewhat across measures of IPA.

After controlling for all other effects, IPA was found to differ by gender on Trial 1 (but not Trial 2) of the competitive reaction time task and on the IPA propensity measure.



However, these gender effects were in the opposing directions, such that men displayed greater observed IPA on Trial 1 of the reaction time task and women reported more IPA propensity. Although past research has found men to aggress at higher levels than women on lab-based aggression paradigms (DeSteno et al., 2006; Giancola et al., 2009), a previous study examining Trial 1 and Trial 2 IPA among couples did not find any gender differences (Watkins et al., 2013). These inconsistent findings suggest that future research is needed to determine if men and women differ in IPA perpetration levels on lab-based aggression paradigms. The finding that women reported greater IPA propensity than men on the PAVE is consistent with past research (Panuzio, 2011). Previous research has also suggested that women tend to report greater IPA perpetration and victimization than men in survey research conducted with couples (Schafer, Caetano, & Clark, 2002). The cause of this gender difference in self-report of IPA is unclear. Women may have a lower threshold for reporting IPA (Testa & Derrick, 2014) or men may underreport IPA. When examining IPA among both men and women, future research may benefit from using multiple modalities of assessment.

Current study findings also reveal important information about potential gender differences in the effect of alcohol on IPA. Several past studies have found a positive relationship between alcohol and general aggression (i.e., aggression against a stranger) among men, but not women (Giancola et al., 2002; Giancola & Zeichner, 1995; Gussler-Burkhardt & Giancola, 2005; Hoaken, Campbell, Stewart, & Pihl, 2003; Hoaken & Pihl, 2000), and although one study found an effect of alcohol on aggression among women, this effect was still stronger for men (Giancola et al., 2009). In contrast, the current study did not find the effect of alcohol on IPA to differ across gender. Although this finding is

different from research on general aggression, it is consistent with findings from a daily diary study on IPA, which found no gender differences in the strength of the effect of drinking on either perpetration or victimization (Testa & Derrick, 2014). Together, these findings suggest that the effect of alcohol may differ across genders for general aggression, but not IPA. This inconsistent impact of gender on the alcohol-aggression relationship may be a reflection of gender differences in perpetration of general aggression versus IPA. Specifically, the studies examining general aggression described above all measure direct general aggression. Much research demonstrates men perpetrate direct general aggression more than women (Bettencourt & Miller, 1996; DeSteno et al., 2006; Eagly & Steffen, 1986). Thus alcohol may have a stronger effect on perpetrating direct general aggression among men, because men are already more likely than women to perpetrate this type of aggression. In contrast to direct general aggression, women perpetrate IPA at similar or slightly higher rates than men (Archer, 2000, Harned, 2002; Katz et al., 2002; Straus, 2004) and thus alcohol may influence each gender's IPA perpetration similarly.

Overall, results from the current study suggest that trait rumination is positively associated with IPA. This finding is consistent both with the CN model, which suggests that the increased negative emotion and enhanced attention towards provoking cues from rumination activates emotion-aggression networks, and with past research demonstrating a link between trait rumination and aggression (Anestis et al., 2009). Individuals higher on trait rumination may have ruminated about the anger-event during the course of the study, which likely enhanced their negative emotion and anger, activating their emotion-aggression networks and making them more likely for them to perpetrate IPA. However,

also worth noting is that on certain measures of IPA, the positive relationship between trait rumination and IPA emerged only in specific alcohol and emotion regulation conditions (i.e., trait rumination interacted with the alcohol and emotion regulation conditions to predict IPA). More specifically, as discussed below, trait rumination was found to interact with the alcohol and emotion regulation conditions to predict Trial 2 IPA and IPA propensity.

On Trial 2 of the competitive reaction time task, higher trait rumination was positively related to IPA among individuals in the alcohol and rumination conditions and individuals in the placebo and uninstructed conditions. The finding that alcohol intoxication, instructed rumination, and high trait rumination are related to greater IPA is consistent with the CN model and the AMM. Among high trait ruminators who were intoxicated, ruminating about the anger-event could have enhanced negative affect and brought the provoking cue of the intense noise blast on the first trial to the forefront of these individuals' focus. In their intoxicated state, these individuals may have been unable to attend to less salient non-provoking cues (e.g., that retaliating with a high blast may hurt their partner or lead to a greater retaliation from their partner on the next trial), leading them to be more aggressive on the second trial. Higher trait rumination was also related to higher Trial 2 IPA among individuals in the placebo and uninstructed conditions. This finding suggests that after thinking about a past conflict with their intimate partner and receiving a provoking blast of noise from their partner, high trait ruminators use greater aggression than low trait ruminators. The reason why this relationship emerged among this particular group, and not the alcohol and uninstructed group or the placebo and rumination group is unclear. Further research is needed to explore the possible relationships between

trait rumination, instructed emotion regulation strategies, and alcohol intoxication.

In predicting IPA propensity, higher trait rumination was related to higher IPA among individuals assigned to the alcohol and reappraisal condition. The reason that trait rumination is related to IPA propensity in these conditions and not in other conditions is unclear. One possibility is that higher trait ruminators who were assigned to the alcohol and reappraisal conditions found following the reappraisal instructions more cognitively challenging than lower trait ruminators, because taking an objective perspective is different from how these individuals typically think about anger-events. Immediately after thinking about the past anger event, participants began the competitive reaction time task, which lasts approximately 10 to 15 minutes. Although reappraising during the event recall may have helped these participants regulate negative affect during the first two trials of the reaction time task, they were not instructed to reappraise during the reaction time task. Thus, by the end of the that task, when participants filled out the IPA propensity measure, participants who were intoxicated and high on trait rumination may have reverted to their typical patterns of thinking and began ruminating about the blasts of white noise they had received from their partner. In addition, because the use of reappraisal may have been more cognitively taxing to intoxicated individuals who had higher trait rumination, these individuals may have had greater difficulty regulating their emotions throughout the competitive reaction time task. Thus, by the time they completed the IPA propensity measure, these individuals may have been cognitively depleted, ruminating, and intoxicated, all factors that are related to greater aggression (Bettencourt et al., 2006; Bushman & Cooper, 1990; DeWall et al., 2007; Exum, 2006).

Current study findings also suggest that overall individuals with higher trait

reappraisal perpetrate less IPA. Specifically, individuals higher in trait reappraisal reported lower IPA propensity and this effect was not dependent on what conditions they had been assigned (i.e., alcohol or emotion regulation strategy condition). Thus, individuals higher on trait reappraisal may be able use this skill when presented with the situations on the PAVE. For example, when participants with higher trait reappraisal read the PAVE item, “my partner does something to offend or disrespect me,” they may be able to consider several possible explanations for the behavior of their partner and therefore have thought about the item more objectively or more positively. These individuals thus may experience less anger and negative emotion, thereby lessening the likelihood that emotion-aggression networks will be activated, which in turn attenuates the risk for IPA perpetration. This finding is consistent with past research indicating that individuals who are high in trait reappraisal report less anger and negative emotion and show better cardiovascular responding after interpersonal provocation as compared to individuals who are low in trait reappraisal (Mauss et al., 2007; Memedovic et al., 2010).

Trait reappraisal also interacted with alcohol intoxication and emotion regulation conditions to predict IPA on Trial 1. Specifically, higher trait reappraisal was significantly associated with less IPA only among individuals in the alcohol and rumination conditions. In addition, those lower in trait reappraisal and who were in the rumination and alcohol conditions were estimated to have the highest levels of Trial 1 IPA. This finding suggests that alcohol and instructed rumination interacted to increase Trial 1 IPA, but only among individuals low in trait reappraisal. Thus, being able to reappraise a situation may be a protective factor against perpetrating IPA, even when intoxicated and after ruminating about a past conflict with an intimate partner. Those who had higher trait reappraisal may

have been able to limit their aggressive responding by using reappraisal skills, which reduced the perception of provoking cues and the likelihood that emotion-aggression networks were activated, whereas those with lower trait appraisal were not equipped to use these skills. This finding is consistent with research demonstrating that reappraisal is associated with decreased vengeance and aggressive behavior (Barlett & Anderson, 2011).

IPA history was only found to positively predict IPA propensity, and this was only among individuals in the alcohol and uninstructed group. This finding is consistent with past research demonstrating that men who have a history of IPA perpetration and consume alcohol have greater aggressive verbalizations during anger-arousing scenarios (Eckhardt, 2007). Yet, it is unclear why this relationship emerged only among individuals in the alcohol and uninstructed conditions and not among all individuals in the alcohol condition. A small number of couples reported a history of IPA perpetration, so the effect of IPA history is not based on many people. Future research with a larger and potentially more representative sample of individuals reporting a history of IPA perpetration is needed to further examine these associations.

### **Limitations and Future Directions**

The current study had several limitations. Although the sample was demographically consistent with the location of recruitment, it was primarily European American. In addition, the majority of participants were students at a large university, limiting generalizability. Because IPA affects a wide-range of individuals (Coker et al., 2002), future research with a more broadly representative sample is needed. As mentioned above, another limitation was the extensive exclusion criteria. Although these criteria were used to limit risk in a study involving alcohol intoxication and IPA, they

greatly limited who could participate. Specifically, individuals who had higher levels of drinking or drinking problems and those with a history of severe IPA were excluded. These two exclusion criteria likely limited the sample to less aggressive individuals. Future research could examine the effects of alcohol and emotion regulation strategies among a sample of problematic drinkers, instead of only social drinkers. This approach would not require participants to drink more than they normally do. Further, research that examines these factors among individuals with a more severe IPA history is needed, though because of safety concerns surrounding intoxicating severely aggressive couples, a different methodology may need to be used. Another limiting feature of the exclusion criteria was that both members of a couple had to meet the same eligibility criteria to participate in the study. Thus, if one member of the couple was eligible, but the other member reported drinking too much or too little, both members of the couple were not able to participate. This exclusion criterion restricted the type of couples who were able to participate in the current study, which again may limit the generalizability of the results.

One future research direction in examining situational risk factors for IPA is to establish the best possible measure of analogue IPA. The competitive reaction time task has received strong support as reliable and valid measures of general aggression for both men and women (Anderson & Bushman, 1997; Giancola & Chermack, 1998; Hoaken & Phil, 2000). Although a strength of the current study was its use of the competitive reaction time task to measure *in vivo* IPA, using this task with a sample of couples produced some challenges. First, although past research shows the task is correlated with self-report measures of aggression (e.g., Carlson et al., 1989; Giancola & Zeichner, 1995),

as mentioned above, the task was not significantly related to self-reported IPA history in the present study. In addition, some participants reported that they became aware that they were not playing their partner during the competitive reaction time task. These participants provided some common reasons for figuring out they were not playing their partner, including that they believed their partner would not allocate them such severe blasts of noise and that the person they were playing did not follow a believable pattern of responses to their own allocations of noise. Other analogue aggression tasks may be better suited for use among couples, such as assigning painful yoga positions (Finkel et al., 2009) or a voodoo doll task, in which participants stab pins into a doll representing their significant other (DeWall et al., in press). Future research could examine different analogue IPA tasks to determine which one has the best external validity.

The current study focused on specific situational risk factors that were hypothesized to play an important role in IPA. There are many other situational risk factors related to alcohol, emotion regulation, and IPA that could be examined. For example, suppression, an emotion regulation strategy associated with a variety of negative social consequences (Gross, 2002; Robertson, Daffern, & Bucks, 2012), could interact with alcohol to predict IPA. In addition, the current findings suggest that the best prediction of alcohol-related IPA may come from examining situational and static, or more trait-like risk factors, together. In support of this notion, past research has found that models of IPA that include both situational and static risk factors have greater predictive ability than models including only static factors (Riggs & O'Leary, 1989, 1996; White, Merrill, & Koss, 2001). Thus, the field would greatly benefit from future research that evaluates multifactor models of IPA that combine combination of



situational and static predictors.

### **Clinical Implications**

In randomly assigning individuals to drink alcohol or a placebo beverage and then giving them the opportunity to aggress against their partner, this study may be the first to establish a proximal link between alcohol intoxication and IPA. In general, participants who became intoxicated displayed greater IPA suggesting the importance of addressing alcohol use in prevention programs and interventions for IPA. Indeed, past research has demonstrated that treatments that reduce problematic alcohol use also reduce IPA (O'Farrell et al., 2003). However, many state standards require that all offender treatment for intimate partner aggression or violence be based on Duluth-model batterer intervention programs (Eckhardt, Murphy, Whitaker, Sprunger, Dykstra, & Woodard, 2013). These programs are centered on a power and control model, in which male-initiated IPA is believed to arise from patriarchal ideology in our culture and is enacted as a means to exert control over women (Pence & Paymar, 1993). Unfortunately, in these programs alcohol is not addressed because it is viewed as an excuse for IPA rather than a potentially modifiable risk factor. Further, some researchers have argued that the Duluth-model ignores literature suggesting that there may be different types of IPA perpetrators (Stith, Rosen, & McCollum, 2003). For example, the Duluth-model treatment may be best suited for individuals who perpetrate intimate terrorism, or a pattern of violent coercive control, but other types of interventions may be more appropriate for perpetrators of situational couple violence, which is not terroristic and occurs when couple conflicts becomes aggressive (Johnson, 2011). Findings from the current study and past research suggest that IPA is a complex problem and that a treatment approach

based solely on the power and control model is unlikely to be effective for all perpetrators.

The present study also revealed links between emotion regulation and IPA. Trait levels of emotion regulation appear to be particularly important, suggesting that clinical interventions including emotion regulation training may be help to reduce IPA. For example, adding a brief component of reappraisal training to interventions may increase trait reappraisal among individuals with low trait reappraisal pre-intervention (Barlett & Anderson, 2011), which in turn could help to reduce IPA perpetration. In addition, anger rumination may be an important target in IPA interventions. Cognitive behavioral therapies that explicitly target rumination and mindfulness training have been shown to reduce ruminative thinking (Deyo, Wilson, Ong, & Koopman, 2009; Watkins et al., 2007). Although these treatments specifically targeted depressive rumination, they may be effectively adapted for individuals prone to anger rumination. In addition, Dialectical Behavioral Therapy (DBT; Linehan, 1993), which targets distress tolerance, emotion regulation, and interpersonal effectiveness may be a useful treatment approach for IPA. In fact, DBT has support as being an effective way to reduce anger and aggression, even when modified for a particular population (Frazier & Vela, 2014).

## **Conclusions**

Intimate partner aggression has many negative effects on victims and society. Knowledge of risk factors, particularly ones that are modifiable, will help inform prevention and intervention efforts aimed at reducing this significant problem. The current study investigated two situational risk factors for IPA, alcohol intoxication and emotion regulation strategies. Although not all hypotheses were supported, this study

revealed novel results showing that alcohol has proximal effects on IPA. In addition, findings from the present study suggest that consideration of trait levels of emotion regulation is important when examining the link between instructed emotion regulation and IPA. The significant interactions found between alcohol intoxication, instructed emotion regulation, and trait emotion regulation suggest that research continue to examine these factors and their effects on IPA. Finally, research examining situational risk factors for IPA in conjunction with relevant trait-like factors may provide the most accurate models of IPA perpetration. As research continues to identify modifiable risk factors for IPA, skills targeting these proven risk factors should be integrated into treatment (Stith, Lechtenberg, & Cafferky, 2013).

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**Appendix A**

Questionnaires Used

## Mood Rating Scale

Participant Number \_\_\_\_\_

Couple ID \_\_\_\_\_

Directions: This scale consists of a number of words that describe different feelings and emotions. Indicated to what extent you feel this way RIGHT NOW.

Use the following scale to record your answers.

(1) = Very slightly or not at all

(2) = A little

(3) = Moderately

(4) = Quite a bit

(5) = Extremely

Please circle one:

1. Cheerful	1	2	3	4	5
2. Disgusted	1	2	3	4	5
3. Relaxed	1	2	3	4	5
4. Irritable	1	2	3	4	5
5. Angry	1	2	3	4	5
6. Enthusiastic	1	2	3	4	5
7. Anxious	1	2	3	4	5
8. Upset	1	2	3	4	5
9. Happy	1	2	3	4	5
10. Hostile	1	2	3	4	5
11. Nervous	1	2	3	4	5
12. Calm	1	2	3	4	5
13. Annoyed	1	2	3	4	5
14. Creative	1	2	3	4	5
15. Distressed	1	2	3	4	5

## PAVE

Sometimes there are situations when people are more likely to become PHYSICALLY aggressive than other times. Sometimes people feel that violence is justified, given the situation. Please indicate how likely it is that you would be physically aggressive in each of the following situations, if they were to arise RIGHT NOW. If you are not in a relationship currently, please answer these questions regarding how you would be likely to act if you were in a relationship and these situations were to occur RIGHT NOW.

Please use the following scale:

1	2	3	4	5	6
Not at all likely					Extremely likely

1. My partner does something to offend or disrespect me.
2. My partner threatens to leave me.
3. My partner just won't stop talking or nagging.
4. I walk in and catch my partner having sex with someone.
5. My partner says, "I wish we never got together."
6. My partner spends a lot of time with close friends of the opposite sex.
7. I find out that my partner has been flirting with someone.
8. My partner comes home late.
9. My partner spends money without consulting me.
10. When my partner and I argue about sex.
11. My partner threatens to divorce/break up with me.
12. My partner ridicules or makes fun of me.
13. My partner tells me not to do something that I want to do.
14. My partner tries to control me.
15. My partner interrupts me when I'm talking.
16. My partner does not include me in important decisions.
17. My partner ignores me.
18. My partner is physical aggressive towards me first.
19. My partner tries to leave during an argument.
20. My partner blames me for something I didn't do.

## CTS2

No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other or just have spats or fights because they are in a bad mood, are tired, or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when you have differences. Please circle how many times you did each of these things in the past six months, and how many times your partner did them in the past six months. If you or your partner did not do one of these things in the past six months, but it happened before that, circle "7".

## HOW OFTEN DID THIS HAPPEN?

1 = Once in the past 6 months

2 = Twice in the past 6 mo.

3 = 3-5 times in the past 6 mo.

4 = 6-10 times in the past 6 mo.

5 = 11-20 times in the past 6 mo.

6 = More than 20 times in the past 6 mo.

7 = Not in the past 6 mo.,

but it did happen before

0 = This has never happened

1. I insulted or swore at my partner.	1	2	3	4	5	6	7	0
2. My partner did this to me.	1	2	3	4	5	6	7	0
3. I threw something at my partner that could hurt.	1	2	3	4	5	6	7	0
4. My partner did this to me.	1	2	3	4	5	6	7	0
5. I twisted my partner's arm or hair.	1	2	3	4	5	6	7	0
6. My partner did this to me.	1	2	3	4	5	6	7	0
7. I made my partner have sex without a condom.	1	2	3	4	5	6	7	0
8. My partner did this to me.	1	2	3	4	5	6	7	0
9. I pushed or shoved my partner.	1	2	3	4	5	6	7	0
10. My partner did this to me.	1	2	3	4	5	6	7	0
11. I used force (like hitting, holding down, or using a weapon) to make my partner have oral or anal sex with me.	1	2	3	4	5	6	7	0
12. My partner did this to me.	1	2	3	4	5	6	7	0
13. I used a knife or gun on my partner.	1	2	3	4	5	6	7	0
14. My partner did this to me.	1	2	3	4	5	6	7	0
15. I called my partner fat or ugly.	1	2	3	4	5	6	7	0
16. My partner called me fat or ugly.	1	2	3	4	5	6	7	0
17. I punched or hit my partner with something that could hurt.	1	2	3	4	5	6	7	0
18. My partner did this to me.	1	2	3	4	5	6	7	0
19. I destroyed something belonging to my partner.	1	2	3	4	5	6	7	0
20. My partner did this to me.	1	2	3	4	5	6	7	0
21. I choked my partner.	1	2	3	4	5	6	7	0



22. My partner did this to me.	1	2	3	4	5	6	7	0
23. I shouted or yelled at my partner.	1	2	3	4	5	6	7	0
24. My partner did this to me.	1	2	3	4	5	6	7	0
25. I slammed my partner against a wall.	1	2	3	4	5	6	7	0
26. My partner did this to me.	1	2	3	4	5	6	7	0
27. I beat up my partner.	1	2	3	4	5	6	7	0
28. My partner did this to me.	1	2	3	4	5	6	7	0
29. I grabbed my partner.	1	2	3	4	5	6	7	0
30. My partner did this to me.	1	2	3	4	5	6	7	0
31. I used force (like hitting holding down, or using a weapon) to make my partner have sex with me.	1	2	3	4	5	6	7	0
32. My partner did this to me.	1	2	3	4	5	6	7	0
33. I stomped out of the room, house, or yard during a disagreement.	1	2	3	4	5	6	7	0
34. My partner did this to me.	1	2	3	4	5	6	7	0
35. I insisted on sex when my partner didn't want to (but did not use physical force).	1	2	3	4	5	6	7	0
36. My partner did this to me.	1	2	3	4	5	6	7	0
37. I slapped my partner.	1	2	3	4	5	6	7	0
38. My partner did this to me.	1	2	3	4	5	6	7	0
39. I used threats to make my partner have oral or anal sex.	1	2	3	4	5	6	7	0
40. My partner did this to me.	1	2	3	4	5	6	7	0
41. I burned or scalded my partner on purpose.	1	2	3	4	5	6	7	0
42. My partner did this to me.	1	2	3	4	5	6	7	0
43. I insisted that my partner have oral or anal sex (but did not use physical force).	1	2	3	4	5	6	7	0
44. My partner did this to me.	1	2	3	4	5	6	7	0
45. I accused my partner of being a lousy lover.	1	2	3	4	5	6	7	0
46. My partner accused me of this.	1	2	3	4	5	6	7	0
47. I did something to spite my partner.	1	2	3	4	5	6	7	0
48. My partner did this to me.	1	2	3	4	5	6	7	0
49. I threatened to hit or throw something at my partner.	1	2	3	4	5	6	7	0
50. My partner did this to me.	1	2	3	4	5	6	7	0
51. I kicked my partner.	1	2	3	4	5	6	7	0
52. My partner did this to me.	1	2	3	4	5	6	7	0
53. I used threats to make my partner have sex.	1	2	3	4	5	6	7	0
54. My partner did this to me.	1	2	3	4	5	6	7	0

### Anger Rumination Scale

Please respond to each item on a scale from 1 (almost never) to 4 (almost always)

1. I ruminate about my past anger experiences.
2. I ponder about the injustices that have been done to me.
3. I keep thinking about events that angered me for a long time.
4. I have long living fantasies of revenge after the conflict is over.
5. I think about certain events from a long time ago and they still make me angry.
6. I have difficulty forgiving people who have hurt me.
7. After an argument is over, I keep fighting with this person in my imagination.
8. Memories of being aggravated pop into my mind before I fall asleep.
9. Whenever I experience anger, I keep thinking about it for a while.
10. I have had times when I could not stop being preoccupied with a particular conflict.
11. I analyze events that make me angry.
12. I think about the reasons people treat me badly.
13. I have day dreams and fantasies of violent nature.
14. I re-enact the anger episode in my mind after it has happened.
15. I feel angry about certain things in my life.
16. When someone makes me angry I can't stop thinking about how to get back at this person.
17. When someone provokes me, I keep wondering why this should have happened to me.
18. Memories of even minor annoyances bother me for a while.
19. When something makes me angry, I turn this matter over and over again in my mind.

## ERQ

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. We are interested in two aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1-----2-----3-----4-----5-----6-----7  
strongly neutral strongly  
disagree agree

1. \_\_\_\_ When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about*.
2. \_\_\_\_ I keep my emotions to myself.
3. \_\_\_\_ When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.
4. \_\_\_\_ When I am feeling *positive* emotions, I am careful not to express them.
5. \_\_\_\_ When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.
6. \_\_\_\_ I control my emotions by *not expressing them*.
7. \_\_\_\_ When I want to feel more *positive* emotion, I *change the way I'm thinking* about the situation.
8. \_\_\_\_ I control my emotions by *changing the way I think* about the situation I'm in.
9. \_\_\_\_ When I am feeling *negative* emotions, I make sure not to express them.
10. \_\_\_\_ When I want to feel less *negative* emotion, I *change the way I'm thinking* about the situation.

## Demographics Questionnaire

1. Gender Identity – Do you consider yourself to be:
  - 1 = Female
  - 2 = Male
  - 3 = Transgender – Female to Male
  - 4 = Transgender – Male to Female
  - 5 = Something else – Please specify \_\_\_\_\_
  
2. Sexual Orientation – Do you consider yourself to be:
  - 1 = Heterosexual / Straight
  - 2 = Lesbian
  - 3 = Gay (male)
  - 4 = Bisexual
  - 5 = Something else – please specify \_\_\_\_\_
  
3. What is your age (in years)? \_\_\_\_\_
  
4. How long have you and your partner been dating (in months)? \_\_\_\_\_
  
5. How would you describe your relationship with your partner?
  - 1 = Dating
  - 2 = Dating and living together
  - 3 = Engaged
  - 4 = Married or marriage-like relationship
  
6. Are you Latino, Hispanic, or of Spanish origin?
  - 1 = Yes
  - 2 = No
  
7. Which of the following best describes you? (You may check more than one.)
  - 1 = African American/Black
  - 2 = American Indian/Native American/Alaskan Native  
Specify: \_\_\_\_\_
  - 3 = Asian/Pacific Islander  
Specify: \_\_\_\_\_
  - 4 = White
  - 5 = Other  
Specify: \_\_\_\_\_
  
8. Years of Education including kindergarten: \_\_\_\_\_

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## HELPS BRAIN INJURY SCREENING TOOL

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**Consumer Information:** \_\_\_\_\_

**Agency/Screeener's Information:** \_\_\_\_\_

**H** Have you ever **Hit** your **Head** or been **Hit** on the **Head**?  Yes  No

Note: Prompt client to think about all incidents that may have occurred at any age, even those that did not seem serious: vehicle accidents, falls, assault, abuse, sports, etc. Screen for domestic violence and child abuse, and also for service related injuries. A TBI can also occur from violent shaking of the head, such as being shaken as a baby or child.

**E** Were you ever seen in the **Emergency** room, hospital, or by a doctor because of an injury to your head?  Yes  No

Note: Many people are seen for treatment. However, there are those who cannot afford treatment, or who do not think they require medical attention.

**L** Did you ever **Lose** consciousness or experience a period of being dazed and confused because of an injury to your head?  Yes  No

Note: People with TBI may not lose consciousness but experience an "alteration of consciousness." This may include feeling dazed, confused, or disoriented at the time of the injury, or being unable to remember the events surrounding the injury.

**P** Do you experience any of these **Problems** in your daily life since you hit your head?  Yes  No

Note: Ask your client if s/he experiences any of the following problems, and ask when the problem presented. You are looking for a combination of two or more problems that were not present prior to the injury.

- |   |  |
|---|--|
| <input type="checkbox"/> headaches                | <input type="checkbox"/> difficulty reading, writing, calculating              |
| <input type="checkbox"/> dizziness                | <input type="checkbox"/> poor problem solving                                  |
| <input type="checkbox"/> anxiety                  | <input type="checkbox"/> difficulty performing your job/school work            |
| <input type="checkbox"/> depression               | <input type="checkbox"/> change in relationships with others                   |
| <input type="checkbox"/> difficulty concentrating | <input type="checkbox"/> poor judgment (being fired from job, arrests, fights) |
| <input type="checkbox"/> difficulty remembering   |  |

**S** Any significant **Sicknesses**?  Yes  No

Note: Traumatic brain injury implies a physical blow to the head, but acquired brain injury may also be caused by medical conditions, such as: brain tumor, meningitis, West Nile virus, stroke, seizures. Also screen for instances of oxygen deprivation such as following a heart attack, carbon monoxide poisoning, near drowning, or near suffocation.

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### Scoring the HELPS Screening Tool

A HELPS screening is considered positive for a *possible* TBI when the following 3 items are identified:

- 1.)** An event that could have caused a brain injury (yes to H, E or S), **and**
- 2.)** A period of loss of consciousness or altered consciousness after the injury or another indication that the injury was severe (yes to L or E), **and**
- 3.)** The presence of two or more chronic problems listed under P that were not present before the injury.

**Note:**

- A positive screening is **not sufficient to diagnose TBI** as the reason for current symptoms and difficulties - other possible causes may need to be ruled out
- **Some individuals could present exceptions** to the screening results, such as people who do have TBI-related problems but answered "no" to some questions
- Consider positive responses within the context of the person's self-report and documentation of altered behavioral and/or cognitive functioning

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The original HELPS TBI screening tool was developed by M. Picard, D. Scarisbrick, R. Paluck, 9/91, International Center for the Disabled, TBI-NET, U.S. Department of Education, Rehabilitation Services Administration, Grant #H128A00022. The Helps Tool was updated by project personnel to reflect recent recommendations by the CDC on the diagnosis of TBI. See [http://www.cdc.gov/ncipc/pub-res/tbi\\_toolkit/physicians/mtbi/diagnosis.htm](http://www.cdc.gov/ncipc/pub-res/tbi_toolkit/physicians/mtbi/diagnosis.htm).

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## TELEPHONE SCREENING INTERVIEW

For office use: Has partner been screened? Y N

Say to participant: *“This study is about alcohol, emotional processes, genes, and relationships. Both you and your partner will need to be able to participate in a phone screen and the laboratory session in order to complete the study. The phone screen should take about 10 minutes. The laboratory session could take anywhere from 1.5 to approximately 6.5 hours. During the phone screen I’m going to ask questions about your alcohol use, your medical and psychiatric history, and your relationship. Some of these questions will be about physical victimization and perpetration. This information is confidential and will only be seen by study personnel. This information is used to determine whether you and your partner are eligible, and whether it is safe for you and your partner, to participate. Do you have any questions? Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers or the University of Nebraska-Lincoln, or in any other way receive a penalty or loss of benefits to which you are otherwise entitled.”*

*“Do you consent to the phone interview?”* Y N **(if no, stop here and thank them for their time)**

**If partner has not been screened say:** *“I will also need ask your partner these questions, to determine whether he/she is eligible, and whether it is safe for both of you to participate. Therefore I will have to talk to your partner before I can tell you whether or not you are eligible to participate. What is a phone number where I can reach your partner?”* [Record phone number on excel sheet]

*“What is your age?”:* \_\_\_\_\_ **(exclude if under 21)**

*“What is your gender?”:* M \_\_\_\_\_ F \_\_\_\_\_ *“What is your partner’s gender?”:*  
M \_\_\_\_\_ F \_\_\_\_\_

*“How long have you and your partner been together?”* \_\_\_\_\_ **(exclude if less than 4 months)**

*“Where did you hear about our study?”*

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*“Are you currently a UNL student?”* Y N

*“Is your partner currently a UNL student?”* Y N

**(exclude if neither partner is a UNL student)**

*“What is your ethnic background?”*

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*“How tall are you and how much do you weigh?”*

**(exclude if participant is under 6 feet tall and weighs more than 250 lbs)  
(exclude if participant is over 6 feet tall and weighs more than 300 lbs)**

**MEDICAL AND PSYCHIATRIC INFORMATION**

- 1) *“Are you taking any prescription and/or nonprescription medications?”*  
       Y       N  
 (if YES, what are they, how often, and doses)

Medication Name	Dosage	How often take?

**(Exclude if medication is listed on harmful interactions list)**

- 2) *“Can you drink alcohol with this medication?”* Y  
       N  
**(exclude if answer is NO)**

**If unknown, continue with screen. At end of screening tell participant we will contact them to let them know if we can schedule. Medications will need to be run by Dr. Grant before being scheduled.**

- 3) *“Is there any reason that you should not drink alcohol, medical or otherwise?”* Y  
       N  
**(exclude if YES)**

- 4) *“Have you ever had, or do you currently have, any major illnesses?”* Y  
 (for example, cancer, liver cirrhosis, hepatitis, tumors, HIV/AIDS, etc.)  
       N

**(If yes, continue with screen. At end of screening tell participant we will contact them to let them know if we can schedule. Major illnesses will need to be run by Dr. Grant before being scheduled.)**

- 5) *“Have you ever been diagnosed with a neurological disorder?”*  
(e.g., multiple sclerosis, cerebral palsy, epilepsy) Y  
N  
**(exclude if answer is YES)**
- 6) *“Have you ever been diagnosed with a psychiatric disorder?”*  
Y N
- 7) *“Have you ever received treatment for a psychiatric disorder?”*  
Y N

**if either 8 or 9 yes, fill out table**

Disorder Name	Age Diagnosed	Current status

**(Exclude if any psychotic, paranoid, or bipolar disorders, or current major depression)**

- 8) Have you ever been diagnosed with ADHD or ADD? Y  
N
- 9) *“Have you ever been diagnosed with alcohol or drug abuse/dependence?”* Y  
N  
**(exclude if yes)**
- 10) *“Have you ever been treated for alcohol or drug problems?”* Y  
N  
**(exclude if yes)**
- 11) *“Have you ever been hospitalized due to alcohol use?”* Y  
N  
**(exclude if yes)**
- 12) *“Have any of your immediate family members (e.g., mother, father, siblings) ever been diagnosed or treated for alcohol dependence?”* Y  
N



- 13) “Do you have a physical disability?” Y  
N  
**(exclude if necessary: if unable to do reaction time task)**
- 14) “Do you have any hearing problems?” Y  
N  
**(exclude if significant hearing loss)**
- 15) “Do you have a cardiac pacemaker?” Y  
N  
**(exclude if answer is YES)**
- 16) “Do you have Asthma” Y  
N  
[if YES then ask the following questions]
- a) “Have you had an emergency room visit related to asthma in the past year?” Y  
N  
**(exclude if answer is YES)**
- b) “Do you use your inhaler more frequently when drinking?” Y  
N  
**(exclude if answer is YES)**
- c) “Have you used oral steroid treatments for asthma in the past year?” Y  
N  
**(exclude if answer is YES)**
- IF** subject reports having asthma but did not say yes to a, b, or c.  
**AND** they can regularly tolerate 3-4 alcoholic drinks per occasion.  
**THEN** they can participate.
- 17) “Do you have any legal restrictions against your drinking (e.g. as a condition of probation or parole)?” Y  
N  
**(exclude if answer is YES)**
- If Female**, “Are you currently breastfeeding?” Y  
N  
**(exclude if answer is YES)**
- If Female**, “Are you currently nursing?” Y  
N  
**(exclude if answer is YES)**

If female: “During the laboratory session, if you agree to participate in the study, you will undergo a pregnancy test. You will need to produce a urine sample within a half hour of arriving at the laboratory or else you will not be able to participate. Okay?”

“Now I am going to ask you some questions about your drinking habits.”

### THE AUDIT

Questions	0	1	2	3	4	Score
1. <i>How often do you have one drink containing alcohol? By a drink we mean half an ounce of absolute alcohol (e.g., a 12 ounce can or glass of beer or cooler, a 5 ounce glass of wine, or a drink containing 1 shot of liquor).</i>	Never  <b>exclude</b>	Once a month or less  <b>exclude</b>	2-4 times a month	2-3 times a week	4 or more times a week	
2. <i>How many drinks containing alcohol do you have on a typical day when you are drinking?</i>	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
3. <i>How often do you have six or more drinks on one occasion?</i>	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. <i>How often during the last year have you found that you were not able to stop drinking once you had started?</i>	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. <i>How often during the last year have you failed to do what was normally expected from you because of drinking?</i>	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6. <i>How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?</i>	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. <i>How often during the last year have you had a feeling of guilt or remorse after drinking?</i>	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured as a result of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10. Has a relative or friend or doctor or other health worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
					<b>Total</b>	

**Exclude if total is 10 or higher**

**If unknown:** "How often do you have 2 or more drinks containing alcohol?" \_\_\_\_\_

(e.g., less than monthly, once a month, twice a month, three times a month or more)

**Person must consume 2 or more drinks at least twice monthly to be eligible.**

**CTS**

*“No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other or just have spats or fights because they are in a bad mood, are tired, or for some other reason. Couples also have many different ways of trying to settle their differences. I’m going to ask you about some thing that might happen when you have differences. Please tell me how many times you did each of these things in the past year, and how many times your partner did them in the past year.”*

	Number of times in past year
<i>Punched or hit your partner with something that could hurt</i>	
<i>Your partner did this to you</i>	
<i>Choked your partner</i>	
<i>Your partner did this to you</i>	
<i>Slammed your partner against a wall</i>	
<i>Your partner did this to you</i>	
<i>Beat up your partner</i>	
<i>Your partner did this to you</i>	
<i>Burned or scalded your partner on purpose</i>	
<i>Your partner did this to you</i>	
<i>Kicked your partner</i>	
<i>Your partner did this to you</i>	
<i>Used a knife or gun on your partner</i>	
<i>Your partner did this to your</i>	
<b>Total</b>	

**Exclude if two or greater.**

**If not eligible:** *“Thank you for your time. From the information you have provided, it appears that you and your partner are not eligible for this study. Please let me know if you have any questions.”*

**When you know the first partner is eligible:** *“Thank you for your time. That is all the questions I have for you at this time. I will contact your partner and will call you back to let you know whether you both are eligible for the study.”*

**When you know both partners are eligible:**

**For women:**

- *“You will have to undergo a pregnancy test if you decide to participate because the study may include alcohol consumption. In order to complete the pregnancy test you will have to produce a urine sample within the first ½ hour of arriving at the laboratory.”*

**For All Participants:**

- *“Please do not drink alcohol 24 hours before coming in. If you read a positive BrAC, we will not run you.”*
- *“Please refrain from recreational drugs from the time of this interview.”*
- *“Please, do not eat 4 hours prior to arriving at the laboratory.”*
- *“Food and water will be provided.”*
- *“Please bring a photo ID displaying your age. If you do not bring a picture ID, you will not be able to participate.”*
- *“Do you smoke?” (IF YES), “you cannot smoke during the experimental part of the study (about 1.5 to 2 hrs). After is fine.”*
- *“You and your partner must be able to get to the laboratory on your own.”*
- *“If you drink, you can have someone come and pick you up or we will provide a taxi for you to get home. If you walk to the building, you will have to arrange to have someone escort you back.”*
- *“We cannot tell you now whether you will drink or not.”*
- *“Finally, it is important to know that you and your partner may finish at different times. We have participants stay at the study location until they are sober. It is possible that one of you will consume alcohol while the other will not. This means that there can be a difference between study times of several hours. While it is okay for you or your partner to wait for the other, you will not be paid or receive credit for waiting. Also, you will not be able to see your partner while you wait if you chose to wait. If you plan on waiting, then we recommend bringing something to work on or to entertain yourself.”*
- Answer any questions the participant has.

*“Okay, you and your partner qualify for the study. Can I schedule you for an appointment to come to our laboratory?”*

- Settle on a day and time for them to come in (11:30 AM or later)

**Appendix B**

University of Nebraska – Lincoln Institutional Review Board Approval Letter



March 15, 2012

Laura Watkins  
 Department of Psychology  
 238 BURN, UNL, 68588-0808

David DiLillo  
 Department of Psychology  
 216 BURN, UNL, 68588-0808

IRB Number: 20120312404 FB  
 Project ID: 12404  
 Project Title: Effects of Alcohol Intoxication and Rumination on Lab-Based Partner Aggression

Dear Laura:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

You are authorized to implement this study as of the Date of Final Approval: 03/15/2012. This approval is Valid Until: 02/22/2013.

1. Approval of IRB project 12404 is contingent on the amendment of the alcohol consumption policy at the University of Nebraska-Lincoln to permit the consumption of alcohol for research purposes. Once the policy has been revised, please submit a change in protocol which includes the new policy.
2. The approved informed consent form has been uploaded to NUgrant (file with -Approved.pdf in the file name). Please use this form to distribute to participants. If you need to make changes to the informed consent form, please submit the revised form to the IRB for review and approval prior to using it.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

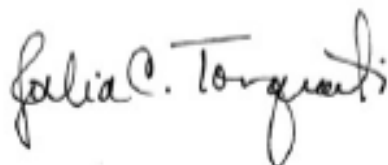
- \* Any serious event (including on-site and off-site adverse event, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subject or others, and was possibly related to the research procedures;
- \* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- \* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- \* Any breach in confidentiality or compromise in data privacy related to the subject or others; or

\* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

For projects which continue beyond one year from the starting date, the IRB will request continuing review and update of the research project. Your study will be due for continuing review as indicated above. The investigator must also advise the Board when this study is finished or discontinued by completing the enclosed Protocol Final Report form and returning it to the Institutional Review Board.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,



Julia Torquati, Ph.D.  
Chair for the IRB





**Appendix C**

Informed Consent Form

INFORMED CONSENT FORM  
**Alcohol, Emotional Processes, and Relationships**

***Purpose of the Research:***

You are invited to participate in a research study investigating how alcohol use, emotional processes, and normal genetic variation may play a role in relationships and reaction time. You must be a University of Nebraska student or the partner of a student in order to participate. You were invited to participate because you have been in a committed dating relationship for at least 4 months, are 21-years or older, and are a social drinker (drink two or more alcoholic drinks twice a month). For safety reasons, if you are less than six feet tall, you must be less than 250 pounds to participate; if you are over six feet tall, you must be less than 300 pounds to participate.

Some of the questions may ask about sensitive information. Anyone in this study can choose to stop at any time for any reason, opt-out of any portion of the study, or choose not to participate at all.

***Procedures:***

If you agree to participate, the experimental portion of the study will take about 1.5 to 2 hours to complete. However, if you are assigned to the alcohol condition, you must stay at the location of the study until you reach a BrAC of .03% and pass a field sobriety test. The average sobriety period will be approximately 4.5 hours, though this could be shorter or longer in some people. Therefore, for participants who consume alcohol, the total amount of study participation time adds up to approximately 6 to 6.5 hours. Participants must remain in the lab until two separate readings on the breathalyzer indicate a level of .03% or lower and they pass a field sobriety test. It is possible that you and your partner will not be assigned to the same condition (i.e., one of you may drink alcohol and the other may not drink alcohol). This could result in one of you completing the study several hours before the other.

The study will take place in the 501 Building. Today, you may participate in the following procedures described below.

**Screening Procedures**

First, you will be asked to blow into a breathalyzer in order to ensure sobriety. If you have a positive BrAC test, you will be given an opportunity to reschedule the study for another time. If you are a woman, you will be asked to complete a urine pregnancy test. If your test is positive, then you will not be able to participate in the rest of the study due to the harmful effects of alcohol consumption on fetuses. Also if you are a woman and are nursing, you will not be able to participate in the study.

Following the BrAC and pregnancy tests, you will be asked to review the answers of your phone screen. After this, you will be asked some questions about past potential head injuries. If you and your partner are eligible, you both will be asked to proceed to the next part of the study.

**Experimental Procedures**

First, you will be asked to complete a few questionnaires. These will ask questions about your demographics, relationship, childhood experiences, and your thoughts, emotions, and behaviors.

Next, you will be asked to rub a sterile swab on the inside of your mouth to collect cheek cells. Cheek cells contain DNA. We will test different parts of this DNA that are known to have some influence on how certain cells work in the brain. Comparing groups of people with different genotypes (genetic makeups) will help us learn whether genotypes play a role in certain types of behavior. Such differences are only apparent when studying large groups of people. These genotypes have not been shown to cause diseases or behavioral disorders, nor does an individual's genotype provide reliable information about that person's behavior. We will not share the results of your genetic tests with you. We will not use the DNA for any other purposes and we will not share the DNA with anyone who is not working on this study.

If you are in the alcohol condition you will be asked to drink the equivalent of three to four alcoholic drinks. You will be asked to think about a past conflict with your partner. You will also be asked to play a reaction time game against your partner. The game may involve listening to loud but not harmful blasts of white noise. You will also be asked to fill out a questionnaire about different relationship situations.

***Risks and/or Discomforts:***

It is possible that you might experience some discomfort (including feelings of anger and frustration) when answering questions about your relationship, when thinking about the recent conflict with your partner, or when playing the computer game against your partner. You may refuse to answer the questions or stop at any time without penalty and for any reason.

You might experience a slight irritation on the inside of your cheek where you rubbed the swab to collect cheek cells.

Small to moderate doses of alcohol consumption may sometimes be associated with nausea, vomiting, headache, dysphoria, and mildly disinhibited behavior. There are also safety risks associated with allowing an individual to leave a study in a state of intoxication. For these reasons, the following are required of participants who consent to the study. Specifically, if you consume alcohol, you agree to each of the following requirements:

- Stay at the location of the study until you reach a BrAC of .03% and pass a field sobriety test. You will not be allowed to leave until two separate readings on the breathalyzer indicate a level of .03% or lower and you pass a field sobriety test. Although you may not feel impaired, there is a slight risk of medical emergency or injury for participants who are above a .03%. Thus, it is crucial that you remain in the lab until your BrAC reaches .03%.
- Remain in a separate room from your partner until you are at a BrAC of .03% or lower.
- Once you are at a BrAC of .03% or lower, either have a friend pick you up from the study location or take a taxi that the study will provide.
- Refrain from consumption of alcohol or other drugs for 24 hours and to not operate dangerous equipment for 12 hours.

Despite all the precautions described above, there is still a small chance that you will have a negative physiological reaction following alcohol consumption. In the case of a non-emergency physiological reaction, you will be assisted in calling the University Health Center. If needed, you will be escorted to the campus Health Center. If the physiological reaction is more serious or urgent, medical services will be called using 911.

If you wish to stop your participation in the study at any time, you may do so without harming your relationship with the researcher or with the university. In the event of problems resulting from participation in the study, counseling and mental healthcare services are available at the UNL Psychological Consultation Center, (402) 472-2351, 325 Burnett Hall, or the University Counseling and Psychological Services, 15th & U Streets, (402) 472-7450. If you are not a UNL student, counseling and mental healthcare services are available at the UNL Psychological Consultation Center, (402) 472-2351, 325 Burnett Hall on a sliding fee scale.

***Benefits:***

There are no known direct benefits to study participants.

***Confidentiality:***

Any identifying information (e.g., names) obtained during this study will be protected and will not be disclosed unless required by law or regulation. The responses you provide will be identified only by a randomly assigned participant identification number, which will not be linked to your name or the data you provide. Direct threats of violence, whether directed at the investigators or to their partner, may be reported to the authorities. However, responses to hypothetical survey questions will not be recorded in an identifiable manner and will not be reported to authorities.

Any paper data will be stored in a locked cabinet in the principal investigator's office and will be kept for five years after the study is complete. Any computerized data that you provide will be stored without any identifying information on a password-protected computer. The DNA samples either will be completely used up during genetic testing, or they will be destroyed and discarded at the end of the study. DNA samples will be identified only with the study participant identification number (not names) and laboratory personnel will not have access to other identifiers. DNA samples will be stored in a freezer in a locked laboratory. Only the researchers listed at the bottom of this form and study personnel will have access to your data. The knowledge gained from this study may be published in scientific journals or presented at scientific meetings, but it will be reported only as aggregate data.

***Compensation:***

You will receive either study credit or money for participating in this project. If you receive study credit, you will receive 2 Experimatrix credits per hour for participating in this study. If you receive money, you will receive \$10 per hour. If you are excluded from the study after the screening procedures, you will receive 1 hour worth of credit (2 credits) or \$10. If you choose not to participate in this study, you should consult your instructor about alternate ways to earn extra credit. If you withdraw before completing all elements of the study, you will still receive full credit or compensation for your time.

***Opportunity to Ask Questions:***

You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study. You may contact the investigator, Laura Watkins at anytime (402- 937-0449) to ask research-related questions. You may also contact the University

of Nebraska – Lincoln Institutional Review Board at 402-472-6929 if you have any questions regarding your rights as a research participant.

***Freedom to Withdraw:***

Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers or the University of Nebraska-Lincoln, or in any other way receive a penalty or loss of benefits to which you are otherwise entitled.

***Consent, Right to Receive a Copy:***

You are voluntarily making a decision whether or not to participate in this research study. Your signature certifies that you have decided to participate having read and understood the information presented. You will be given a copy of this consent form to keep.

***Signature of Participant:***

\_\_\_\_\_  
*Name of Research Participant*

\_\_\_\_\_  
*Signature of Research Participant*

\_\_\_\_\_  
*Date*

***Signature of Person Obtaining Consent***

**In my judgment, the participant is voluntarily and knowingly giving informed consent to participate in this research study.**

\_\_\_\_\_  
*Signature of Person Obtaining Consent*

\_\_\_\_\_  
*Date*

***Names and Phone numbers of investigators***

Laura E. Watkins, M.A., Principal Investigator	(402) 937-0449
David DiLillo, Ph.D., Secondary Investigator	(402) 472-3297

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**Appendix D**

Debriefing Form

### **Alcohol, Emotional Processes, and Relationships Debriefing Form**

Thank you for participating in the Alcohol, Emotional Processes, and Relationships study!

The goal of this study was to examine the effects of alcohol consumption and emotion regulation strategies on your reactions in the computer game you played.

You either received an alcoholic beverage (approximately 3 to 4 mixed drinks at a bar) or a placebo beverage (the rim of the glass was sprayed with alcohol). We are interested in whether alcohol consumption affects one's responses during the computer game.

You also may have received instructions about how to think about the past conflict with your partner. We are interested in how different ways of thinking about the past conflict have an impact on one's emotions and reactions during the computer game.

Specifically, we are interested in the sound levels and sound duration you designated for your partner during the computer game. During the game, you were in fact playing a computer and *not* your partner. Also, your partner did not hear the noise blasts you designated and the noise blasts you heard were not from your partner. The sounds both you and your partner heard were part of the computer program.

Finally, because the study depends on people not knowing about the study prior to participating, we ask that you please refrain from discussing the study with others.

If you experience any distress after you leave the study, there are two mental health facilities you can contact: the UNL Psychological Consultation Center, 325 Burnett Hall, telephone (402) 472-2351, which offers affordable services based on a sliding fee scale; and the University Counseling and Psychological Services, 15th & U, telephone (402) 472-7450, which offers three free clinic visits to UNL students enrolled in more than seven credits.

If you have questions and/or concerns about this study, you may contact the principal investigator, Laura Watkins, at (402) 937-0449 or [watlaura@gmail.com](mailto:watlaura@gmail.com).

Thank you!