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Can College Students Use Emotion Regulation Strategies to Alter Intimate Partner Aggression-Risk Behaviors? An Examination Using I³ Theory

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Abstract

Objective: Drawing on Finkel and Eckhardt's I³ theory (Finkel & Eckhardt, 2013), this experimental study examined the effects of emotion regulatory efforts on aggressive verbalizations during anger arousal.

Methods: Participants were 236 male and female college students with and without a history of intimate partner aggression (IPA) perpetration. Participants were randomized to 1 of 3 emotion regulation strategy conditions: cognitive reappraisal, expressive suppression, or no instruction. They were trained to use these strategies in response to emotionally evocative dating scenarios presented via the Articulated Thoughts in Simulated Situations (ATSS) paradigm. Participants' aggressive verbalizations in response to these scenarios were coded.

Results: A significant interaction emerged such that IPA perpetrators trained to use cognitive reappraisal articulated fewer aggressive verbalizations than did non-IPA perpetrators; IPA perpetrators instructed to use expressive suppression tended to articulate more aggressive verbalizations than did non-IPA perpetrators.

Conclusions: Findings lend support to some of the major tenets of the I³ model, and suggest that emotion regulation strategies may be important treatment targets for IPA perpetration.

Keywords: anger arousal, cognitive reappraisal, emotion regulation, expressive suppression, I³ theory, intimate partner aggression, intimate partner violence, violence

Intimate partner aggression (IPA) is a serious public health concern that occurs with alarming frequency (Shorey, Cornelius, & Bell, 2008; Tjaden & Thoennes, 2000), inflicts both physical and psychological harm to victims (Amar & Gennaro, 2005; Kaura & Lohman, 2007), and results in billions of dollars per year in medical expenses and loss of productivity (Centers for Disease Control and Prevention, 2003). IPA among college students is particularly important, as IPA is much more common than once believed among this population (Makepeace, 1981; Straus, 2004). Further, both men and women college students engage in IPA. Data show that approximately 28% of college women and 21% of college men have physically victimized their dating partner within the past year (Desmarais, Reeves, Nicholls, Telford, & Fiebert, 2012). Because IPA perpetration among college students occurs fre-

quently and may serve as a gateway for future and more severe IPA (Roscoe & Banaske, 1985), the identification of risk factors for IPA perpetration among this sample is a crucial step in the development of interventions to reduce and prevent future partner aggression. The purpose of this study is to examine, experimentally, emotion regulation processes that may serve to increase or decrease IPA-risk behaviors in response to anger-provoking situations.

Despite the scope and seriousness of the problem, efforts to reduce IPA have been less effective than desired (Babcock, Green, & Robie, 2004; Stover, Meadows, & Kaufman, 2009). For example, the most prevalent interventions used within the criminal justice system focus on culturally bound notions of gender inequality as the principal contributor to IPA (Pence & Paymar, 1993). This approach has been criticized for, among

other things, failing to reduce recidivism (Dutton & Corvo, 2006). Although social and cultural factors are undoubtedly important, other forces that may be more easily amenable to change through psychotherapeutic intervention should be considered. By and large, other programs have been effective in changing aggression-supportive attitudes, yet not subsequent behaviors (see review by Jackson et al., 2003). Thus, researchers have argued for the examination of person-level variables that unfold under conditions more proximal to IPA occurrence (Bogat, Levendosky, & von Eye, 2005) and may hold promise as the basis for intervention to reduce future partner aggression.

Several etiological models highlight the role of proximal antecedents that may contribute to IPA (e.g., Bell & Naugle, 2008; Finkel & Eckhardt, 2013; Stith, Smith, Penn, Ward, & Tritt, 2004). One such model is Finkel and colleagues' I³ theory (Finkel & Eckhardt, 2013; Slotter & Finkel, 2011). According to this theory, IPA is the product of three interactive processes: *instigation*, which refers to situational experiences in which a person is provoked with an instigating trigger (e.g., feelings of jealousy when one's partner flirts with another person) that results in an urge to aggress; *impellance*, which refers to dispositional or situational factors that contribute to a person experiencing strong aggressive urges following instigation (e.g., high aggressivity, childhood abuse history); and *inhibition*, which refers to dispositional or situational factors that contribute to a person being able to override aggressive urges following instigation (e.g., dispositional self-control, self-regulatory depletion). I³ theory postulates that partner aggression is most likely to occur after instigation, when impelling forces are strong and inhibiting forces weak, whereas perpetration is least likely to occur when inhibition is strongest and outweighs the urge to aggress (Finkel & Eckhardt, 2013).

Emotion Regulation and IPA

Within the I³ model, one situational variable with relevance to IPA is emotion regulation, defined as "the [process] by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998a, p. 275). Although people generally develop stable pat-

terns of emotion regulation responses, of which they may have little awareness, individuals are also capable of consciously engaging in various emotion regulation strategies in response to the demands of a particular situation (Gross & Thompson, 2007). Several studies have linked the dysregulation of emotion to impulsive-type aggression (Davidson, Putnam, & Larson, 2000; Strüber, Lück, & Roth, 2008), similar to that occurring in IPA, as well as IPA perpetration specifically (McNulty & Hellmuth, 2008). Findings that IPA perpetrators experience difficulties with emotion regulation (Gratz, Paulson, Jakupcak, & Tull, 2009; Shorey, Brasfield, Febres, & Stuart, 2011a; Stuart et al., 2006) suggest that regulation of negative affect in response to instigating triggers may be an important factor contributing to IPA. For example, problems controlling emotional impulses and believing one has limited approaches to managing negative affect are related to increased IPA perpetration by men (Gratz & Roemer, 2004; Shorey et al., 2011a; Tager, Good, & Brammer, 2010). Similarly, in a sample of newlywed couples, McNulty and Hellmuth (2008) found that husbands' variability in past-week negative affect was related to increased IPA perpetration by the husband. Women in treatment for domestic violence often cite uncontrolled negative emotions generated during couple conflicts as an immediate precipitant to their violent acts (Stuart et al., 2006). Together, these findings suggest that the inability to regulate negative emotions plays a role in promoting partner aggression. In fact, some authors speculate that IPA perpetrators use aggression as an ineffective way of regulating negative emotions (Gratz et al., 2009; Shorey et al., 2011a). If this is the case, then interventions designed to help individuals manage negative affect in the context of couple conflict may reduce IPA occurrence.

Gross (1998a, 1998b, 2002) has conducted seminal research on two common emotion regulation strategies, cognitive reappraisal and expressive suppression, that may function to increase or minimize IPA risk. These strategies are employed at different points in the emotion generative process (Gross, 2001). Cognitive reappraisal is viewed as an antecedent-focused strategy because it occurs before the onset of an emotion, and thus alters the emotional trajectory (Gross, 1998b; Gross, 2002). For example, a man might

engage in reappraisal by thinking about how trustworthy and reliable his significant other is before asking why she recently had dinner with an ex-boyfriend. Conversely, expressive suppression occurs later in the emotion generative process, once emotional responses have been fully activated, and therefore is viewed as a response-focused strategy (Gross, 1998b; Gross, 2002). A wife who keeps a poker face while her husband describes plans to go on a “guys’ trip” with friends during her birthday would be using suppression. Both of the strategies can influence an individual’s emotional and behavioral responding, leading to very different consequences.

There is an abundance of empirical support showing that cognitive reappraisal is an adaptive emotion regulation strategy that leads to positive social outcomes, whereas expressive suppression is often problematic and associated with a variety of negative social consequences (Gross, 2002; Robertson, Daffern, & Bucks, 2012). As an antecedent-focused strategy, cognitive reappraisal has the goal of altering how a person views a situation to reduce its emotional impact (Gross, 2002). When confronted with an instigating factor, such as verbal conflict with a romantic partner, reappraising one’s cognitions to perceive a situation in a less negative way represents an inhibiting factor within the I^3 model that may neutralize urges to physically aggress. Consistent with this possibility, cognitive reappraisal is associated with experiencing and expressing less negative emotion (Gross & John, 2003) and less aggressivity as measured by reductions in the desire to aggress out of revenge (Barlett & Anderson, 2011). By contrast, suppression involves effortful attempts to conceal emotional responses as they arise (Gross, 1998b), imposing increased cognitive demands that may interfere with rapid decision making needed to respond effectively to negative social interactions, including verbal conflict (Robertson, Daffern, & Bucks, 2012). Within the I^3 model, suppression can be viewed as an impellance factor with the potential to exacerbate urges to aggress following instigation. Consistent with this possibility, suppression has been linked to negative interpersonal consequences, including decreased emotional closeness with others, less social support (Gross & John, 2003), and increased general aggression (Nagtegaal, Raasin, & Muris, 2006). Thus, although individuals may initially

use suppression to try to inhibit aggressive urges, functionally, suppression may ultimately impel individuals to aggress.

If, as suggested here, cognitive reappraisal and expressive suppression play important but differing roles in the emergence of IPA, then their impact might be clearly seen in the aggressive verbalizations that arise from triggers for couple conflict. An overwhelming majority of IPA incidents are precipitated by verbal conflict (Greenfield et al., 1998), while self-reported verbal aggression arising from such conflicts is an important longitudinal predictor of IPA perpetration for both men and women (Schumacher & Leonard, 2005). Moreover, in lab studies using the Articulated Thoughts in Simulated Situations (ATSS; Davison, Robins, & Johnson, 1983) paradigm to expose participants to emotionally evocative scenarios involving intimate partners, Eckhardt and colleagues (1998, 2002) found that aggressive verbalizations predict IPA, such that violent men in dating and marital relationships articulate more aggressive verbalizations during anger arousal compared to nonviolent men (Barbour, Eckhardt, Davison, & Kassonov, 1998; Eckhardt, Jamison, & Watts, 2002). These findings suggest that skills-based interventions designed to diffuse affectively driven aggressive verbalizations in the face of instigation may hold promise for reducing IPA perpetration. Although researchers have suggested that helping individuals regulate negative emotions is a key factor in reducing IPA (Eckhardt, 2007; McNulty & Hellmuth, 2008), we are unaware of any experimental studies that test this proposition.

Present Study

A major goal of the present study was to examine whether the emotion regulatory strategies of cognitive reappraisal and expressive suppression produce expected changes in IPA-relevant aggressive verbalizations. Specifically, we expected that the use of cognitive reappraisal would decrease—and expressive suppression would increase—aggressive verbalizations in response to anger-arousing dating vignettes. A further question of interest was whether emotion regulation strategy use would differentially impact participants with and without a history of IPA perpetration, viewed here as an impellance factor because of the strong aggressive tenden-

cies shown through their past actions. If aggressive verbalizations can be reduced through skills training with these partner-aggressive individuals, then such findings might open up new avenues for interventions to prevent IPA. Our specific hypotheses were as follows:

- 1) Compared with non-IPA perpetrators, IPA perpetrators will express more aggressive verbalizations during anger arousal across emotional regulation conditions.
- 2) Compared with individuals instructed to use cognitive reappraisal, those using expressive suppression will express more aggressive verbalizations during anger arousal.
- 3) Emotion regulation strategy and IPA perpetration history will interact such that IPA perpetrators within the uninstructed and suppression conditions will express a greater number of aggressive verbalizations during anger arousal compared to non-IPA perpetrators, whereas no differences will emerge between IPA perpetrators and non-IPA perpetrators within the cognitive reappraisal condition.

Method

Participants

Participants were 236 undergraduate students (138 women, 98 men) from a Midwestern university who were involved in a committed heterosexual dating relationship (mean length of relationship = 18.91 months, $SD = 21.64$). Participants were recruited through flyers posted throughout the college campus, and Experimentix, an online tool for recruiting students enrolled in psychology courses. Students were recruited for "a research study investigating the cognitive and emotional aspects of interpersonal functioning." The majority of participants were European American (88.6%), followed by Hispanic (3.8%), Mixed/Biracial (3.4%), Asian/Pacific Islander (3.0%), African American (2.5%), and Other (2.5%). The mean age of participants was 19.88 ($SD = 2.75$). Consistent with past research (Eckhardt, 2007; Eckhardt & Jamison, 2002; Testa, Hoffman, & Leonard, 2011), participants were classified into the IPA group if they reported engaging in one or more acts of IPA perpetration in the past six months, or the non-IPA group if they reported no instances of IPA perpetration. This

study was approved by the University's Institutional Review Board. All participants provided written informed consent before participation.

Measures

Articulated Thoughts in Simulated Situations (ATSS) paradigm (Davison et al., 1983). Mirroring procedures used by Eckhardt and colleagues (2002, 2007, 2008), the ATSS paradigm was used as an instigator to arouse anger and assess participants' aggressive verbalizations in response to emotionally evocative scenarios involving dating partners. The ATSS scenarios were presented to the participants via MediaLab software. Participants were instructed to listen to three audio scenarios (neutral, jealousy, and overheard conversation), each portraying a college-relevant dating scenario, and to imagine that they were involved in each of these scenarios. Participants were asked to talk out loud about their thoughts and feelings in response to the scenarios when prompted to do so by a tone. The two anger-arousing scenarios involved themes of jealousy, abandonment, and ridicule. The jealousy scenario portrayed a conversation in which the participants' partner was flirting with someone of the opposite sex, while the overheard conversation scenario described a situation in which the participants' partner complained to a same-sex friend about the participant. Each scenario was divided into eight 15–25-s segments of simulated interaction separated by 30-s pauses during which participants verbally expressed their thoughts and feelings. Participants first completed the neutral (non-anger inducing) scenario to familiarize themselves with the procedures for responding. The order in which the jealousy and overheard conversation scenarios were presented was counterbalanced.

Articulations recorded through MediaLab software were transcribed and coded using procedures developed by Eckhardt and colleagues (e.g., Eckhardt et al., 2002; Eckhardt, 2007; Eckhardt & Crane, 2008) to quantify the frequency of verbal aggression (insulting or demeaning a character in the scenario), physical aggression (desires to hit or shove, or any reference to a physical altercation), and belligerence (attempts to initiate an altercation by provoking, threatening, or challenging a character) verbalized by participants. Six advanced undergraduate research assistants who were blinded to the exact nature

of the study completed 25 hours of training and served as coders. Consistent with Eckhardt et al. (2002) and Eckhardt (2007), aggressive verbalizations served as the primary dependent variable measuring IPA-risk behaviors, and reflected an aggregate variable representing insults, threats of physical aggression, and belligerent statements. To measure interrater reliability, 15% of the independently coded data were randomly selected to be coded by an additional coder. An intraclass correlation calculated for aggressive verbalizations from a two-way mixed model suggested very high reliability ($r_{1C} = .95, p < .001$).

Mood Rating Scale. Participants completed the Mood Rating Scale to assess the effects of the ATSS task on their self-reported mood states. The Mood Rating Scale is an abridged version of the Positive and Negative Affective Schedule-Expanded Form (PANAS; Watson & Clark, 1992) consisting of 15 items that describe different feelings and emotions (i.e., upset, calm, anxious, creative, disgusted). Participants rated the extent to which they were experiencing each emotion at the present moment, on a 5-point scale, from 1 (*very slightly or not at all*) to 5 (*extremely*). Consistent with Eckhardt and Jamison (2002) and Eckhardt and colleagues (2002), five adjectives, "angry," "hostile," "irritable," "disgusted," and "annoyed," were selected and averaged to produce an anger summary score. These adjectives have been shown to form a distinguishable anger factor when negative mood descriptors are factor analyzed (e.g., Watson & Clark, 1992). Coefficient alpha was .93 for this sample.

Revised Conflict Tactics Scales - Physical Assault subscale (CTS2; Straus, Hamby, & Warren, 2003). The CTS2 physical assault subscale contains 12 self-report items describing various acts of physical aggression that can occur between partners (e.g., "I pushed or shoved my partner"). Participants indicated the frequency with which they perpetrated each behavior against an intimate partner in the past six months, using a scale ranging from 0 (*never*) to 6 (*more than 20 times*). Responses for each item were totaled to create a sum score with higher scores representing more partner aggression. Participants with a sum score of 0 were categorized in the non-IPA group, whereas those with a sum greater than 0 were categorized in the IPA group. The CTS2 is the most widely used measure of IPA (Langhinrichsen-Rohling, 2005) and has demonstrated adequate internal consistency reliability and good

construct validity (Newton, Connelly, & Landsverk, 2001; Straus et al., 1996). Coefficient alpha was .85 for this sample.

Emotion Regulation Manipulation

Participants were randomized to one of three emotion regulation strategy conditions: cognitive reappraisal, expressive suppression, or no instruction. Participants assigned to the "no instruction" condition received no additional instructions prior to listening to the ATSS anger-arousing scenarios. Based on the work of Gross (1998b), participants in the 'cognitive reappraisal' and 'expressive suppression' conditions received the following instructions before listening to the ATSS anger-arousing scenarios.

Participants assigned to cognitively reappraise were told the following:

We will now have you listen to two more audio-recorded scenarios. This time, we would like you to think of the scenarios in a less negative way. Specifically, we ask that you try to think of the scenarios objectively and try to think of it in a way that is not upsetting or frustrating to you. Again, please try to think of it in a less negative way.

Participants assigned to suppress were told the following:

We will now have you listen to two more audio-recorded scenarios. This time, if you have feelings as you listen to the scenarios, please try your best not to let those feelings show. In other words, as you listen to the scenarios, try to behave in such a way that a person watching you would not know that you were feeling anything. Listen to the scenarios carefully, but please try to behave so that someone watching you would not know that you are feeling anything at all.

Participants were then provided with two examples of how to engage in cognitive reappraisal or suppression and asked to generate one example on their own to demonstrate they understood the emotion regulation strategy assigned to them.

Procedures

Following written informed consent, participants completed a battery of computerized self-report measures in a private room, including the CTS2. Participants then completed the

Mood Rating Scale and were introduced to the ATSS procedure through recorded instructions. They then completed the neutral ATSS scenario followed by another Mood Rating Scale. Afterward, participants either received brief instructional interventions to use cognitive reappraisal or expressive suppression in response to the ATSS anger-arousing vignettes involving their dating partners, or received no instructions on how to regulate their emotions. Participants then listened and responded to the remaining two ATSS anger-arousing scenarios: jealousy and overheard conversation. On completion of the 2nd and 3rd ATSS scenarios, participants filled out a final Mood Rating Scale. To counteract any residual feelings of frustration and/or distress, participants then watched a short comedic clip of a Jim Gaffigan stand-up routine on the topic of being lazy for no reason. Lastly, participants were verbally debriefed about the purposes of the study.

Data Analysis Procedures

Initial inspection of the distribution of aggressive verbalizations revealed a non-normal distribution. Because the standard analysis of variance (ANOVA) model assumes normal distribution of the residuals, alternative statistical models that were more appropriate for these data were examined. Four generalized linear models for modeling non-normal count data were examined, including Poisson, zero-inflated Poisson, negative binomial, and zero-inflated negative binomial models, each of which includes a log link for the prediction of the count outcome. The Poisson model assumes that the model-predicted mean of aggressive verbalizations is equal to its residual variance; the negative binomial model does not make this assumption, allowing the residual variance to exceed the mean (i.e., overdispersion) if necessary. The zero-inflated versions of each model also include a separate model to predict the probability of excess zeros using a logit link and a binomial residual distribution.

To determine the best model for describing the distribution of aggressive verbalizations, each model was estimated using maximum likelihood within SAS PROC GENMOD (with a logit link for zero-inflated models), and included the main effects of gender, aggressive verbalizations

articulated during the neutral scenario, IPA status, emotion regulation condition, and all interactions. The fit of the Poisson and negative binomial models were initially compared with likelihood ratio tests. The negative binomial model was found to fit significantly better than the Poisson model, $-2\Delta LL(1) = 290.56, p < .0001$. Then, Akaike Information Criteria (AIC) and Bayesian Information Criteria (BIC) values were examined to compare the fit of the negative binomial model (AIC = 846.96; BIC = 922.11) to the fit of the zero-inflated Poisson (AIC = 978.05; BIC = 1053.20) and zero-inflated negative binomial (AIC = 848.96; BIC = 927.53) models. Given that smaller AIC/BIC values indicate better fit, these results indicated that a zero-inflation factor was not necessary to include. Thus, a negative binomial regression model was estimated to examine study hypotheses.

Results

As noted, the final sample used in analyses was $n = 236$. This sample excluded data from four participants, two a result of participants not speaking English fluently and two a result of experimenter error. No differences were found in aggressive verbalizations articulated during the two ATSS anger scenarios (jealousy and overheard), $z = -1.70, p = .09$, using a Wilcoxon paired signed-rank test to account for the non-normal distribution of aggressive verbalizations. Therefore, both anger scenarios were combined and examined as a single anger scenario score.

IPA Perpetration

A total of 68 (28.81%) participants (45 women, 23 men) endorsed one or more behaviors on the CTS2 and thus were classified as having a history of IPA perpetration. Of the participants reporting IPA perpetration, the majority (97.87%) reported committing "minor" acts of physical aggression, including hitting, slapping, and kicking. Additionally, the majority of IPA perpetrators reported engaging in 1 to 2 acts of IPA (58.8%), whereas 16.2% reported 3 to 4 acts, 7.4% reported 5 to 6 acts, 2.9% reported 8 to 9 acts, 5.9% reported 10 to 11 acts, and 9% reported 12 or more acts.

Gender Differences

Consistent with a prior study that used the ATSS paradigm to examine aggression among men and women (Eckhardt & Crane, 2008), results did not reveal a significant main effect for gender, $\chi^2(1) = .68, p = .41$, nor interactive effects between gender and IPA status, $\chi^2(1) = .84, p = .36$, gender and emotion regulation condition, $\chi^2(2) = 2.97, p = .23$, or gender, IPA status, and emotion regulation condition, $\chi^2(2) = .95, p = .62$. Therefore, data for men and women were examined collectively; however, a main effect of gender was included as a control when examining study hypotheses to reduce any potential biases (however small) within the analyses.

Anger Arousal Manipulation Check

To assess whether participants experienced increased anger by the ATSS procedure, differences in self-reported anger (i.e., a summary score calculated from the Mood Rating Scale) across the four time conditions (pre-ATSS, post-neutral, post-anger after each scenario) were examined as a function of IPA status (IPA, no IPA) and emotional regulation condition (uninstructed, cognitive reappraisal, suppression). Given its positive skewness, a lognormal residual distribution was used for the anger outcome rather than a normal distribution. Condition means are shown in Table 1.

There was a significant increase in anger ratings across the time, $F(3, 218) = 85.60, p < .0001$, indicating that participants experienced increased anger arousal in response to the ATSS. Anger ratings across ATSS procedure differed significantly by IPA status, $F(1, 218) = 10.25, p = .002$, such that individuals with a history of IPA perpetration reported higher anger ratings on average relative to individuals without a history of IPA perpetration. However, anger ratings did not differ significantly by emotion regulation condition, $F(2, 218) = 1.17, p = .31$. Follow-up analyses indicated a difference in anger ratings before and after the ATSS anger arousal task was completed, $t(218) = 13.04, p < .0001$. No differences in anger ratings were found after completion of the ATSS anger arousal task between the uninstructed and cognitive reappraisal conditions, $t(218) = -.15, p = .88$, the uninstructed and suppression conditions, $t(218) = .78, p = .44$, and the cognitive reappraisal and suppression conditions, $t(218) = .93, p = .35$.

Table 1. Ratings of Angry Mood During Articulated Thoughts in Simulated Situations (ATSS) by IPA Group

Group	ATSS scenario							
	Pre-ATSS		Post-Neutral		Post-Anger 1		Post-Anger 2	
	M	SD	M	SD	M	SD	M	SD
IPA	7.21	3.24	8.19	4.07	11.85	5.68	12.78	5.61
No-IPA	6.19	1.90	6.74	2.38	10.14	5.01	10.54	5.32

IPA = intimate partner aggression

No interactions were found between time and IPA status, $F(3, 218) = .87, p = .46$, time and emotion regulation condition, $F(6, 218) = 1.01, p = .42$, and time, IPA status, and emotion regulation condition, $F(6, 217) = .11, p = .99$. Thus, although the ATSS manipulation did appear to induce differences in self-reported anger, these differences did not depend on IPA status or emotion regulation condition.

Aggressive Verbalizations

Descriptive data of participants' aggressive verbalizations per condition and group are presented in Table 2. As a measure of effect size ($r = .36$), we obtained the correlation between the model predicted and actual outcomes. Both gender and aggressive verbalizations articulated during the neutral scenario were included as a main effect. However, neither gender, $\chi^2(1) = .02, p = .89$, nor neutral scenario aggressive verbalizations, $\chi^2(1) = 1.62, p = .20$, had significant main effects. In addition, there was no significant marginal main effect for IPA status (Hypothesis 1), $\chi^2(1) = 1.99, p = .16$, indicating that, on average, IPA perpetrators did not express more aggressive verbalizations during anger arousal compared to non-IPA perpetrators. However, there was a significant marginal main effect for emotion regulation condition (Hypothesis 2), $\chi^2(2) = 39.57, p < .0001$, with fewer aggressive verbalizations articulated on average in the cognitive reappraisal condition than in the uninstructed, $\chi^2 = 12.22, p < .001$, and expressive suppression conditions, $\chi^2 = 10.32, p < .001$. No differences were found between the uninstructed and expressive

Table 2. Mean Number of Aggressive Verbalizations as a Function of IPA Status and Emotion Regulation Strategy Use

Group	ATSS anger scenario		
	M	SD	95% CI
No IPA			
Uninstructed (<i>n</i> = 54)	2.69	4.28	1.52, 3.85
Cognitive reappraisal (<i>n</i> = 55)	0.89	1.92	0.37, 1.41
Suppression (<i>n</i> = 55)	2.33	3.28	1.44, 3.21
IPA			
Uninstructed (<i>n</i> = 22)	3.18	2.82	1.93, 4.43
Cognitive reappraisal (<i>n</i> = 20)	0.15	0.36	-0.02, 0.32
Suppression (<i>n</i> = 24)	4.46	5.27	2.23, 6.68

ATSS = Articulated Thoughts in Simulated Situations;
 IPA = intimate partner aggression;
 ER = emotion regulation condition

suppression conditions, $\chi^2 = .09, p = .77$. Finally, as shown in Figure 1, there was a significant IPA Status \times Emotion Regulation condition interaction (Hypothesis 3), $\chi^2(2) = 12.26, p < .002$.

Simple effects were examined to describe the interaction, first with respect to IPA differences by emotion regulation condition and then condition differences by IPA status. Within the uninstructed condition, IPA perpetrators and non-IPA perpetrators did not differ in the number of aggressive verbalizations articulated during an-

ger arousal, $\chi^2 = .14, p < .71$. Most importantly, within the cognitive reappraisal condition, IPA perpetrators articulated fewer aggressive verbalizations during anger arousal than non-IPA perpetrators, $\chi^2 = 7.44, p < .01$. Also, within the expressive suppression condition, IPA perpetrators tended to articulate more aggressive verbalizations during anger arousal compared to non-IPA perpetrators, $\chi^2 = 2.81, p < .09$, although this fell short of the traditional .05 significance level. Finally, in considering differences across emotion regulation conditions, fewer aggressive verbalizations were articulated in the cognitive reappraisal condition compared to the uninstructed condition for IPA perpetrators, $\chi^2 = 18.15, p < .0001$, and non-IPA perpetrators, $\chi^2 = 6.68, p < .01$. Additionally, fewer aggressive verbalizations were articulated in the cognitive reappraisal condition relative to the suppression condition for IPA perpetrators, $\chi^2 = 18.15, p < .0001$, and non-IPA perpetrators, $\chi^2 = 10.25, p < .002$. Finally, there were no differences in articulated aggressive verbalizations between the uninstructed and suppression conditions for IPA perpetrators, $\chi^2 = .77, p = .38$, and non-IPA perpetrators, $\chi^2 = .79, p = .37$.

Finally, additional negative binomial model analyses were conducted to test whether greater IPA total scores on the CTS2 had an effect on aggressive verbalizations beyond whether or not an individual reported IPA. Results indicated

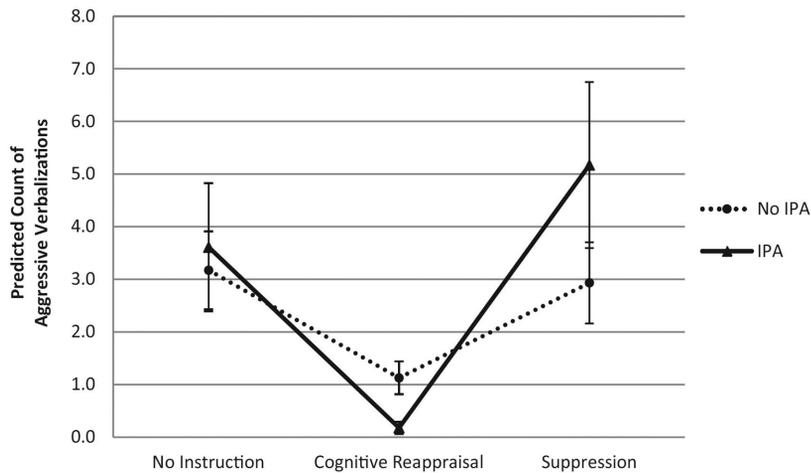


Figure 1. Negative binomial predicted mean aggressive verbalizations articulated during anger scenarios as a function of intimate partner aggression status and emotion regulation condition. Figure includes standard error bars.

no significant marginal main effect for IPA total score, $\chi^2(1) = 2.37, p = .12$, and no significant interaction between IPA total score and emotion regulation condition, $\chi^2(2) = 2.73, p = .26$.

Discussion

The present study used the I³ model as a framework to examine the impact of two emotion regulation strategies on aggressive verbalizations during anger arousal among participants with and without a history of IPA perpetration. In general, IPA history alone did not predict aggressive verbalizations; however, IPA history and emotion regulation strategies interacted in predicted ways to impact the expression of aggression during anger arousal. In particular, compared with other participants, those with a history of IPA perpetration who were instructed to use cognitive reappraisal displayed fewer aggressive verbalizations during anger-provoking situations. Conversely, IPA perpetrators who engaged in expressive suppression displayed more aggressive verbalizations in response to the anger-provoking scenarios than did IPA perpetrators and non-IPA perpetrators utilizing cognitive reappraisal. Additionally, when using suppression, there was a trend (albeit nonsignificant) for IPA perpetrators to exhibit more aggressive verbalizations than non-IPA perpetrators. The theoretical and clinical implications of these findings, as well as directions for further research, are discussed below.

The I³ model holds that instigating triggers serve as preconditions that set the stage for impelling and inhibiting forces to influence the emergence of IPA. An instigating trigger was introduced in the present study through the ATSS paradigm, designed to mirror real-world circumstances in which one partner is provoked by a social interaction with the other partner. As intended, these procedures triggered increased self-reported angry mood during anger arousal compared to the neutral scenario. IPA history alone was not associated with increased aggressive verbalizations during anger arousal. This finding is consistent with others (e.g., Eckhardt, 2007) but differs from some work linking IPA history to greater aggressive verbalizations during anger arousal among college students (e.g., Eckhardt et al., 2002). This discrepancy may be

attributable to a shorter time frame for IPA perpetration used in the present study (six months vs. past-year). These mixed findings suggest that further study is needed to clarify whether IPA history alone is sufficient to compel individuals to generate aggressive verbalizations following instigation.

IPA history did, however, play a key role in interacting with emotion regulation strategies to predict aggressive verbalizations following provocation. When participants received brief instructions to reframe their thoughts, IPA perpetrators articulated fewer aggressive verbalizations in response to anger-provoking vignettes. Thus, it appears that cognitive reappraisal enabled IPA perpetrators to alter their usual response patterns by enacting an antecedent-focused strategy to change the meaning of the instigating trigger. These results suggest that training in cognitive reappraisal may facilitate coping with conflict among intimate partners in a way that does not escalate to IPA. This possibility is consistent with the more general findings showing that cognitive reappraisal facilitates positive relationship functioning in the form of healthy sharing of emotions (Gross & John, 2003) and can reduce trait vengeance—a proxy for general aggression (Barlett & Anderson, 2011).

In contrast to the findings for cognitive reappraisal, we expected that IPA perpetrators who actively concealed their emotions through suppression would articulate more aggressive urges than non-IPA perpetrators. Although our findings trended in this direction, the results fell just shy of statistical significance. Our ability to find the predicted effect may have been hindered by the ATSS task, which required participants to express their thoughts and feelings at set intervals, thereby interrupting the continuous use of suppression and potentially freeing cognitive resources for use in managing aggressive impulses. Future work is needed to examine whether the *continuous* use of suppression contributes to IPA following anger-provocation. Such findings would support others showing that suppression interferes with dyadic communication (Butler et al., 2003) and contributes to general aggression (e.g., Tull, Jakupcak, Paulson, & Gratz, 2007).

Although not a comprehensive test of the I³ model, an important goal of this study was to operationalize key aspects of the model so as to

generate hypotheses allowing us to empirically examine parts of the theory. The results of this effort lend support to some of the major tenets of the I³ model in that, following instigation, compared with cognitive reappraisal (a strong inhibitor), expressive suppression (a strong impellance) resulted in greater partner-relevant aggressive verbalizations. Although these findings are in line with the I³ theory, broader support for the theory must come from additional studies using various constructs from each component of the model and operationalizing those constructs in different ways. For example, participants could be assigned to experience instigating triggers such as direct criticism from a partner or that elicit other emotions besides anger (e.g., jealousy; Dutton, van Ginkel, & Landolt, 1996). Manipulation of these events could be part of larger studies examining three-way interactions between the instigating, impelling, and inhibiting factors posited by the I³ model. Future work should also examine the role of emotion regulation processes in light of dispositional variables that predict IPA (e.g., aggressiveness; Schumacher, Feldbau-Kohn, Slep, & Heyman, 2001) or altered physiological states (e.g., alcohol intoxication) that have been linked to aggression.

Given that the proximal outcome presumed to be impacted by emotion regulatory efforts is mood state (Gross, 1998a; Gross, 2002), it is curious that we did not find significant differences post-ATSS in self-reported anger between individuals instructed to use cognitive reappraisal and expressive suppression. However, this finding corroborates several others showing no association between IPA status and changes in the intensity of angry feelings experienced in the moment (Babcock, Green, Webb, & Yerington, 2005; Barbour et al., 1998; Eckhardt et al., 2002; Eckhardt, 2007). In part, these findings may result from specific problems that IPA perpetrators have with emotional clarity and awareness (Shorey et al., 2011), which could interfere with accurate self-report of these experiences. Alternatively, it is possible that the emotion regulation strategies used here impacted emotions relevant to IPA perpetration that were not measured in this study. For example, jealousy, which can be an emotional trigger for IPA (Babcock, Costa, Green, & Eckhardt, 2004), may have been reduced through cognitive reappraisal, leading to less aggressive responding. Finally, prior

work linking cognitive reappraisal and expressive suppression to differing emotional experiences has used impersonal provocations such as film clips (e.g., Gross, 1998b). Here, we used a very personal, relationship-relevant instigation (e.g., threat of infidelity), which may have made it especially difficult to reduce negative affect through brief instructions to cognitively reappraise. Consistent with this possibility, Richards and colleagues (2003) found that, following a conflict discussion, partners' negative emotional experiences were not impacted by instructions to reappraise or suppress. Thus, it appears that brief instructions to cognitively reappraise may be insufficient to reduce negative affect resulting from personally sensitive provocations.

Limitations and Research Implications

Limitations of the present study suggest additional directions for work in this area. First, like many studies with college students, the present sample was limited in demographic diversity, with the majority of participants being European American and all being involved in heterosexual relationships. Future research should examine these processes within more ethnically diverse samples and individuals in same-sex relationships, populations that also experience high rates of IPA (Caetano, Cunradi, Schafer, & Clark, 2000; Tjaden & Thoennes, 2000; Tjaden, Thoennes, Allison, 1999). Also, this study relied on the participants' own admission of IPA perpetration; we did not have access to reports from both partners. Therefore, it is possible that as a result of underreporting some participants in the non-IPA group may actually have been perpetrators. Future studies should obtain both participants' and partner's reports to minimize this possibility. Additionally, IPA history was viewed as an impellance factor in this study, and although it is an important personal history variable, it could be related to a range of dispositional or contextual variables that serve as more proximal impelling forces. Further, most participants in the IPA group reported engaging in relatively minor acts of partner aggression. Although "common couple violence" is the most prevalent form of IPA (Cunradi, Bersamin, & Ames, 2009; Johnson, 1995) and should be taken seriously, it is unclear whether the processes seen here apply to

perpetrators of more severe and chronic aggression. For example, more severely violent individuals may find it more challenging to modify aggressive verbalizations through cognitive reappraisal. Additionally, because this study utilized individuals in relationships (rather than couples) who responded to hypothetical vignettes, it is unclear how IPA perpetrators might respond in the face of actual partner conflict. Future work could examine this question with couples asked to employ cognitive reappraisal or suppression while engaged in verbal conflict in vivo with an intimate partner. Finally, although aggressive verbalizations may reflect an urge to lash out physically against a partner, the linkages between these verbalizations and IPA are not universal. Thus, future work should examine the circumstances in which emotion regulation processes may intervene to avert or promote IPA behaviors.

Clinical and Policy Implications

To our knowledge, this is the first study to use an experimental, process-oriented approach to examine the impact of specific emotion regulation strategies on IPA-risk behaviors. As such, the present findings build on prior work linking aggressive verbalizations to IPA (e.g., Barbour et al., 1998; Eckhardt et al., 2002) by showing that using specific emotion regulatory strategies during instigation may differentially impact the expression of aggressive verbalizations. Although aggressive verbalizations alone have clinical importance because of their potential to interfere with constructive problem solving (Cordova, Jacobson, Gottman, Rushe, & Cox, 1993; Barbour et al., 1998; Eckhardt et al., 2002), it is their role as a possible gateway to partner aggression that calls particular attention to the need for intervention. The linkages found here between emotion regulatory processes and the types of everyday aggressive verbalizations that can give rise to IPA lay groundwork for the development of such interventions. In particular, our finding that the largest reductions in aggressive verbalizations occurred when individuals who engaged in IPA used cognitive reappraisal indicates that this high-risk college group may be amenable to skills-based interventions that involve cognitive reframing of one's negative affect *in the moment*. Notably, these positive effects on aggressive ver-

balizations resulted from very brief instructions (approximately 3 minutes) to utilize a particular emotion regulation strategy. Further work is needed to confirm and extend these initial findings. For example, it will be important to determine whether cognitive reappraisal or expressive suppression can alter aggressive behaviors among individuals who exhibit more frequent and severe forms of partner violence. Moreover, lab-based studies are needed to examine emotion regulatory processes as they play out during actual couple conflict. It is possible, for example, that partners respond to each other by alternating between (unsuccessful) attempts to cognitively reappraise the situation and suppressing their strong emotions. The present results provide a basis for such work by suggesting that intervening to help high-risk college individuals strategically deploy cognitive reappraisal—and resist suppression—in the face of partner conflict may be effective in helping to disrupt the verbal antecedents of aggression, even for individuals with a history of IPA perpetration. Ultimately, this type of skills-based intervention could prove to be a useful part of larger treatment packages to reduce IPA.

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