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Abstract

Objective: Intimate partner aggression (IPA) is a serious problem among dating couples. The present study examined dyadic and situational processes that may lead to IPA perpetration among a sample of 59 heterosexual couples (total n = 118), within the framework of Finkel's I^3 model. ***Method:*** IPA was assessed using an in vivo aggression task, in the context of a weak inhibiting factor (self-control depletion) and a strong impellance factor (negative emotion) generated during in vivo verbal conflict between partners (functioning as an instigating trigger). ***Results:*** Actor–partner interdependence model analyses demonstrated that negative emotion (prediscussion and reactivity) positively predicted men's aggression and the interaction between emotion reactivity and self-control depletion predicted women's partner aggression. Several partner effects emerged as well. ***Conclusion:*** These findings provide support for the I^3 model and suggest that during conflictual encounters both partners may recognize and respond to each other's negative mood and depletion states in ways that escalate aggression. The current study contributes to our understanding of the individual and dyadic processes leading to IPA perpetration.

Keywords: aggression, intimate partner violence, self-control depletion, negative emotion, conflict, domestic violence

Intimate partner aggression (IPA) is a prevalent problem in the United States and worldwide. Past year rates of IPA in heterosexual relationships range from 12% to 30% (Caetano, Cunradi, Schafer, & Clark, 2000; Cunradi, Todd, Duke, & Ames, 2009; Smith, Thornton, DeVelis, Earp, & Coker, 2002). IPA among college dating couples is even more prevalent, with approximately 20% to 50% of this age group reporting aggression (Cogan & Fennell, 2007; Forke, Myers, Cantallozzi, & Schwarz, 2008; Straus, 2004). The consequences of IPA in college samples are varied and include physical health complaints (Amar & Gennaro, 2005) and psychological difficulties such as depression, anxiety, and somatization symptoms (Clements, Ogle, & Sabourin, 2005; Kaura & Lohman, 2007). The high prevalence and numerous detrimental effects of dating violence among college students highlight the importance of understanding risk factors that contribute to IPA in these relationships. The present study aims to examine individual and dyadic processes that occur situationally and may lead to IPA perpetration.

Much of the past research has emphasized dispositional or demographic risk factors for IPA perpetration, primarily among men. These relatively stable and enduring conditions are typically assessed using survey methods and include low socioeconomic status (Riggs, Caulfield, & Street, 2000), personality pathology (Holtzworth-Munroe, Meehan, Herron, Rehman, & Stuart, 2003), and attitudes condoning violence (Stith, Rosen, McCollum, & Thomsen, 2004). 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 *dyadic processes* leading to aggression. Indeed, much IPA is bidirectional (Renner & Whitney, 2012), and even when it is unidirectional, aggression is likely to occur after a conflictual in-

teraction between partners (Dobash & Dobash, 1984). Thus, although the responsibility for IPA always lies with the aggressor, at its core partner aggression is an interdependent system in which each person not only initiates actions but also responds to those of his or her partner. Careful study of the situational factors that influence this process is needed to understand the reciprocal interactions from which IPA arises. Investigations of static risk factors using purely self-report methods are limited in their ability to do this. Furthermore, although not impossible to modify, dispositional factors can be challenging to change or influence, making it difficult to formulate interventions that target these factors effectively.

The present study draws on Finkel's' I^3 theory of intimate partner violence (Finkel, 2007; Finkel & Eckhardt, in press) to address situational factors that unfold moment-to-moment and may operate collectively to increase IPA propensity. The I^3 theory posits three broad categories of risk factors: instigation, impellance, and inhibition. Instigation factors are provoking events that trigger an urge to aggress (e.g., an insult from one's partner). Impellance factors increase the likelihood an individual will experience an urge to aggress at the moment of instigation (e.g., blameful attributions, posttraumatic stress disorder symptoms; Eckhardt & Jamison, 2002; Taft, Watkins, Stafford, Street, & Monson, 2011). Inhibition factors counteract the urge to aggress (e.g., high self-control). Both impellance and inhibition factors include distal (e.g., childhood maltreatment), dispositional (e.g., trait anger), relational (e.g., jealousy), and situational (e.g., acute physiological arousal) risk factors. Various combinations of instigation, impellance, and inhibition factors influence how likely a person is to aggress against a partner. For example, individuals who experience an instigating trigger along with a strong impellance and weak inhibition factor are said to have an increased risk of perpetrating IPA (Finkel & Eckhardt, in press). The I^3 theory is consistent with other theoretical models that attempt to explain aggressive behavior. For example, the General Aggression Model (GAM; Anderson & Bushman, 2002) also highlights the importance of the situation and risk factors that impel aggression (affect, cognition, biases) and how these different risk factors interact to influence aggression. However, the I^3 model is particularly well-suited to guide research on IPA because of its emphasis on risk factors specific to intimate relationships, such as relational risk factors. Thus, the present study draws on the I^3 model to investigate the individual and joint influence of two situational risk factors following a commonly occurring instigator. Specifically, we examined in vivo partner aggression resulting from the instigating factor of relationship conflict in the context of a weak inhibiting factor, self-control depletion, and a strong impellance factor, negative emotion.

Self-Control and Aggression

Self-control is the ability to regulate and override impulses and urges, including thoughts, desires, and behaviors (Baumeister, Bratlavsky, Muraven, & Tice, 1998; Finkel et al., 2009), and is said to rely on a limited resource such that efforts to self-regulate in one task lead to increased failure at future tasks that require self-control (Baumeister, Vohs, & Tice, 2007; Hagger, Wood, Stiff, & Chatzisarantis, 2010). Within the I^3 model depleted self-control represents a weak inhibition factor that, in the presence of an impelling force, such as negative emotion, may increase IPA propensity. Finkel and colleagues (2009) report that participants who undergo a depletion task and receive an ostensible negative evaluation from their partners respond with more partner-directed aggression. Moreover, those high in dispositional aggressivity also self-report more IPA under conditions of self-control depletion (Finkel et al., 2012).

Importantly, depletion not only impairs the depleted individual, it also may affect the partner and the partner's behaviors. Depletion may increase behaviors that elicit aggression from partners. For example, when a person is depleted he or she may be less likely to resist the urge to insult a partner during verbal conflict. Consistent with this idea, prior research shows that on days individuals report greater self-control depletion, they also report enacting more negative behaviors toward their intimate partner (Buck & Neff, 2012). These negative behaviors, in turn, could lead to greater conflict between partners, ultimately increasing risk for IPA. Unlike previous work on depletion and aggression, which focuses only on actor effects

of depletion, the present study examines self-control depletion in the context of couple conflict and uses a dyadic methodology to test both partners' influences on IPA perpetration.

Negative Emotion, Conflict, and Aggression

Negative emotion is a strong impellance factor that is theorized to increase risk of interpersonal aggression (Anderson & Bushman, 2002; Berkowitz, 1990). Berkowitz's (1990) cognitive neoassocianistic model holds that experiencing negative emotion (e. g., distress, anger, annoyance) may result in aggressive behavior because both negative emotion and aggression are connected via a common associative network that mobilizes an individual for defensive (i.e., aggressive) action. It follows then that negative emotion including emotional reactivity, or the tendency to experience intense emotional arousal in response to emotion-evoking situations (Horowitz & Wilner, 1976), may serve as a trigger for aggression. Indeed, laboratory findings linking negative emotion reactivity to general aggression (directed toward a stranger) support the role of emotion reactivity as an impellance factor (Pedersen, 2006; Verona & Curtin, 2006; Verona, Patrick, & Lang, 2002). This work uses various manipulations to induce negative emotion, such as insulting feedback from an experimenter (Pedersen, 2006) or air blasted at participants' throats (Verona et al., 2002). Although these studies show expected connections between negative emotion and general aggression, the manipulations used to generate negative affect "represent novel situations that may not completely parallel the situations encountered … by men and women in their everyday life" (Verona & Curtin, 2006, p. 122). To address this issue, couples in the present study engaged in verbal arguments, naturally occurring events that provoke high levels of negative affect between partners (Burman, Margolin, & John, 1993; Jacobson et al., 1994) and have been shown to precede approximately 80% of domestic violence events (Greenfeld et al., 1998). Thus, by asking couples to argue about actual conflicts in their relationships, we aimed to replicate in the lab the most common real-world antecedent to IPA.

Purpose of the Present Study

In the current investigation, we examine self-control depletion and negative emotion in the context of couple conflict, a naturalistically occurring instigation that regularly arouses aggressive impulses (Finkel et al., 2009) and has been linked to IPA (Greenfeld et al., 1998). Consistent with the I^3 model, our overall hypothesis was that the weak inhibiting factor self-control depletion, would interact with the impellance factor negative emotion (both preconflict and negative emotion reactivity) to increase IPA perpetration after the instigation of couple conflict. To test this, one random member of each couple completed a common self-control depletion task. Couples then discussed the topic of most significant conflict in their relationship, after which they completed a computer task assessing IPA, in which they assigned white noise blasts to their partner. This task allowed us to examine two types of IPA: reactive aggression and retaliatory aggression. Reactive aggression immediately followed the conflict discussion. Retaliatory aggression was measured with the second trial because it occurred after a blast of maximum intensity ostensibly from the partner and therefore was an indication of how individuals might respond after being aggressed against by their partner. The Actor–Partner Interdependence Model (APIM; Cook & Kenny, 2005) was used to examine actor effects (i.e., the unique effects of men's predictors on men's outcomes and women's predictors on women's outcomes) as well as partner effects (i.e., unique effects of women's predictors on men's outcomes and men's predictors on women's outcomes). In doing so, the following study hypotheses were tested:

Hypothesis 1: We hypothesized that those in the self-control depletion group would display greater IPA toward their partners (both reactive and retaliatory) and elicit greater IPA from their partners (both reactive and retaliatory).

Hypothesis 2: We hypothesized actor effects such that individuals who had greater preconflict negative emotion and negative emotion reactivity would display greater IPA (both reactive and retaliatory), particularly among those who were depleted. Specifically, we expected

that preconflict negative emotion and emotion reactivity would interact with self-control depletion such that the relationship between negative emotional states and IPA would be stronger among persons who were depleted.

Hypothesis 3: Finally, we hypothesized partner effects such that both preconflict negative emotion and negative emotion reactivity would interact with self-control depletion to elicit greater IPA perpetration from the other partner (both reactive and retaliatory aggression). More specifically, when individuals were depleted, we expected a stronger positive relationship between their negative emotional states and their partner's IPA perpetration.

Method

Participants

Participants were 59 heterosexual dating couples (total n = 118) recruited through the undergraduate subject pool of a Midwestern university psychology department. To be eligible, participants had to be in a committed relationship for at least four months, able to read questionnaires in English, and 18 years of age or older. Participants' reported ethnicity was as follows: European American (89%); Hispanic/Latino (4.2%), Asian/Pacific Islander (.8%), mixed ethnicities (5.1%), and "other" ethnicities (.8%). The mean age of participants was 19.61 years (SD = 1.8, range: 18 to 27). Couples had been in a relationship for an average of 19.16 months (SD = 15.44, range: 4 to 72 months).

Measures and Lab Tasks

Self-control depletion. A video-viewing task that has been used in several previous studies (e.g., DeWall et al., 2007; Schmeichel, Vohs, & Baumeister, 2003) was used as a means of self-control depletion. Specifically, participants viewed a 6-min video of a woman being interviewed by someone who is offscreen. In the lower right corner of the screen a series of words in black text are shown with a white background for 10 seconds each. These words have no relationship to the woman being interviewed. Participants in the self-control depletion condition were instructed "not to read or look at any words that may appear on the screen." These participants were also asked to redirect their gaze to the woman being interviewed if they find themselves looking at the words. Participants in the nondepletion condition were given no instructions regarding the irrelevant words, nor were they made aware of the words before viewing the video. This task depletes self-control by requiring participants in the depletion condition to regulate the strong urge to look at the words in the bottom of the screen (Baumeister et al., 1998). Past research has found that participants who are in the depletion condition of this video-viewing task report controlling their attention to a greater extent and rate the video-watching task as more difficult than nondepletion participants (DeWall et al., 2007; Schmeichel et al., 2003). One partner in each couple was randomly assigned to the self-control depletion condition and the other partner was assigned the no depletion condition, resulting in 34 men (57.6%) and 25 women (42.4%) undergoing depletion.

Negative emotion. Participants were presented with a list of common areas of conflict in couple relationships derived from various conflict discussion questionnaires (Geiss & O'Leary, 1981; Heavey, Lane, & Christensen, 1993) and asked to select the topic that was the largest source of conflict in their relationship. All couples participated in 10 minutes of discussion about their chosen topic. The majority of couples (n = 55) discussed one jointly agreed-upon topic; four couples discussed two topics (one chosen by each partner) for five minutes each. These four couples did not differ from the other couples on levels of negative emotion reactivity, $t(57) = -0.28$, $p = .78$, $t(57) = .97$, $p = .34$, among women and men, respectively. Participants' negative emotion was assessed using a 16-item abridged version of the Positive and Negative Affective Schedule—Expanded Form (PANAS; Watson & Clark, 1992), which was administered with other questionnaires at the beginning of the study and immediately after the couple discussion. Participants rated how strongly they were currently experiencing 16 emotions on a scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). The primary independent variables derived from this measure was a preconflict negative mood score and a negative mood change score created by summing responses to

the following seven items and subtracting the pre- from post-discussion score: disgusted, irritable, angry, hostile, annoyed, upset, and distressed. Participants completed the depletion task between the two emotion ratings. Prior research has shown that depletion and nondepletion groups do not differ in negative emotion after completing this depletion task (DeWall et al., 2007; Schmeichel et al., 2003). Consistent with this work, there was no relationship between depletion and negative emotion (b = –0.04, p = .98 among women and b = 0.93, p = .50 among men) in the current study. Among participants with complete data in the current study, alphas for the prediscussion negative affect score were .84 for women and .71 for men; alphas for postdiscussion negative affect score were .88 and .87 for women and men respectively.

As a result of experimenter error, 10 couples did not receive the PANAS items of angry, hostile, and annoyed. Although these items can be considered missing completely at random in terms of the sample who did not receive the items, we wished to avoid any potential bias in the negative mood score that might be introduced by not including responses to these particular missing items. However, because of the positively skewed item response distribution (i.e., a preponderance of 1 and 2 responses on the 5-point scale), a standard multiple imputation approach that assumes multivariate normality was not appropriate. Instead, we conducted a custom imputation process, in which the missing item responses were predicted from each person's responses to the other items using a binomial model, controlling for person and time. Specifically, for each person, the predicted binomial model parameter p was used to generate 100 imputations, each time drawing a new random value from a binomial distribution given each person's p parameter to appropriately capture the uncertainty in the missing response. The imputed datasets were then analyzed and the results combined, as described later in the results section.

Aggression task. In vivo partner aggression was measured with the Taylor Competitive Reaction Time Test (Taylor, 1967) that has been used in numerous studies (e.g., Bushman, 1995; Bushman & Baumeister, 1998; DeWall et al., 2007). Participants were informed that the task is a reaction time (RT) game that they play against their partner. However, the computer was actually programmed to mimic a competitor's responses. During each trial participants press a button as quickly as possible after an onscreen stimulus changes color. Before each trial, participants designate a length (on a scale from 0 to 5 seconds) and volume (a level ranging from 0 to 10) of white noise to be blasted over the headphones of their partner if they win and their partner loses. Further, participants are informed that the partner who wins on a given trial hears no noise, although the partner who responds slower (i.e., loses) will hear a blast of white noise. The noise levels ranged from 1 (60 decibels) to 10 (105 decibels) in 5-decibel increments. Before beginning the task, each participant is asked to listen to samples of the lowest, middle, and highest volume levels. The 105 decibel level is uncomfortable to hear, but does not cause pain and is not harmful. Participants also have the option of choosing zero, which produces no sound and gives a nonaggressive alternative.

Consistent with Bushman and Baumeister (1998) and DeWall et al. (2007), two primary aggression variables were calculated by taking the mean of the white noise level and length assigned during the first trial and the second trial by each participant. All participants lose the first trial and hear the highest level and longest duration of white noise. 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 partner (Bushman & Baumeister, 1998). Numerous studies have used the single first trial as a measure of aggression, because in later trials an individual's aggression scores tend to converge on reciprocation of what he or she has ostensibly received from the other partner (e.g., Bushman & Baumeister, 1998; Denson, von Hippel, Kemp, & Teo, 2010; DeWall et al., 2007). Because the first trial in this study immediately followed the conflict discussion and participants had not yet received a noise blast, it is best considered a measure of *reactive* aggression (Reidy, Shelley-Tremblay, & Lilienfeld, 2011). We were also interested in the second trial because it occurred after a blast of maximum intensity perceived to come from a partner and therefore was an indication of how a person might respond after being aggressed against by their partner. As such, this trial was labeled *retaliatory* aggression (Wilkowski, Robin-

son, & Troop-Gordon, 2010). The second trial responses were considered to be the purest measure of retaliatory aggression because this is the only trial in which all participants were responding to having received the maximum length and volume of white noise blast.

Procedure

The home institution's Institutional Review Board approved all procedures for this study. Participants were recruited through the Department of Psychology Experimetrix website, an online service that provides subject pool management. All students enrolled in psychology courses offering course credit for research participation have access to the Experimetrix website. Interested students who wished to receive course credit for a psychology course could sign up themselves and their intimate partner for the study. The member of the couple enrolled in the psychology course received course credit for participation and the other member of the couple received either course credit or $10.

After providing informed consent, participants completed questionnaires, including the first mood rating, and then were randomized to self-control condition. Participants were told that they would later be making judgments of the interviewee because the experiment concerns assessment of nonverbal communication. Immediately after the video, the couple completed the conflict discussion described above. Next, participants were brought to separate rooms to complete the competitive computer RT task. After completing the computer game, participants were fully debriefed individually about the purposes of the study. All participants were asked whether they were suspicious about playing their partner during the game. Five participants (four women and one man) reported being suspicious that they were not playing their partners. These participants' aggression variables were not used in analyses.

Results

Data Description

Descriptive statistics for study variables are presented in Table 1. No significant mean differences were found between men and women on study variables, including preconflict negative emotion, emotion reactivity, reactive aggression, and retaliatory aggression. Paired sample t tests demonstrated that for both women and men, reactive aggression (Trial 1) was significantly lower than retaliatory aggression (Trial 2), $t(54) = -6.99$, $p < .001$, $d = -1.06$; $t(57) = -6.90$, $p < .001$, $d = -0.89$, respectively. Both women's and men's negative emotion ratings increased from preconflict to postconflict, with mean differences of 2.95, $p < .001$ and 2.12, $p < .001$, respectively. This indicates that participants became more negative during the conflict. Bivariate correlations among variables are also displayed in Table 1. Women's and men's higher emotion reactivity were significantly correlated with each other ($r = .49$, $p < .01$) and men's higher emotion reactivity was related to greater retaliatory aggression ($r = .31$,

Table 1. Descriptive Statistics and Correlations among Study Variables

Measure	1	2	3	4	5	6	7	8	9
Mean	—	8.40	2.98	3.30	6.36	9.26	2.28	3.88	6.42
Standard deviation	—	2.62	5.25	2.17	3.45	2.62	5.58	2.35	3.29
Range	—	7–18	–9–20	0–7	0–10	7–18	–11–17	0–8.75	0–10
1. Self-control depletion									
2. Preconflict negative emotion: women	–.07								
3. Negative emotion reactivity: women	–.004	–.37**							
4. Reactive aggression: women	–.02	.02	.31*						
5. Retaliatory aggression: women	–.02	–.03	.17	.28*					
6. Preconflict negative emotion: men	–.03	–.17	–.07	.09	.12				
7. Negative emotion reactivity: men	.09	–.07	.49**	.17	.04	–.35**			
8. Reactive aggression: men	.03	–.02	–.20	–.01	.02	.28*	–.06		
9. Retaliatory aggression: men	–.12	.17	–.20	–.07	–.15	–.07	.31*	.50**	

* $p < .05$; ** $p < .01$

$p < .01$). For both women and men, higher reactive aggression was related to higher retaliatory aggression ($r = .28$, $p < .05$; $r = .50$, $p < .01$; respectively).

Analytic Approach

The APIM (Cook & Kenny, 2005) was used to account for the interdependent nature of these dyadic data. Dyadic path modeling enables the estimation of parameters for both couple members concurrently (Cook & Kenny, 2005). This model simultaneously estimates actor effects (represented by paths labeled A in Figure 1), which include the effects of men's predictors on men's aggression and women's predictors on women's aggression, and partner effects (represented by paths labeled P in Figure 1), which include the effects of women's predictors on men's aggression and men's predictors on women's aggression. All APIM analyses were conducted under maximum likelihood estimation with robust standard errors using Mplus v. 6.11 software (Muthén & Muthén, 1998–2010). The estimated models were saturated (i.e., all paths were estimated) so there are no model fit statistics that are relevant to report. The Mplus imputation analysis command was used to combine results across imputations.

For the current analyses, self-control was coded into two groups in which the group coded as 0 represented couples in which men were depleted and women were not depleted, and the group coded as 1 represented couples in which the women were depleted and men

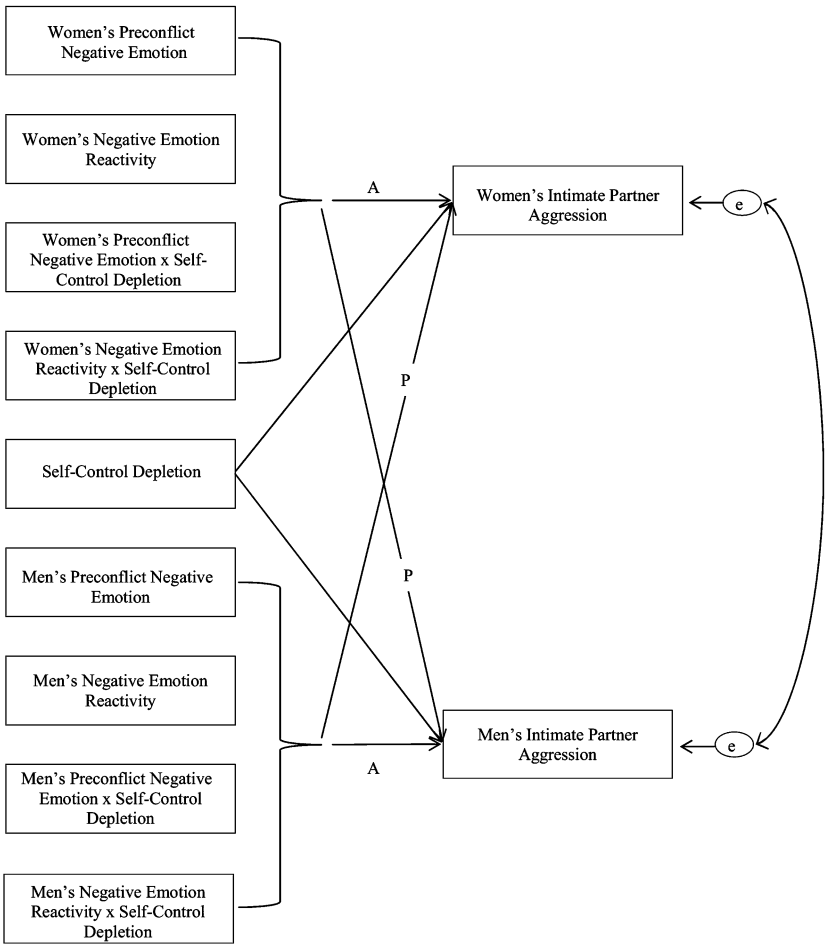

Figure 1. Actor–Partner Interdependence Model for current study.

were not depleted. Preconflict negative emotion scores were centered at 7 (the lowest possible value) before creating interaction terms to maintain interpretability. The value of 0 for the negative emotion reactivity variable is interpretable and meaningful (i.e., 0 indicates no change in emotion). Interaction effects were constructed by multiplying the self-control depletion variable by women's and men's preconflict negative emotion and emotion reactivity.

The two outcomes from Trial 2 (retaliatory aggression) were censored from above, such that about one third of the sample had the highest possible value of 10. Therefore, we used a censored link function that included an inflation model to quantify the proportion of the sample who were unable to assume any value higher than the censoring limit of 10. No significant predictors of the inflation were found, and thus the inflation model included an intercept only.

Although past research has examined gender differences in APIM analyses (e.g., Cook & Snyder, 2005), because of the study design, we were unable to test for possible differences between men and women in the strength of actor and partner effects. More specifically, because self-control depletion was assigned by gender in each couple (i.e., in each couple either the man or the woman was depleted and their partner was not depleted), differential effects across gender could not be distinguished from differential effects related to self-control depletion.

APIM Results

Results for the APIM model are displayed in Tables 2 and 3: Table 2 shows results for reactive aggression (white noise Trial 1), and Table 3 displays results for retaliatory aggression (white noise Trial 2). The dependent variables had the following R^2 values for explained variance by the model: Women's reactive aggression (R^2 = .30, *SE* = .10, $p < .01$); men's reactive aggression (R^2 = .22, *SE* = .09, $p < .01$); women's retaliatory aggression (R^2 = .86 including the inflation factor, *SE* = .13, $p < .001$); and men's retaliatory aggression (R^2 = .87 including the inflation factor, *SE* = .09, $p < .001$).

Self-control depletion effects on IPA (Hypothesis 1). Given the interactions of self-control depletion with preconflict negative emotion and negative emotion reactivity, the simple effect of self-control depletion is conditional on the zero values for those interacting predictors (i.e., for people with the lowest level of preconflict negative emotion and who had no change in negative emotion during the conflict discussion). Although self-control depletion did not predict reactive or retaliatory aggression in women or men, these simple effects were qualified by some significant interactions with negative emotion, as described next.

Actor effects of negative emotion on IPA (Hypothesis 2). We expected individuals' preconflict negative emotion and negative emotion

Table 2. Actor–Partner Interdependence Model Results for Reactive Aggression

	Path estimates (standard errors)			
Variable	W→W	M→W	M→M	W→M
SCD	–1.25[a] (.81)		–.70[a] (.90)	
Preconflict negative emotion				
SCD = 0 (Man depleted)	.09 (.10)	.04 (.08)	.22 (.15)	–.16 (.10)
SCD = 1 (Woman depleted)	.10 (.21)	.49** (.17)	.22 (.18)	.35 (.25)
SCD × Preconflict negative emotion	.01 (.23)	.45* (.18)	–.002 (.23)	.51 (.27)
Negative emotion reactivity				
SCD = 0 (Man depleted)	.004 (.08)	.10 (.09)	.01 (.08)	–.06 (.08)
SCD = 1 (Woman depleted)	.21** (.07)	–.05 (.07)	.12 (.07)	–.11 (.08)
SCD × Negative emotion reactivity	.20† (.11)	–.14 (.11)	.11 (.11)	–.04 (.12)

SCD = Self-Control Depletion. Unstandardized path coefficients are reported. We fit the distinguishable or fully saturated model (i.e., *df* = 0), which allowed *a* and *p* effect to vary across women's (*w*) and men's (*m*) aggression.

a. Self-regulatory depletion is a within dyads variable (each couple had one member depleted and one not-depleted).

† $p < .06$; * $p < .05$; ** $p < .01$

Table 3. Actor-Partner Interdependence Model Results for Retaliatory Aggression

	Path estimates (standard errors)			
Variable	W→W	M→W	M→M	W→M
SCD	1.86[a] (1.69)		–.93[a] (1.17)	
Preconflict negative emotion				
SCD = 0 (Man depleted)	–05 (.24)	.69** (.16)	.45** (.15)	.59 (.34)
SCD = 1 (Woman depleted)	.56 (.33)	–.06 (.28)	.73* (.36)	.69 (.45)
SCD × Preconflict negative emotion	.61 (.41)	–.75* (.31)	.28 (.37)	.09 (.61)
Negative emotion reactivity				
SCD = 0 (Man depleted)	–.10 (.17)	.47** (.14)	.34 (.23)	–.24 (.19)
SCD = 1 (Woman depleted)	.24 (.16)	–.31* (.14)	.62** (.22)	–.32* (.14)
SCD × Negative emotion reactivity	.34 (.23)	–.78** (.20)	.28 (.32)	–.07 (.22)

SCD = Self-Control Depletion. Unstandardized path coefficients are reported. We fit the distinguishable or fully saturated model (i.e., $df = 0$), which allowed *a* and *p* effect to vary across women's (*w*) and men's (*m*) aggression.

a. Self-regulatory depletion is a within dyads variable (each couple had one member depleted and one not-depleted).

* $p < .05$; ** $p < .01$

reactivity to predict higher levels of their own aggression (both immediately after conflict and after a white noise blast—referred to as *reactive* aggression or *retaliatory* aggression, respectively), especially in persons who were depleted (i.e., through interactions of negative emotion with self-control depletion).

Reactive aggression. Hypothesis 2 was partially supported for reactive aggression: women's greater negative emotion reactivity did predict women's higher reactive aggression in women who were depleted ($b = 0.21$, $z = 2.93$, $p < .01$), but not in women who were not depleted ($b = 0.004$, $z = 0.05$, $p = .96$). The interaction coefficient for the difference in these effects was marginally significant ($b = 0.20$, $z = 1.89$, $p < .06$), indicating a larger actor effect of women's negative emotion reactivity on women's reactive aggression in couples in which women were depleted (as shown in Figure 2). However, contrary to Hypothesis 2, no actor effects on reactive aggression were found for men with respect to negative emotion reactivity, or for women or men with respect to preconflict negative emotion; these effects did not differ by depletion status.

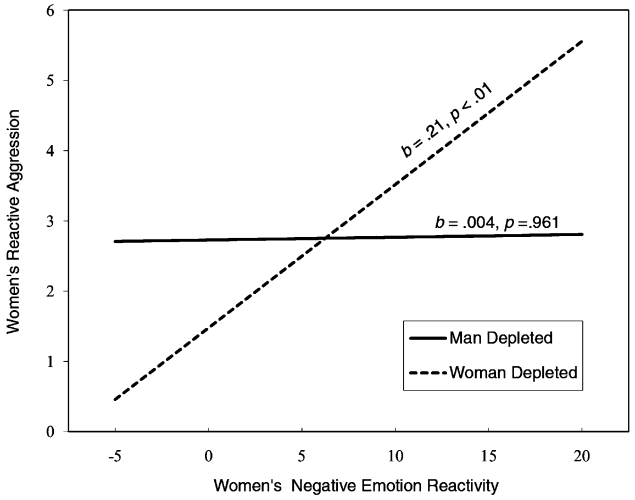

Figure 2. Interaction between self-control depletion and women's negative emotion reactivity in predicting women's reactive aggression.

Retaliatory aggression. Hypothesis 2 was also partially supported for retaliatory aggression: men's greater preconflict negative emotion predicted men's higher retaliatory aggression in men who were depleted (b = 0.45, z = 2.84 p < .01) and in men who were not depleted (b = 0.73, z = 2.02, p < .05). These effects did not differ significantly in magnitude (interaction b = 0.28, z = 0.75, p = .46, indicating equivalent actor effects of men's preconflict negative emotion on men's retaliatory aggression in men who were and who were not depleted. Similarly, men's greater negative emotion reactivity significantly predicted men's higher retaliatory aggression—significantly so in men who were not depleted (b = 0.62, z = 2.82, p < .01), but nonsignificantly so in men who were depleted (b = 0.34, z = 1.60, p = .13), although these actor effects did not differ significantly in magnitude (interaction b = 0.28, z = 0.88, p = .38). Finally, contrary to Hypothesis 2, no actor effects of preconflict negative emotion or negative emotion reactivity predicting retaliatory aggression were found for women.

Partner effects of negative emotion on IPA (Hypothesis 3). We expected that when individuals were depleted, there would be a stronger positive relationship between their negative emotional states (preconflict negative emotion and negative emotion reactivity) and their partner's IPA perpetration (as reactive and retaliatory aggression).

Reactive aggression. Hypothesis 3 was partially supported for reactive aggression: men's greater preconflict negative emotion predicted women's higher reactive aggression in couples in which women were depleted (b = 0.49, z = 2.93, p < .01), but not in couples in which men were depleted (b = 0.04, z = 0.57, p = .57). These effects differed significantly in magnitude (interaction b = 0.45, z = 2.43, p < .05), indicating a larger partner effect of men's preconflict negative emotion on women's reactive aggression in couples in which women were depleted (as shown in Figure 3). Contrary to Hypothesis 3, no partner effects on reactive aggression were found for women's preconflict emotion, or for men's or women's negative emotion reactivity; these effects did not differ by depletion status.

Retaliatory aggression. Hypothesis 3 was also partially supported for retaliatory aggression: men's preconflict negative emotion predicted higher women's retaliatory aggression in couples in which men were depleted (b = 0.69, z = 4.28, p < .01), but not in couples in which women were depleted (b = –0.06, z = –0.21, p = .83). These effects differed significantly in magnitude (interaction b = –0.75, z = –2.46, p < .05), indicating a more positive partner effect of men's preconflict negative emotion on women's retaliatory aggression in couples in which men were depleted. Similarly, greater men's negative emotion reactivity predicted higher women's retaliatory aggression in cou-

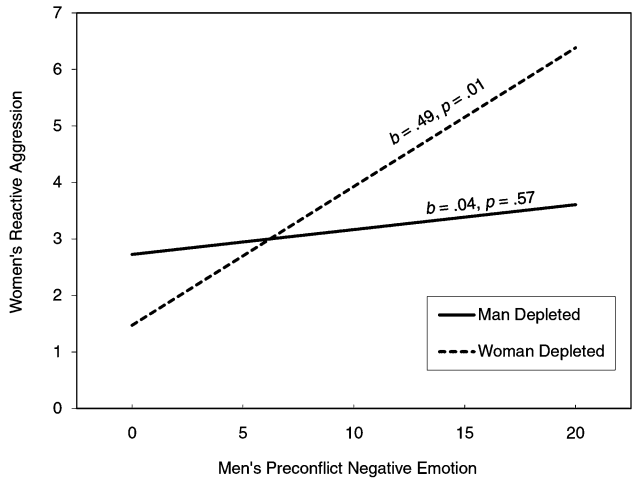

Figure 3. Interaction between self-control depletion and men's preconflict negative emotion in predicting women's reactive aggression.

ples in which men were depleted (b = 0.47, z = 3.27, p < .01), but actually predicted lower women's retaliatory aggression in couples in which women were depleted (b = –0.31, z = –2.20, p < .01). These effects also differed significantly in magnitude (interaction b = –0. 78, z = –3.90, p < .05), indicating a more positive partner effect of men's negative emotion reactivity on women's retaliatory aggression in couples in which men were depleted (as shown in Figure 4). Contrary to Hypothesis 3, no partner effects on retaliatory aggression were found for women's preconflict negative emotion. In addition, greater women's negative emotion reactivity actually predicted lower men's retaliatory aggression, significantly so in couples in which women were depleted (b = ––0.32, z = –2.34, p < .05), but nonsignificantly so in couples in which men were depleted (b = –0.24, z = –1.27, p = .20); these partner effects did not differ significantly in magnitude (interaction b = –0.07, z = –0.34, p = .73).

Discussion

The present study examined important situational processes that may lead to IPA perpetration among couples, within the framework of Finkel's I^3 model. Specifically, the individual and interactive effects of self-control depletion (a weak inhibiting factor) and emotional reactivity (a strong impellance factor) arising from verbal conflict (an instigator) were examined as predictors of IPA. Hypotheses were generally supported in that negative emotion and emotional reactivity emerged as significant predictors of aggression, and in some cases predicted higher levels of aggression in the presence of self-control depletion. However, as discussed below, these results differed between genders and across reactive (i.e., white noise blasts on Trial 1) and retaliatory aggression (i.e., white noise blasts on Trial 2).

Among the more notable outcomes were our findings that self-control depletion and greater emotional reactivity interacted to increase reactive IPA among women. These findings support the I^3 model in that the combined presence of a weak inhibiting factor (depletion) and an impelling factor (emotional reactivity) produced greater aggression in response to a common instigating trigger (verbal conflict). Although verbal conflict regularly arouses aggressive impulses among intimates, these impulses usually do not manifest in physical aggression (Finkel et al., 2009). In the present study, however, negative emotion reactivity generated during verbal conflict may have heightened urges to aggress, whereas short-term exertion of self-control reduced the ability to restrain these urges—as reflected in our finding of more reactive aggression observed under those conditions. If, as

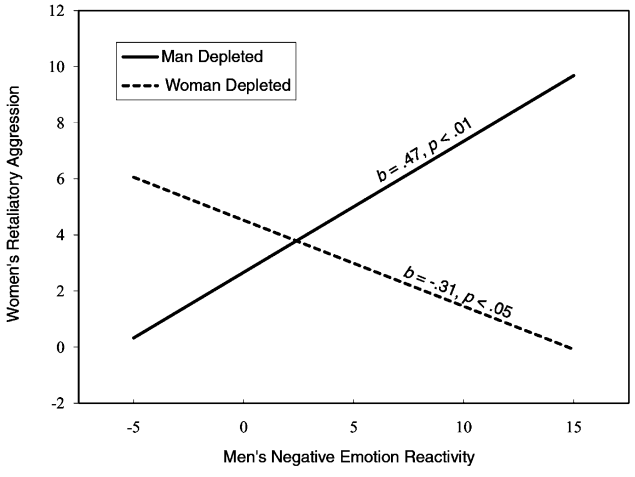

Figure 4. Interaction between self-control depletion and men's negative emotion reactivity in predicting women's retaliatory aggression.

suggested here, self-control depletion increases the risk of acting on aggressive impulses stemming from everyday instigations, interventions that bolster self-control may be useful for IPA prevention. For instance, preliminary work suggests that regimens designed to improve self-control can reduce tendencies toward partner aggression (Finkel et al., 2009, Study 5).

Although self-control depletion and greater emotional reactivity increased reactive IPA among women, this pattern did not emerge for their retaliatory aggression, nor did men's depletion predict their own reactive or retaliatory aggression alone or in combination with negative emotion. One reason that depletion may not have influenced aggression more than it did is because the instigator we used, conflict, may not have been provoking among all couples. Although verbal often precedes IPA (Greenfeld et al., 1998) and, overall, negative affect increased during conflict discussions, some participants may have found these interactions to be productive rather than provoking. This lack of a perceived instigation may have diminished aggressive responding among some couples.

In contrast to these findings with depletion, men's retaliatory aggression was predicted by increases in their own preconflict negative emotion and negative emotion reactivity. Specifically, after receiving an ostensibly aggressive blast of white noise on the first trial, men who reported greater negative emotion retaliated with increased aggression. This finding adds to prior research demonstrating a stronger positive relationship between experimentally induced negative emotion and general aggression in men relative to women (Verona & Curtin, 2006), as well as survey data linking emotion dysregulation to increased IPA in men, but not women (Gratz et al., 2009). One potential reason for this pattern is that gender role socialization leads men to inhibit expression of emotions (Gross & John, 1998), particularly those that increase perceived vulnerability (e.g., expressions of hurt feelings; Fivush, 1989; Kuebli & Fivush, 1992). When faced with these situations, men may attempt to regulate their negative affect through aggression, a form of avoidance with the potential to negatively reinforce future aggression (Gratz et al., 2009; Jakupcak, Tull, & Roemer, 2005). In the current context men may have used greater retaliatory aggression as a means to manage a surge of negative affect.

Prior work instructing participants to use specific types of instigating triggers (e.g., to criticize a partner's drawing) has demonstrated associations between an individual's own depletion and IPA perpetration (Finkel et al., 2009; Finkel et al., 2012). In the present study, we broadened this focus by allowing couples to interact freely about the area of greatest concern in their relationship. As common precipitants to IPA, these everyday arguments allowed us to observe, naturalistically, the unique contributions of each person's depletion and emotional reactivity to his or her partner's IPA perpetration. Consistent with other work examining IPA within a dyadic framework (e.g., Kim & Capaldi, 2004; Marshall, Jones, & Feinberg, 2011), several partner effects emerged. Women who were in a state of depletion displayed more reactive aggression when their partners experienced greater preconflict negative emotion. This finding suggests that women were able to recognize negative emotion in their partners and, when depleted, were less able to control aggressive urges during the aggression task. Further, when men were depleted, their own greater emotion reactivity and preconflict negative emotion resulted in greater retaliatory aggression from partners. This finding suggests that men who were depleted and experienced greater negative emotion may have enacted more negative behaviors (e.g., an insulting remark) during the conflict discussion, thereby eliciting greater aggression from their partners. Together these partner effects converge to indicate that during conflictual interactions partners may recognize and respond to each other's negative affect and depletion in ways that influence aggression. This possibility is supported by recent studies showing that couples are reasonably accurate in recognizing each other's emotions during conflict (Sanford, 2012). In that study, partners were able to recognize each other's emotions through objective observation of overt affect that would be apparent to anyone, and insider perspective, which is information that is not available to outsiders, such as knowledge of how one's partner is likely to feel in a given situation. It is possible that similar processes occurred in the present study. Moreover, our results comport with survey data showing the bidirectional nature of IPA (Renner & Whitney, 2012), and highlight that dating violence

is an interactional process in which individuals function as part of an interdependent system. These findings point to the importance of examining dyadic interactions when trying to understand the situational processes giving rise to IPA. One exception to our predicted findings was that when women were depleted, partners' greater emotion reactivity was related to *lower* levels of retaliatory aggression in both women and men. It is unclear why this occurred but suggests that in some circumstances recognition of a partner's negative emotion reactivity during conflict may lead the other partner to decrease IPA after being aggressed against.

For both men and women, levels of retaliatory aggression (assessed in response to the maximum noise blast) were significantly higher than those of reactive aggression (assessed following the conflict discussion). These findings indicate that a strong provocation from a partner may serve as an instigating trigger for more severe IPA perpetration than otherwise would occur. This increase in severity may signal a sequential pattern, noted elsewhere (Burman et al., 1993; Gottman & Levenson, 1999), in which negative behavior by one partner is followed by a more severe counter attack from the other. In the present case, initial acts of aggression tended to be met with increasingly harsh responses from one's partner. Although, retaliatory aggression levels were higher than levels of reactive aggression, these two forms of aggression did not differ across sexes (i.e., men and women had the same levels of reactive and retaliatory aggression). This is consistent with survey studies that have found similar rates of IPA among men and women (Straus, 2004).

Limitations

The present findings should be considered in the context of study limitations. First, the sample consisted primarily of European Americans attending college. Although the college years are a risky period for IPA (Cogan & Fennell, 2007; Forke et al., 2008), the current findings may not generalize to the broader population of couples at risk for IPA. Second, although observational measures of IPA address some weaknesses associated with self-reporting, the extent to which the aggression seen here corresponds to real-world IPA is unclear. IPA, like other forms of interpersonal aggression, may be influenced by interactional cues, such as voice tone and facial expressions. Although participants had access to these cues during the conflict discussion, the cues were not available during the actual aggression task. Further, although this aggression task has been used extensively in *general* aggression literature, this study may be the first to use it to measure IPA perpetration; thus, it is unclear whether assigning blasts of white noise to one's intimate partner—the highest levels of which are uncomfortable but not harmful—is in fact comparable to IPA perpetration (e.g., an individual slapping his or her partner). Third, although not exclusively anger-related, many items on our emotion rating scale reflected mood states indicative of anger (e.g., angry, annoyed, irritated). Although anger is frequently associated with IPA, future work could examine the effects of more general negative affect, including sadness and fear, on intimate partner aggression, as well as the possible protective role of increased positive affect that may be generated from productive conflict discussions.

Research Implications

This study used an experimental design and used a naturalistic instigation of couple conflict to shed light on important dyadic processes leading to IPA perpetration. Findings suggest that self-control depletion and negative emotion reactivity during conflict may sometimes work together to increase IPA perpetration. Although we view negative emotion reactivity as an impellance factor, it is also possible that reactivity could be conceptualized as an indirect indicator of the level of instigation from one's partner. Future work could examine each partner's behaviors during conflict to determine whether those actions fully account for negative emotion reactivity. Future research should also expand on the current findings by examining the interactive effects of both partners being depleted, including in response to other types of situationally occurring impellance, inhibition, and instigation factors. For instance, acute alcohol intoxication, which has been linked to IPA perpetration in multiple self-report studies (see Foran & O'Leary, 2008 for a review), could be examined in vivo as a disinhibiting factor.

Clinical and Policy Implications

This study also has implications for IPA intervention and prevention efforts. Although conflict is inevitable in intimate relationships, strong negative emotion arising from conflict appears to increase risk for IPA in the presence of depletion in some cases. Interventions that enhance strategies to regulate negative emotion arising in moments of heated conflict may help partners inhibit the urge to aggress. Further, our findings of partner effects suggest that recognizing and appropriately responding to cues from one's partner may be useful in diffusing conflict before it escalates to aggression. Finally, increasing an individual's self-control ability, thereby reducing the adverse effects of depletion, may be an important treatment target. Data showing that mindfulness-based stress reduction programs can increase self-control (Carmody, Baer, Lykins, & Olendzki, 2009) suggest that interventions that improve self-regulation may be promising. Continued work in this area could test these possibilities to further inform the development of interventions tailored to help both men and women reduce IPA perpetration.

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