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# **An Exploration of the Mediators Between Childhood Maltreatment and Intimate Partner Violence**

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Intimate partner violence (IPV) is associated with numerous long-term consequences and warrants significant clinical attention. Recent theoretical models and empirical research have suggested that several factors play a role in the development of IPV perpetration, including childhood maltreatment, early maladaptive schemas, anger, and difficulties in emotion regulation. This study investigated the relationship between childhood maltreatment and IPV, specifically examining the mediation of this relationship by several variables thought to be related to this pernicious problem, including early maladaptive schemas, the experience of anger, and emotion regulation difficulties. In a young adult collegiate sample of 110 women in relationships, results of a bootstrapped multiple mediation analysis supported the hypothesis that childhood maltreatment predicted physical aggression within intimate partner relationships and found that the total indirect effect of childhood maltreatment on physical aggression through the 3 proposed mediators was significant. However, consistent with recent empirical findings, only difficulties in emotion regulation significantly mediated the relationship between childhood maltreatment and physical aggression within the sample.

**Keywords:** anger; emotion regulation; violence; childhood maltreatment; intimate partner violence

**V**iolent behaviors are associated with numerous long-term personal and societal costs. In fact, the total lifetime cost in medical care associated with life-threatening violence-related incidents has been estimated to exceed \$35 billion nationally (Corso, Mercy, Simon, Finkelstein, & Miller, 2007). When more specifically considering intimate partner violence (IPV), it has been reported that approximately 1 in 4 women and 1 in 7 men in the United States endorse being the victim of IPV (Breiding,

Black, & Ryan, 2008). Although commonly thought of as a male-to-female problem, data suggest that this serious public health concern is bidirectional because clearly both men and women engage in IPV (Desmarais, Reeves, Nicholls, Telford, & Fiebert, 2012; Straus, 2009). Although numerous consequences are associated with such victimization, being a victim of IPV has been associated with a range of psychopathological conditions for both male and female victims, from depression and heavy alcohol abuse/dependence to increased potential for developing a chronic disease (Bonomi et al., 2006; Coker, Sanderson, Fadden, & Pirisi, 2000).

Although male-perpetrated IPV has been reported to typically be more severe and be substantially more likely to result in physical injury to female victims (Archer, 2000), research with young adults strongly suggests that females exhibit a relatively equal degree of physical aggression as their male counterparts (Hines & Saudino, 2003; Straus, 2008). In addition, male victims of IPV have been found to experience significant negative health consequences, including depression (Simonelli & Ingram, 1998), substance use (Shorey, Stuart, & Cornelius, 2011), and posttraumatic stress (Hines, 2007). The evidence suggests that females also perpetrate IPV against other females (Freedner, Freed, Yang, & Austin, 2002), although data are considerably sparser with respect to IPV among same-sex couples. Recent research also suggests that males and females may engage in IPV for different reasons, with female-to-male IPV appearing to be more motivated by a desire for retaliation and to express/demonstrate emotion (Shorey, Meltzer, & Cornelius, 2010).

Given the consequences of violence in general, and IPV in particular, understanding factors that are associated with and/or may predict violent behavior has clear scientific importance. Psychological science has proposed various models to understand the development of this interpersonal and societal problem (Baumeister, Smart, & Boden, 1996; Beck, 1999; Berkowitz, 1989; Berkowitz & Harmon-Jones, 2004; Novaco, 1977). Overall, although some minor differences between dominant models exist, most of them include a general theme, which essentially posits that cognitive interpretations of events result in heightened negative affect (anger in particular) and that the experience of this emotional state can directly lead to aggressive behavior in one form or another. Fundamental to treatment approaches developed from these traditional CBT models is the idea that controlling or changing cognitions is therefore likely to reduce the degree of anger, and in turn, the cognitive shift should ultimately reduce the frequency of associated violent behavior (Baumeister et al., 1996; Beck, 1999; Beck & Fernandez, 1998; Berkowitz, 1989; Berkowitz & Harmon-Jones, 2004; Deffenbacher, Dahlen, Lynch, Morris, & Gowensmith, 2000; Howells et al., 2002; Novaco, 1977).

Apart from the aforementioned dominant framework, a feminist theoretical framework commonly known as the *Duluth model* (Pence & Paymar, 1993) has been specifically developed for the understanding of IPV and suggests that perpetration of IPV is rooted in a patriarchal ideology. From this perspective, IPV is seen as developing from learned, culturally reinforced paternalistic and dominant-oriented attitudes. To date, however, data on both of these dominant approaches have not consistently supported either of these widely regarded models for the treatment of IPV. To illustrate, a meta-analytic review of interventions for IPV by Babcock, Green, and Robie (2004) determined that effect sizes for all intervention types were small ( $<.40$ ), suggesting that these intervention approaches minimally reduce recidivism beyond the effect of arrest itself. Furthermore, no differences were found between Duluth model and traditional cognitive behavioral therapy (CBT) interventions. More recent, in a review of interventions for IPV by Stover, Meadows, and

Kaufman (2009), it was determined that current interventions for such perpetrators have limited impact on the likelihood of repeat violence, with recidivism rates estimated to be between 30% and 40% within 6 months of treatment, regardless of the type of intervention employed. Seeking to provide a more nuanced review of batterer treatment efficacy within the context of meta-analyses, another recent study concluded that “. . . overall, the treatment of batterers is not efficacious, though some programmes were . . . or had negative effects.” The authors further stated that “. . . the results remain inconsistent and further studies are required to assess the efficacy of batterer treatment programmes, i.e., to examine moderators that may explain why some batterers respond to treatment yet others fail to do so under similar treatment programmes” (Arias, Arce, & Vilarino, 2013, p. 159). Based on the data accumulated to date, there appears to be a lack of consistent and persuasive empirical evidence for the effectiveness of the most commonly used interventions for perpetrators of IPV, including interventions based on both traditional CBT and Duluth model frameworks. Given the less-than-clear findings regarding treatment of IPV, it is essential that theorists and researchers revisit the investigation of variables that may be associated with and possibly predict IPV and, specifically, explore possible mediators, moderators, and contextual factors associated with positive, neutral, and negative treatment outcomes for IPV.

It is important to note that to date, most IPV research have been conducted with male perpetrators, with an emphasis on understanding risk factors and/or predictors of such violence. As such, additional research into female-perpetrated IPV would appear especially important given the recent research suggesting that roughly 30% of female college students in dating relationships will engage in physical aggression (Bell & Naugle, 2007; Cornelius, Shorey, & Beebe, 2010; Shorey, Cornelius, & Bell, 2008). Although it is often assumed that female perpetration is most often motivated by self-defense, emerging research suggests that female-perpetrated physical aggression occurs for various motives above and beyond self-defense, including anger, jealousy, retaliation, and difficulty responding to emotional distress (Hettrich & O’Leary, 2007; Shorey, Brasfield, Febres, & Stuart, 2011a; Shorey et al., 2010; Walley-Jean & Swan, 2009). Because psychological science seeks to address IPV as a significant societal problem, further research is clearly needed to determine the risk factors and predictors of female-perpetrated IPV (Ross & Babcock, 2010).

## ANGER, AVOIDANCE, AND EMOTION REGULATION

An additional contemporary model for understanding violent behavior, including IPV, is the *anger avoidance model* (AAM; Gardner & Moore, 2008), which posits that individuals prone to violent behavior typically present with (a) an aversive developmental history characterized by chronic childhood maltreatment and (b) a personal temperament style best described as unrestrained and highly reactive (Gray, 1994). Together, it has been hypothesized that these two diatheses result in the development of early maladaptive schemas (which serve as a lens through which one interprets life experience) and poorly developed emotion regulation skills, which in turn result in efforts (sometimes extreme) to avoid the experience of negative emotion, particularly anger (Gardner & Moore, 2008, 2014). According to the AAM, when avoidance is not possible and/or does not work to reduce/eliminate the experience of anger, violent behavior often ensues as a way to terminate one’s perceived intolerable affect.

More specifically, a core component of the AAM is that individuals exhibiting difficulties with aggressive behavior typically report an early learning history that is marked by chronic abusive, harsh, and generally aversive environments, where withdrawal from threat is often not an option (Gardner & Moore, 2008, 2014). This assertion regarding chronic childhood maltreatment has garnered significant empirical support because the relationship between childhood maltreatment and the perpetration of IPV has been consistently noted in the empirical literature (Bevan & Higgins, 2002; Gratz, Paulson, Jakupcak, & Tull, 2009). In addition, the AAM proposes that the interaction of temperament and chronic childhood maltreatment results in various specific early maladaptive schemas, which in turn guide the appraisal and interpretation of external stimuli. Recent empirical research supports the hypothesized relationship between early aversive histories, early maladaptive schemas, anger, and aggressive behavior (Cohen, Eckhardt, & Schagat, 1998; Smyth, Dettore, Gardner, & Moore, 2010; Wenzel & Lystad, 2005). Of particular relevance was a recent study by Gay and colleagues, which determined that early maladaptive schemas mediated the relationship between childhood emotional abuse and IPV (Gay, Harding, Jackson, Burns, & Baker, 2013).

Another important proposed vulnerability for violent behavior posited by the AAM is *emotion dysregulation*. Recent research has in fact suggested that childhood maltreatment is a direct predictor of deficits in emotion regulation (Gardner, Moore, & Dettore, 2014; Orobio de Castro, Merk, Koops, Veerman, & Bosh, 2005; Sullivan, Meese, Swan, Mazure, & Snow, 2005). *Emotion dysregulation* (often referred to as difficulties in emotion regulation) is defined as difficulty with experiencing, tolerating/accepting, and expressing emotion, which in the case of violent behavior is most typically the emotion of anger. Gardner and Moore (2008) have suggested that when individuals perceive anger as intolerable, unacceptable, and/or uncomfortable, even when the level of anger is not outside of normative levels, violence may be used as a way to avoid or escape from the experience of the full affective state. This is achieved by either eliminating the aversive stimulus or by changing its form. Regarding IPV, individuals may use verbal threats as a way of *avoiding the onset* of an emotional experience or may shove or kick their partners as a way of *escaping from the experience* of affective states deemed intolerable. Although the *form* of this behavior does constitute an effort at interpersonal control (which is consistent with the Duluth model), the *function* of the behavior is emotional avoidance/escape. Consistent with this proposition, studies have confirmed the important role of deficits in emotion regulation in understanding IPV (Bell & Naugle, 2008; McNulty & Hellmuth, 2008; Shorey, Brasfield, Febres, & Stuart, 2011b) and empirical studies have further indicated that IPV may in fact function as an escape-based emotion-regulation strategy among nonclinical populations (Gratz et al., 2009; Jakupcak, Lisak, & Roemer, 2002). Similarly, relationships between avoidance strategies, couple adjustment, and interpersonal aggression have been found in male soldiers. According to a study by Reddy, Meis, Erbes, Polusny, and Compton (2011), male soldiers who employed avoidance strategies were found to be more likely to have engaged in physical aggression and experienced a greater exposure to physical aggression by their intimate partners. These findings are consistent with the AAM assertion that escape and/or avoidance strategies are used to minimize or alter the subjective experience of intolerable affective states, and these chronic and maladaptive emotion regulation strategies may at times take the form of violent behaviors (Gardner & Moore, 2008, 2014). Finally, a recent study indicated that emotion regulation deficits mediated the relationship between childhood maltreatment and the experience of anger in both IPV and non-IPV male violent offenders (Gardner et al., 2014).

## THE PRESENT STUDY

This study used a cross-sectional design to investigate the relationship between several variables that both the AAM and recent research suggest play a role in the perpetration of IPV. As such, it is hypothesized that (a) childhood maltreatment will predict physical aggression in intimate partner relationships within an all-female sample; (b) childhood maltreatment will have an indirect effect on physical aggression through maladaptive schemas, the experience of anger, and difficulties in emotion regulation, and those three variables will each uniquely contribute to the manifestation of violence within intimate relationships; and (c) the experience of anger and difficulties in emotion regulation will mediate the relationship between childhood maltreatment and IPV.

## METHOD

### Participants

Both undergraduate and master's-level graduate students were recruited from a midsized suburban university in the Northeastern United States. Data were collected from 312 study participants. The full sample of 312 can be broken down into two groups: (a) participants who were not in a current relationship ( $n = 202$ ) and (b) participants who were in a current relationship ( $n = 110$ ). Only participants who reported current involvement in a relationship were included in the analyses. In this subsample, 52.7% identified as White, 20.9% identified as African American, 20.9% identified as Hispanic, 3.6% identified as Asian, 0.9% identifying as Native American, and 0.9% identified as other. The participants who were in a current relationship ( $n = 110$ ) ranged in age from 18 to 46 years, with a mean age of 23.94 years and standard deviation of 6.02 years. Of these participants, 56.4% identified as being unmarried but in a committed relationship, 25.5% identified as dating but not in a committed relationship, and 18.2% identified as married. In addition, 50.9% of these participants identified as being in a relationship for longer than 2 years, 19.1% identified as being a relationship for 1–2 years, 6.4% identified as being a relationship for 9–12 months, 5.5% identified as being in a relationship for 5–8 months, and 10% identified as being in a relationship for 1–4 months.

### Procedure

Following institutional review board approval, undergraduate and master's-level graduate students were voluntarily recruited with the assistance of willing university faculty who were asked to announce the availability of research participation for extra credit in their classes. Students interested in participating were instructed to access the surveys via a secure online portal and were informed that participation was voluntary, confidential, and anonymous. All appropriate components of informed consent were explained and obtained prior to the completion of the measures. Measures are listed in the following text in the order of administration.

### Measures

**Childhood Trauma Questionnaire.** The Childhood Trauma Questionnaire (CTQ) is a 28-item retrospective self-report questionnaire that measures five different forms of

childhood maltreatment and early aversive experiences, including sexual abuse, physical abuse, emotional abuse, physical neglect, and emotional neglect (Bernstein & Fink, 1998). Participants are asked to rate the frequency of having experienced particular forms of childhood maltreatment using a 5-point scale ranging from 1 (*never true*) to 5 (*very often true*). Among nonclinical and clinical samples, the CTQ has demonstrated sufficient psychometric properties, including adequate to strong convergent, construct, and predictive validity; test–retest reliability; and internal consistency (Bernstein et al., 1994; Paivio & Cramer, 2004; Rosen & Lee, 1996). From this measure, the Emotional Abuse (EA) and Physical Abuse (PA) subscales were used in an effort to identify those participants who had experienced childhood maltreatment associated with physical or emotional aggression and to differentiate the effects of these conditions from those of neglect or sexual abuse. Cronbach's alpha for the combination of the 2-item EA and 9-item PA subscales in this sample was .86.

**Young Schema Questionnaire-Short Form, Third Edition.** The Young Schema Questionnaire-Short Form (3rd ed., YSQ-S3) is a 90-item self-report measure that assesses 18 early maladaptive cognitive-affective schemas proposed by Young and Brown (2003). Items are rated on a 6-point scale ranging from 1 (*completely untrue of me*) to 6 (*describes me perfectly*). This study focused on the total score, which indicates an overall development of early maladaptive schemas. A previous psychometric investigation of the YSQ using both adult and undergraduate samples indicated adequate test–retest reliability, coefficients ranging from .50 to .82, and adequate internal consistency, with Cronbach's alpha coefficients ranging from .83 to .96 (Schmidt, Joiner, Young, & Telch, 1995). Cronbach's alpha for this sample was .96.

**Positive and Negative Affect Schedule.** The Positive and Negative Affect Schedule (PANAS) is a 20-item self-report measure designed to assess positive and negative affective states (Watson, Clark, & Tellegen, 1988). Items are rated on a 5-point scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). Several different timeframes have been used with the PANAS; this study adopted “to what extent you generally feel this way.” The PANAS is a reliable measure that provides accurate and largely independent measures of both positive and negative affective states. This study used only the total Positive and Negative Affect Schedule-Negative Affect (PANAS-NA) score to control for negative mood states and general negative affectivity that could influence responding on other measures. Cronbach's alpha for that subscale in this sample was .79.

**Anger Disorders Scale-Short Form.** The Anger Disorders Scale-Short Form (ADS-S) is an 18-item self-report questionnaire that distinguishes clinically dysfunctional anger from normal, adaptive experiences of anger (DiGiuseppe & Tafrate, 2004). Items are rated on a 5-point scale, with 1 indicating *infrequent experiences* and 5 indicating *frequent or persistent experiences*. The ADS-S has excellent internal consistency (.86 total score) and test–retest reliability ranging from .82 to .92. The ADS-S has also been shown to have high convergent and discriminate validity. Cronbach's alpha in this sample was .84.

**The Difficulties in Emotion Regulation Scale.** The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item self-report inventory that assesses emotion dysregulation across six domains. Domains include nonacceptance, difficulties engaging in goals, impulse control difficulties, limited emotional awareness, limited emotional clarity, and limited access to emotion regulation strategies. Items are rated on a 5-point scale ranging from 1 (*almost never*) to 5 (*almost always*). This study focused on the total DERS score, which implies global difficulties with emotion regulation. The DERS has been demonstrated to have high internal consistency ( $\alpha = .93$ ), good test–retest reliability,

and adequate predictive and construct validity in a sample of undergraduate students (Gratz & Roemer, 2004). Cronbach's alpha in this sample was .95.

**Conflict Tactics Scale-Revised.** The Conflict Tactics Scale-Revised (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) is a 39-item measure that assesses past instances of attempts to negotiate with a partner as well as instances of emotional/psychological and physical aggression toward one's partner. In addition, the CTS2 includes scales measuring engagement in sexually coercive behavior and experience of physical injury from assaults by one's partner. Items are rated on a 7-point scale ranging from 0 (*never*) to 6 (*more than 20 times*). On a separate rating for each item, participants can also indicate that behaviors have not occurred in the past year but have occurred previously. These items were not included in the calculations for this study. The CTS2 and the original CTS (Straus, 1979) are considered to be the most widely used measures of intimate partner aggressive behaviors. The CTS2 has demonstrated good internal consistency in a collegiate sample, with the reliability of scales ranging from .79 to .95 (Straus et al., 1996). This study focused only on the 12-item Physical Assault (CTS2-PA) subscale as an indicator of engagement in IPV. This subscale includes items that specifically assess the use of physical aggression toward intimate partners in the past year. Of note, use of sexually coercive behavior in intimate relationships could be considered more etiologically complex than other forms of aggression and the specific relevance of the hypothesized predictors is beyond the scope of this study. Cronbach's alpha in this sample was .95 for the Physical Assault subscale.

## RESULTS

### Descriptive Results

Among study participants, 47.3% ( $n = 52$ ) endorsed engaging in some form of physical aggression in the past year. The most frequently endorsed forms of past-year physical aggression were pushing or shoving one's partner (29.1% of the sample), throwing things at one's partner (21.8%), and slapping one's partner (19%), whereas the least frequently endorsed were scalding or burning one's partner (5.4%) and using a knife or gun (2.7%).

Table 1 illustrates the means, standard deviations, and bivariate correlations between all variables included in this study. As anticipated, childhood emotional and physical abuse (CTQ [EA + PA]), early maladaptive schemas (YSQ-S3), general negative affect (PANAS-NA), anger experience (ADS-S), and emotion regulation difficulties (DERS) were all positively and significantly correlated with physical aggression (CTS2-PA). In addition, CTQ (EA + PA) and PANAS-NA scores were also significantly associated with YSQ-S3, ADS-S, and DERS scores (hypothesized mediators). Independent samples  $t$  tests revealed that those who indicated they had engaged in physical aggression obtained higher scores than those who did not indicate having engaged in aggression on three of the variables used in the analyses: (a) childhood maltreatment (CTQ),  $t(107) = 1.97$ ,  $p = .05$ ; (b) early maladaptive schemas (YSQ-S3),  $t(107) = 3.95$ ,  $p < .001$ ; (c) anger experience (ADS-S),  $t(107) = 3.22$ ,  $p < .01$ ; and (d) difficulties in emotion regulation (DERS),  $t(107) = 2.78$ ,  $p < .01$ . Preliminary regression analyses revealed that neither age ( $\beta = .024$ ,  $ns$ ) nor duration of relationship ( $\beta = -.036$ ,  $ns$ ) were significant predictors of physical aggression (CTS2-PA). A preliminary ANOVA examining differences in physical aggression by racial or ethnic group revealed no significant differences,  $F(5, 108) = 2.08$ ,  $ns$ .

**TABLE 1. Means, Standard Deviations, and Correlations**

	<i>M/SD</i>	CTQ- PA + EA	YSQ-S3	PANAS-NA	ADS-S	DERS	CTS2-PA
CTQ-PA + EA	15.45/6.44	—					
YSQ-S3	204.45/57.29	.36**	—				
PANAS-NA	24.41/6.46	.25**	.53**	—			
ADS-S	33.91/9.37	.23*	.37**	.38**	—		
DERS	76.86/23.17	.33**	.63**	.49**	.50**	—	
CTS2-PA	8.54/20.10	.27**	.32**	.19*	.37**	.42**	—

*Note.* CTQ-PA + EA = Childhood Trauma Questionnaire, Physical Abuse and Emotional Abuse; YSQ-S3 = Young Schema Questionnaire-Short Form, Third Edition; PANAS-NA = Positive and Negative Affect Schedule-Negative Affect; ADS-S = Anger Disorders Scale-Short Form; DERS = Difficulties in Emotion Regulation Scale; CTS2-PA = Conflict Tactics Scale-Revised, Physical Aggression.

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

### Mediation Analyses

Multiple mediation analyses were performed using Model 4 in the PROCESS add-on for SPSS, developed by Hayes (2013). Multiple mediation was used for the analyses because it provides a parsimonious strategy for testing a larger multidimensional model without requiring numerous individual mediational analyses. Multiple mediation analysis also provides estimates for the collective indirect effects of childhood emotional and physical abuse on IPV through all proposed mediators in the model as well as the individual indirect effects through specific predictors. Moreover, PROCESS allows for use of covariates when examining mediation effects, which enabled testing of indirect effects of the hypothesized mediator variables. General negative affect (PANAS-NA) was included in the analysis as a covariate to control for the influence of negative mood states apart from the experience of anger. Using bias-corrected bootstrapping (with 10,000 resamples), confidence intervals were generated for direct and indirect effects in both simple and multiple mediator models. Bootstrapping (Preacher & Hayes, 2004, 2008) is a nonparametric statistical approach that estimates the sampling distribution of the product of coefficients  $a$  and  $b$ , the path from the independent variable to the hypothesized mediator and the path from the hypothesized mediator to the dependent variable. Estimates are based on 10,000 new and identically sized datasets randomly derived from and then replaced in the original dataset. Bootstrapping is widely considered to be the most accurate approach to determining mediation because (a) normal distribution of the sample data is not assumed, (b) it increases power, (c) it minimizes Type I error, and (d) it allows confidence intervals for the mediated effect to be asymmetrical (MacKinnon, Fairchild, & Fritz, 2007; Preacher & Hayes, 2004, 2008). The point estimate is simply the mean of the indirect effect cross products ( $ab$ ) computed across the 10,000 new bootstrapped datasets and as such offers a useful estimate of the true value of the indirect effect. The 95% confidence intervals (CIs) reflect the 2.5 and 97.5 percentile scores of the obtained distribution of indirect effects ( $ab$ ), with  $z$  score-based corrections for bias. The point estimate is significant at the indicated level if the confidence intervals do not contain zero (MacKinnon et al., 2007).

Although bootstrapping of ordinary least squares (OLS) regression offers a robust test of indirect effects, it does require that data meet assumptions of linearity, homogeneity of variance (homoscedasticity), and independence. Examination of scatterplots for linearity and homoscedasticity of the data revealed potential heteroscedasticity, which was confirmed, using the Glejser test of homoscedasticity (Glejser, 1969) for two predictors of physical aggression (DERS, ADS). To address this issue, the heteroscedasticity-consistent standard error estimator (HC3) option (Hayes, 2013; Hayes & Cai, 2007) was used when conducting mediation analyses using PROCESS.

In the multiple mediator model tested, childhood maltreatment (CTQ [EA + PA]) served as the primary predictor variable, whereas physical aggression in intimate relationships (CTS2-PA) served as the criterion variable. Potential mediators included in the analysis were early maladaptive schemas (YSQ-S3), the experience of anger (ADS-S), and difficulties in emotion regulation (DERS). General negative affect (PANAS-NA) was included in the analysis as a covariate.

Results supported research Hypotheses 1 and 2, in that childhood maltreatment predicted physical aggression in intimate partner relationships within the all-female sample, and revealed that the total indirect effect of childhood maltreatment on physical aggression through the three proposed mediators was significant. Moreover, with these three prospective mediators in the model, the direct effect of childhood maltreatment on physical aggression was no longer significant (the bias-corrected confidence interval for this effect contained zero). In fact, addition of the mediator variables to the equation reduced the nonstandardized regression coefficient for childhood maltreatment from 0.744 to 0.384, accounting for 51.6%  $[(0.744 - 0.360)/0.744]$  of the association between the independent and dependent variables. However, contrary to research Hypothesis 3, of the three proposed mediators, only difficulties in emotion regulation significantly mediated the relationship between childhood maltreatment and physical aggression. Specific indirect effects of the YSQ-S3 and ADS-S were not significantly different from zero. See Table 2 for point estimates and confidence intervals.

**TABLE 2. Results of Multiple Mediation Analysis of the Relation Between Childhood Maltreatment and Physical Aggression in Intimate Relationships, Controlling for Negative Affect**

Mediation Pathway	Point Estimate	SE	BC 95% CI	
			Lower	Upper
Indirect effects	0.744	0.300	0.150	1.337
Total	0.060	0.114	-0.095	0.367
YSQ-S3	0.116	0.133	-0.035	0.592
ADS-S	0.184	0.130	0.365	
DERS			0.573	

*Note.* SE = standard error. BC 95% CI = bias-corrected 95% confidence interval. YSQ-S3 = Young Schema Questionnaire-Short Form, Third Edition; ADS-S = Anger Disorders Scale-Short Form; DERS = Difficulties in Emotion Regulation Scale.

The multiple mediation results can also be seen in Figure 1, which highlights the significant *a* and *b* paths in the overall model,  $R^2 = .24$ ,  $F(4, 102) = 3.76$ ,  $p < .01$ . Only difficulties in emotion regulation (DERS) was both significantly predicted by childhood physical and emotional abuse (CTQ [PA + EA]) and was also a significant predictor of physical aggression in intimate partner relationships (CTS2-PA), when general negative affect (PANAS-NA) was controlled. In addition, although childhood abuse (CTQ [PA + EA]) significantly predicted physical aggression prior to entering the potential mediators into the equation, 95% CI [0.004, 1.483], it no longer exerted a significant direct effect when the mediators were added, 95% CI [-0.483, 1.250], consistent with a finding of significance.

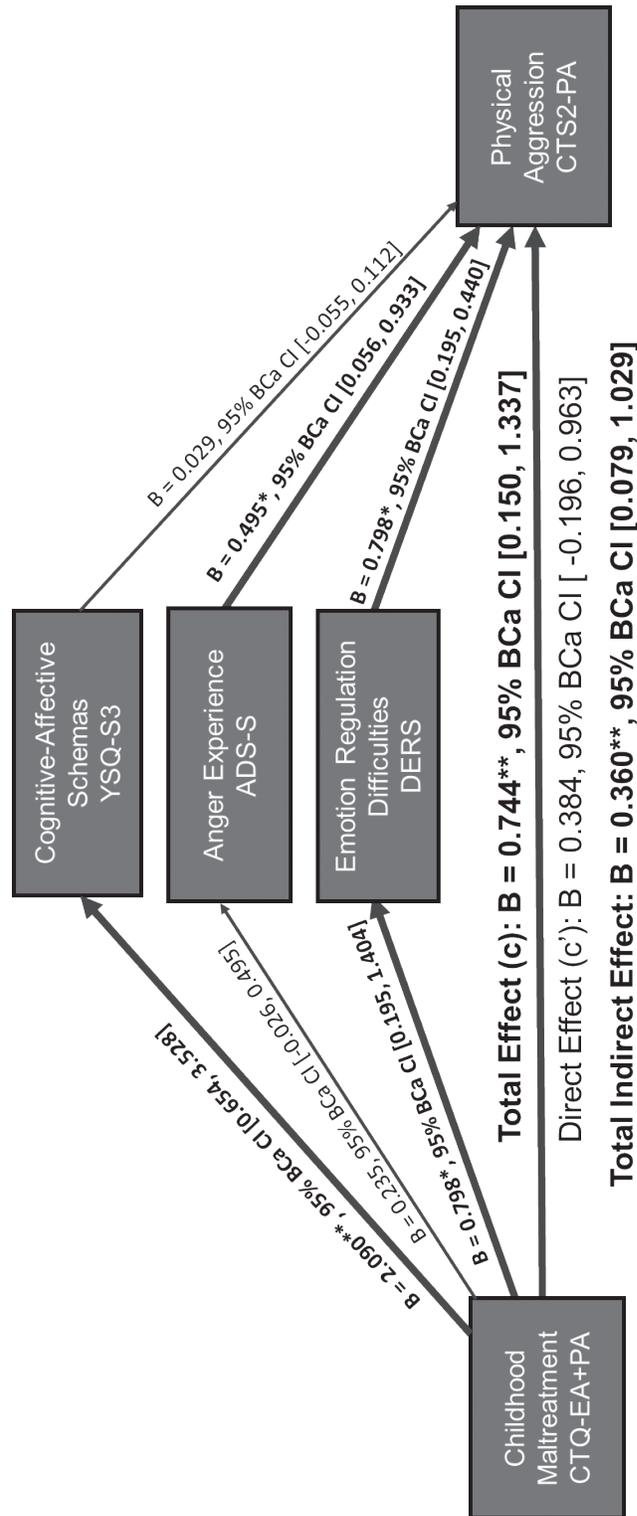
## DISCUSSION

This study was designed to extend our knowledge regarding the relationship between several pertinent historical and psychological variables and self-reported aggression by women in intimate relationships as well as to expand the growing literature suggesting that difficulties in emotion regulation are strongly related to IPV (McNulty & Hellmuth, 2008; Shorey, Brasfield, et al., 2011a, 2011b). More important, this study found that a substantial portion of participants (approximately 47%) engaged in IPV in the past year. This result meets and even exceeds recent research findings suggesting that a sizeable percentage of college-age females (often suggested to be approximately 30%) will perpetrate physical aggression in intimate relationship contexts (Bell & Naugle, 2007; Cornelius et al., 2010; Shorey et al., 2008) and further explicates female-perpetrated IPV as an important area of scientific inquiry.

The present investigation also found that, as predicted, childhood maltreatment, early maladaptive schemas, deficits in emotion regulation, and the experience of anger together contribute to the manifestation of IPV within an all-female sample. Although contrary to our hypothesis, these variables did not all uniquely contribute to IPV, the rather large amount of explained variance of the combined model (more than 51%) indicates that these variables address a substantial portion of the psychosocial factors associated with IPV. However, it should be noted that a large percentage of unexplained variance still remains, suggesting that additional factors (e.g., alcohol/substance use, patriarchal attitudes) may be important contributors to the development of this profound personal and societal problem, thereby warranting further exploration in future studies.

In addition, and more important, controlling for negative affect and yet still finding that the experience of anger remains a contributor to IPV in the overall model suggests that it is the specificity of anger, rather than the more general concept of negative affect, that is an important contributor to IPV. Prior research has demonstrated that elevated levels of anger and hostility specifically, are in fact distinguishing characteristics of male perpetrators who engage in IPV (Norlander & Eckhardt, 2005). This study's findings indicate that the experience of anger is also relevant for the understanding of female-perpetrated IPV.

Consistent with recent research identifying emotion dysregulation as an important variable in IPV (Bliton et al., 2015), results from the multiple mediation analysis described herein suggest that deficits in emotion regulation appears to be an essential pathway by which childhood maltreatment results in the manifestation of violence within intimate relationships. Contrary to our hypothesis, the results indicate that the experience of anger is not a mediator of the relationship between childhood maltreatment and IPV, at least in a female population within an intimate relationship context. Rather, it appears that early



**Figure 1.** Parallel multiple mediator model showing nonstandardized regression coefficients and significance levels for paths *a* (between childhood physical and emotional abuse and proposed mediators) and *b* (between proposed mediators and physical aggression in intimate partner relationships). Total effect represents the *c* path (total contribution of childhood maltreatment to physical aggression, including both direct and indirect effects); direct effect represents the *c'* path (contribution of childhood maltreatment to physical aggression after removing the indirect effect of the proposed mediators). CTQ (PA + EA) = Childhood Trauma Questionnaire, Physical Abuse and Emotional Abuse; YSQ-S3 = Young Schema Questionnaire-Short Form, Third Edition; ADS-S = Anger Disorders Scale-Short Form; DERS = Difficulties in Emotion Regulation Scale; CTS2-PA = Conflict Tactics Scale, Physical Aggression. \* $p < .05$ . \*\* $p < .01$ .

maladaptive schemas and the experience of anger in the presence of deficits in emotion regulation substantially contribute to IPV. More important, although early maladaptive schemas and the experience of anger were significant contributors to self-reported IPV in the overall model, they were no longer significant in the mediation analysis, suggesting that at least a portion of their impact on IPV could occur indirectly through deficits in emotion regulation.

From the perspective of the AAM and other contemporary contextual models (Bell & Naugle, 2008), the inability/unwillingness to tolerate/accept anger may result in escape behaviors, up to and including violence. In addition to being generally supportive of the basic elements of the AAM and other contemporary contextual models, the present results are fully consistent with previous research specifically suggesting that deficits in emotion regulation are found in perpetrators of IPV (Gardner, Dettore, Moore, & Foy, 2010; Gardner *et al.*, 2014; Gratz *et al.*, 2009; Jakupcak *et al.*, 2002; Reddy *et al.*, 2011; Robertson, Daffern, & Bucks, 2014). The aforementioned finding that childhood maltreatment appears to impact IPV through emotion regulation, and that this indirect effect through emotion regulation is significant, whereas the indirect effects through early maladaptive schemas and anger experience alone are not, adds to the recent literature identifying difficulties in emotion regulation as an important variable in understanding IPV. Although still in an early phase of scientific inquiry, this result suggests that emotion regulation may be a viable treatment target for this difficult-to-treat behavior.

Although informative, the results should be considered in the context of the study's limitations. First, the sample size of participants in a current relationship and those who endorsed acting violently toward their partners was relatively small, and as such, some caution should be taken when drawing broad conclusions. Second, the sample was restricted to undergraduate and graduate students attending a university located in the northeastern United States. Therefore, replicating this study with samples in different geographical regions of the United States and worldwide would enhance the generalizability of these findings. Third, the participant sample was exclusively female, and although there has been prior research suggesting that women engage in acts of both minor and severe aggression as frequently as men (Straus, 2009), controversy has existed with respect to such suggestions (Conradi & Geffner, 2009). Care should thus be taken when generalizing these results to a male population, particularly in light of recent findings by Shorey, Brasfield, *et al.* (2011b), which indicated that emotion regulation difficulties related to dating violence in college students showed some gender differences. In addition, although one might argue that the difference between court-mandated IPV offenders and college students who self-report IPV, yet who have not entered the judicial system, may be because of circumstances or chance, it remains an open empirical question as to the differences that might be found between a nonmandated and a mandated offender population. Lastly, the use of self-report measures to assess the occurrence of early childhood maltreatment is susceptible to retrospective bias and prohibits any certainty that such maltreatment occurred.

Despite the possible limitations, this study adds to the literature by examining several important variables that relate to IPV in combination, which is an important task aimed at gaining a better understanding of core mechanisms of IPV. Replication will further highlight the core mechanisms that underlie the relationship between childhood maltreatment and the manifestation of IPV. Future research should further seek to extend and replicate this study to include additional psychosocial variables among both male and female young adults.

The present findings have important clinical implications. First, they reinforce recent findings suggesting the preeminent importance of emotion regulation skills among the range of psychosocial factors (including the experience of anger) that contribute to IPV and in turn suggest possible targets for psychological interventions. Second, they suggest both the relevance and possible foci of primary prevention programs designed to reduce risk for future violent behavior for at-risk individuals. In fact, the results of this study may encourage researchers to consider psychological interventions specifically designed to target deficits in emotion regulation skills, when treating violent behaviors within relational contexts (Gardner & Moore, 2014).

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