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Article in *Personality and Individual Differences* · November 2014

DOI: 10.1016/j.paid.2014.06.009

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Emotion dysregulation, negative affect, and aggression: A moderated, multiple mediator analysis



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ARTICLE INFO

Article history:

Received 22 April 2014

Received in revised form 5 June 2014

Accepted 8 June 2014

Keywords:

Emotion regulation

Physical aggression

Negative affect

Sex differences

ABSTRACT

Research on violence has highlighted the role of trait negative affect in reactive aggressive behavior. Emotion dysregulation is a multidimensional construct reflecting maladaptive ways in which a person experiences and responds to emotional states, and has also been empirically linked to aggression. This study sought to test the hypothesis that multiple facets of emotion dysregulation would mediate the relationship between negative affect and physical aggression in a nonclinical sample. An additional aim was to examine the moderating effect of sex in the relationship between negative affect and aggression, and whether mediators differ as a function of sex. Three-hundred and eighteen participants completed measures of physical aggression, difficulties in emotion regulation, and negative affect. Results showed that sex moderated the relationship between negative affect and physical aggression, and emotion dysregulation fully mediated the relationship between these variables in both males and females. While difficulty inhibiting impulsive behavior when distressed was a significant mediator across sexes, difficulties with emotional awareness demonstrated a mediation effect only in males. Findings provide preliminary support for the facets of emotion dysregulation that are important in understanding the negative affect – physical aggression association in males and females.

Published by Elsevier Ltd.

1. Introduction

Aggressive behavior falls under the *externalizing* factor of the personality spectrum, a latent dimension encompassing substance abuse and antisocial behaviors (Kendler, Davis, & Kessler, 1997). Extant research has highlighted the role of negative affect (or Neuroticism) in the pathogenesis of reactive aggression (Miller & Lynam, 2006; Rothbart, Ahadi, & Hershey, 1994). Negative affect reflects the disposition to experience aversive affective states, encompassing emotions such as anger, fear, anxiety, shame and disgust (Watson, Clark, & Tellegen, 1988). Indeed, the propensity to experience negative affect has been a focal point of developmental theories of externalizing problems (Waldman, Singh, & Lahey, 2006).

The association between trait negative affect and aggressive behavior is well documented in the literature. In children, prospec-

tive associations between negative affect and aggression have been identified (Rothbart et al., 1994). Negative emotionality in adolescence predicts later antisocial personality disorder, over and above adolescent conduct disorder (Krueger, 1999). Among adults, negative affect variables are associated with aggression (Miller, Zeichner, & Wilson, 2012), with Neuroticism emerging as the primary broadband personality trait distinguishing reactive and proactive aggression (Miller & Lynam, 2006). Further evidence suggests the association between Neuroticism and aggression is related in part to an increase in aggressive emotions (Barlett & Anderson, 2012).

1.1. Emotion dysregulation and aggression

To better elucidate the negative affect-aggression association, additional investigations into mechanisms underlying this relationship are needed. Emotion regulation (ER) reflects the set of processes that influence which emotions one has, when one has them, and how one experiences and expresses these emotions (Gross, 2013). Emotion dysregulation reflects maladaptive ways in which a person experiences and responds to emotional states

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¹ Author's Note: Writing of this article was supported by the Office of Academic Affiliations, Advanced Fellowship Program in Mental Illness Research and Treatment, Department of Veterans Affairs.

(Werner & Gross, 2010). Emotion dysregulation has emerged as a possible mechanism by which negative affect influences psychopathology in general. Calkins' (1994) developmental theory of ER suggests the effects of behavioral traits (e.g., emotional reactivity) on social outcomes are mediated by individual differences in ER. Supporting this, in a study of maltreated and nonmaltreated children, Kim-Spoon, Cicchetti, and Rogosch (2013) found ER longitudinally mediated the relationship between emotional lability–negativity and internalizing symptoms. In the externalizing domain, ER difficulties have been shown to mediate the relationship between negative affect intensity and drinking to cope (Veilleux, Skinner, Reese, & Shaver, 2014). The role of ER in explaining the link between negative affect and aggression has been less examined however, and warrants further inquiry.

Several lines of research support the notion that negative affect may lead to aggression through ER difficulties (see Robertson, Daffern, & Bucks, 2012). In conceptualizing clinical anger, Gardner and Moore (2008) posit aggression functions as avoidance, thereby serving to regulate anger in the short-term. Among adolescents, emotion dysregulation prospectively predicts aggressive behavior, although psychopathology in general does not predict later ER deficits, providing evidence for emotion dysregulation as a risk marker (McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011). In a student sample, deficits in self-regulation partially mediate the relationship between anger rumination and reactive aggression (White & Turner, 2014).

1.1.1. Specific ER skills and aggression

Although significant advances have been made in the study of ER, research has been hindered by problems with definitional clarity (Zinbarg & Mineka, 2007). We take an acceptance-based perspective, in which emotion dysregulation is conceptualized as a multidimensional construct involving difficulties with the awareness, understanding, and acceptance of emotions; difficulties engaging in goal-directed behavior and inhibiting impulsive behaviors; and, limited access context-appropriate regulatory strategies when distressed (Gratz & Roemer, 2004).

Prior research suggests problems in each of these domains are associated with aggression. In a sample of undergraduates, self-reported difficulties inhibiting impulsive behaviors when distressed, difficulties engaging in goal-directed behavior when distressed, and limited perceived access to ER strategies each exhibited significant correlations with frequency of intimate partner abuse (Gratz & Roemer, 2004). In another study, emotional nonacceptance mediated the association between restrictive emotionality and aggressive behavior in males (Cohn, Jakupcak, Seibert, Hildebrandt, & Zeichner, 2010). Recently, using experience sampling methodology, the ability to understand and differentiate between emotions was shown to moderate the relationship between anger and aggression (Pond et al., 2012). Together, these studies suggest negative affect may increase the likelihood of aggression via one's difficulty adaptively regulating these experiences.

1.2. Sex differences in emotional arousal and aggression

Research on aggression suggests that males are more aggressive than females (see Bettencourt & Miller, 1996). In a meta-analysis by Knight, Guthrie, Page, and Fabes (2002), the magnitude of sex differences in aggression covaried as a function of emotional arousal, suggesting that divergence in aggression between males and females partially stems from differences in emotional arousal or regulation. Consistent with this, emotion dysregulation was recently found to mediate the link between childhood maltreatment and intimate partner violence in males only (Gratz, Paulson, Jakupcak, & Tull, 2009). Given these findings, investigations into relationships between emotional arousal, regulation,

and aggression should also examine potential sex differences, as these associations may vary as a function of sex.

1.3. The present study

This study will elaborate on the relationship between trait negative affect and aggression, and examine the role of multiple aspects of ER in explaining this relationship. We hypothesized that trait negative affect would significantly relate to trait physical aggression, and this association would be stronger in men as compared to women. Next, we hypothesized that six facets of emotion dysregulation (emotional nonacceptance; difficulties engaging in goal-directed behaviors when distressed; difficulties controlling impulsive behaviors when distressed; lack of emotional awareness; limited perceived access to emotion regulation strategies; and, lack of emotional clarity) would be associated with trait physical aggression at the bivariate level, and ER difficulties would mediate the relationship between negative affect and aggression. To evaluate this question, we examined the simultaneous and shared influence of individual ER domains in mediating the relationship between negative affect and physical aggression and the moderating role of sex among these associations.

2. Method

2.1. Participants

Three-hundred and eighteen undergraduate students were recruited from a university in the northeastern United States. Participants were required to be at least 18 years old and able to read and understand English. Ages ranged from 18 to 67 years ($M = 21.35$, $SD = 5.83$), and 71% of the sample was female. The sample was 62.6% Caucasian, 16% African–American, 11% Hispanic, 5% Asian, and 5.4% 'Other.' Median household income ranged from 46,000 to 50,000. This study received full approval from the University Institutional Review Board.

2.2. Materials

2.2.1. Difficulties in emotion regulation scale (DERS)

The DERS (Gratz & Roemer, 2004) is a 36-item self-report questionnaire designed to assess emotion dysregulation both generally and in specific domains. In the current study, internal consistency was adequate for the total score ($\alpha = .93$) and the six factor-analytically derived subscales (α ranging from .79 to .89). The six subscales measure nonacceptance of emotional responses (Nonacceptance); difficulties engaging in goal-directed behaviors when distressed (Goals); difficulties controlling impulsive behaviors when distressed (Impulse); lack of emotional awareness (Awareness); limited access to emotion regulation strategies perceived as effective (Strategies); and, lack of emotional clarity (Clarity).

2.2.2. Positive and negative affect schedule (PANAS)

The PANAS (Watson et al., 1988) is a 20-item self-report measure designed to assess two dimensions of emotional experience: negative affect (NA), the disposition to experience negative mood states; and, positive affect (PA), the disposition to experience positive mood states. The PANAS has previously demonstrated excellent psychometric properties. The NA scale ($\alpha = .85$) was utilized for this study, and participants rated mood descriptors based on how they feel generally.

2.2.3. Aggression questionnaire (AQ)

The AQ (Buss & Perry, 1992) is a 29-item self-report questionnaire which assesses the dispositional traits of aggression in cogni-

tive, affective, and behavioral domains. The AQ is comprised of four factor-analytically derived subscales: physical aggression, verbal aggression, anger, and hostility. The Physical Aggression (AQ-PA) subscale ($\alpha = .82$) was the subject of analysis in this study.

For all scales, higher scores correspond to greater levels of the measured construct.

2.3. Statistical analysis

Preliminary data screening identified 19 participants with missing data. Fifteen participants were excluded due to excessive missing data (>20% of items), and unweighted means estimation was utilized to account for the small amount of missing items among the remaining 4 participants. As a result, 303 total participants were subjected to analyses, including 88 males and 215 females.

Prior to testing the full model, hierarchical regression analysis was conducted to establish the hypothesized simple moderating effect of sex on negative affect in predicting physical aggression. Age was included as a covariate and entered into the first step, negative affect (mean-centered) and sex (dummy-coded) were entered into the second step, and the two-way interaction between negative affect and sex was entered in the third step.

Next, we tested a moderated, multiple mediator model examining the associations between negative affect, six domains of emotion dysregulation, and physical aggression, which we hypothesized to be moderated by sex. A bootstrapping approach developed by Preacher and Hayes (2008) was used to test the proposed model. This nonparametric approach is preferable as it simultaneously tests multiple predictors without the need for several individual tests (and corresponding alpha inflation), and the sampling distribution of indirect effects often violates the normality assumption inherent in traditional methodologies. The Preacher and Hayes (2008) program models and tests indirect effects by examining point estimates and bias-corrected confidence intervals (CIs). CIs that do not include zero indicate the presence of an indirect effect and provide evidence for a significant mediation effect. Age was included as a covariate and the data were resampled 5000 times to construct 95% CIs for the indirect effects.

3. Results

3.1. Descriptive statistics

Means, standard deviations, and bivariate correlations for PANAS-NA, DERS-Total and subscale scores, AQ-PA, and age are displayed in Table 1. PANAS-NA and AQ-PA exhibited a moderate positive association ($r = .23, p < .001$). PANAS-NA and DERS-Total exhibited a large positive correlation ($r = .58, p < .001$). There was a moderate positive correlation between DERS-Total and AQ-PA ($r = .36, p < .001$). Consistent with the pattern of DERS-Total findings, and supporting our hypotheses, all DERS subscale intercorrelations with PANAS-NA and AQ-PA were significant and in the expected direction.

3.2. Moderating effect of sex on negative affect and physical aggression

In the hierarchical regression analysis, significant main effects were identified for sex and PANAS-NA in explaining AQ-PA. In the final step of the analysis, the interaction between sex and PANAS-NA showed a significant increase in explaining AQ-PA variance, $\Delta R^2 = .01, F(4, 298) = 12.982, p < .05$. Therefore, sex was a significant moderator of the relationship between PANAS-NA and AQ-PA.

3.3. Moderated, multiple mediation model

3.3.1. Moderated, direct effects

In the conditional process model, PANAS-NA was entered as the independent variable, AQ-PA as the dependent variable, the six DERS subscales (Nonacceptance, Goals, Impulse, Awareness, Strategies, and Clarity) as the mediators, and sex as a moderator for all paths (see Fig. 1). In this model, PANAS-NA exhibited significant direct effects on Nonacceptance ($B = .28, p < .001$), Goals ($B = .25, p < .001$), Impulse ($B = .27, p < .001$), Awareness ($B = .10, p < .05$), Strategies ($B = .46, p < .001$), and Clarity ($B = .15, p < .001$). Additionally, sex was found to moderate the relationships between PANAS-NA and Nonacceptance ($B = .25, p < .01$), and PANAS-NA and Strategies ($B = .27, p < .01$). These results indicate that while PANAS-NA is significantly associated with all six DERS subscales in both sexes, the magnitude of negative affect's relationship with Nonacceptance and Strategies is stronger among males as compared to females. Among the proposed mediators, Impulse ($B = .39, p < .01$) was the only significant predictor of AQ-PA after accounting for the other DERS subscales and PANAS-NA. Evidence of moderation was found in two individual paths, as both the interaction terms for Impulse \times Sex ($B = .52, p < .05$) and Awareness \times Sex ($B = .44, p < .05$) significantly predicted AQ-PA. Results indicate the magnitude of the association between these proposed mediators and AQ-PA are influenced by sex, with a stronger relationship found among males. While overall, Awareness is not a significant predictor of AQ-PA after controlling for the remaining DERS subscales, this relationship varies as a function of sex, with a demonstrated association found among males. The overall model accounted for 29% of the variance in AQ-PA, $F(16, 286) = 7.2794, p < .001$, and the direct effect of PANAS-NA on AQ-PA was reduced to nonsignificance after the DERS facets were included ($B = .06, p = .36$), evidencing full mediation. Sex did not moderate the direct effect of PANAS-NA on AQ-PA in the full model, suggesting that sex differences in this relationship vary through the mediating effects of emotion dysregulation.

3.3.2. Moderated, indirect effects

The indirect effects of PANAS-NA with AQ-PA through the six mediators were then examined as a function of sex. Significant indirect effects were found via Impulse and Awareness. Regarding the Impulse – AQ-PA association, the regression coefficient was $B = .36$ (95% CI: .16, .63) for males and $B = .11$ (95% CI: .03, .21) for females. As zero was not included within either CI, we can conclude the Impulse subscale exhibits a significant indirect effect in both males and females. For the Awareness – AQ-PA association, the regression coefficient was $B = .07$ (95% CI: .01, .19) for males and $B = .00$ (95% CI: $-.04, .02$) for females, suggesting a significant indirect effect of the Awareness subscale for males only. The remaining DERS subscales did not exhibit significant indirect effects as 95% CIs for point estimates each include zero.² Results are displayed in Table 2, and graphically in Fig. 1.

Given the cross-sectional nature of our study, we also tested the alternative model that PANAS-NA mediates the relationship between the DERS and AQ-PA. In a model with DERS-total as the independent variable, PANAS-NA as the mediator, and AQ-PA as the dependent variable, the direct effect of DERS remained significant ($B = .10, p < .001$), while PANAS-NA exhibited a nonsignificant indirect effect ($B = .01, 95\% \text{ CI: } -.02, .03$). Next, six individual models were tested, each with one DERS subscale entered as the

² A model using DERS-Total as the mediator was also tested to confirm that global emotion dysregulation exhibited a significant indirect effect in the relationship between PANAS-NA and AQ-PA. The overall model explained 21% of the variance in AQ-PA, significant indirect effects were found for both males and females, and the direct effect of PANAS-NA was negated when accounting for the DERS.

Table 1
Summary of Means, Standard Deviations, and Intercorrelations for PANAS–NA, DERS Total and Subscale Scores, AQ–Physical Aggression, and Age.

Measure	1	2	3	4	5	6	7	8	9	10	M	SD	Range
1. PANAS–NA	(.85)										22.70	6.97	10–42
2. DERS–Total	.58**	(.93)									79.68	21.15	37–150
3. Nonacceptance	.45**	.77**	(.89)								12.91	5.59	6–30
4. Goals	.41**	.80**	.41**	(.89)							15.16	5.05	5–25
5. Impulse	.45**	.78**	.53**	.50**	(.87)						11.34	4.68	6–30
6. Awareness	.18**	.41**	.16**	-.01	.11*	(.78)					13.35	4.37	6–29
7. Strategies	.55**	.87**	.64**	.55**	.71**	.15**	(.89)				16.45	6.67	8–40
8. Clarity	.33**	.61**	.35**	.23**	.33**	.50**	.35**	(.79)			10.49	3.67	5–25
9. AQ–PA	.23**	.36**	.22**	.19**	.40**	.15**	.32**	.21**	(.82)		20.54	6.65	9–40
10. Age	-.08	-.16*	-.12*	-.18**	-.08	-.01	-.11	-.19**	-.13*	-	21.31	5.67	18–67
Male M	21.13	77.74	12.30	14.08	11.01	13.92	16.09	10.34	22.82	21.98			
Male SD	6.72	22.32	6.16	4.71	4.36	4.44	6.78	3.99	6.97	7.28			
Female M	23.34	80.48	13.16	15.60	11.47	13.11	16.60	10.54	19.61	21.04			
Female SD	6.98	20.66	5.33	5.13	4.80	4.33	6.64	5.53	6.3	4.81			
t-statistic ^a	2.58*	0.88	1.25	2.37*	0.98	1.57	0.53	0.71	3.79**				

Note. PANAS–NA = Positive and Negative Affect Schedule–Negative Affect Subscale; DERS–Total = Difficulties in Emotion Regulation Scale–Total Score; AQ–PA = Aggression Questionnaire–Physical Aggression Subscale.

Cronbach’s α in parentheses along the diagonal.

^a Mean scale score comparisons by sex.

* $p \leq .05$.

** $p \leq .01$.

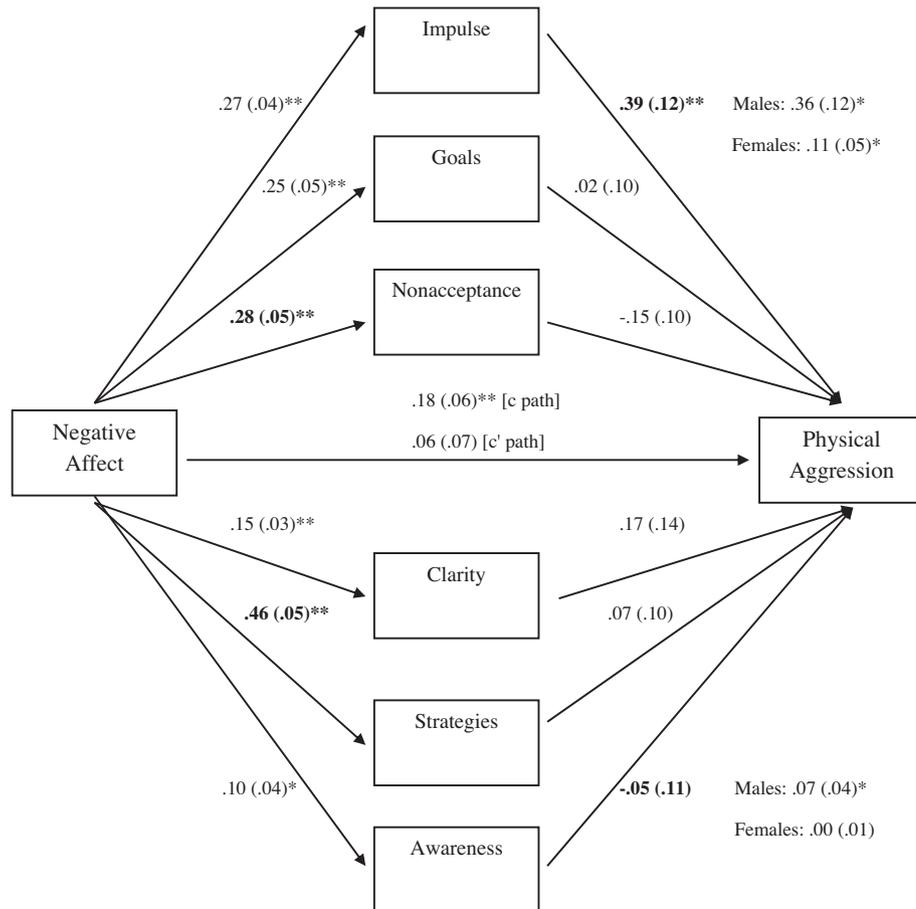


Fig. 1. Moderated, multiple mediation model of the relationship between negative affect and physical aggression. Each pathway includes unstandardized path coefficients of the direct relationship of one variable to another, adjusted for age and the interaction between the predictor variable and sex. Bolded coefficients reflect pathways that are significantly moderated by sex. Coefficients to the right of the model are the conditional indirect effects through Impulse and Awareness. The c path represents the total effect of Negative Affect on Physical Aggression. The c' path represents the direct effect of Negative Affect on Physical Aggression after accounting for emotion dysregulation. SEs are identified in parentheses. * $p < .05$. ** $p < .01$.

independent variable, the remaining five DERS subscales entered as covariates, PANAS–NA entered as the mediator, and AQ–PA entered as the dependent variable. None of the six models displayed

evidence of mediation, with regression coefficients for indirect effects ranging from B 's of .00 to .03 (*ns*). These models therefore provide no statistical support for the alternative suggestion that

Table 2

Unstandardized Conditional Effects of Negative Affect on Physical Aggression through Six Dimensions of Emotion Dysregulation as Moderated by Sex.

	Males				Females			
	Point estimate	SE	Percentile 95% CI		Point estimate	SE	Percentile 95% CI	
			Lower	Upper			Lower	Upper
<i>Total Effect</i>								
PANAS–NA on Aggression	.42**	.10	.23	.62	.18**	.06	.06	.30
<i>Direct Effect</i>								
PANAS–NA on Aggression	.14	.15	–.15	.43	.06	.07	–.07	.19
<i>Indirect Effects</i>								
via Nonacceptance	.07	.09	–.10	.26	–.04	.03	–.11	.02
via Goals	–.09	.06	–.22	.01	.00	.03	–.06	.07
via Impulse	.36*	.12	.16	.63	.11*	.05	.03	.21
via Awareness	.07*	.04	.01	.19	.00	.01	–.04	.02
via Strategies	–.09	.14	–.38	.20	.03	.05	–.07	.12
via Clarity	–.02	.04	–.13	.06	.03	.02	–.02	.08
Model Summary			$R_2 = .29, F(16,286) = 7.2794, p < .001$					

Note. PANAS–NA = Positive and Negative Affect Schedule–Negative Affect Scale; Estimates displayed are adjusted for age; Path coefficients are unstandardized; Model based on 5000 bootstrap samples.

* Significant point estimate ($p < .05$).

** Significant point estimate ($p < .01$).

negative affect mediates the association between emotion dysregulation and physical aggression.

4. Discussion

Psychopathology research has suggested that the manner in which one responds to internal states may be more important in understanding problem behaviors and symptoms, than the frequency or intensity of these states (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Consistent with this, the present study sought to clarify the relationship between negative affect and aggression by examining the mediating role of emotion dysregulation. Results lend support for the role of emotion dysregulation as a mechanism underlying aggressive behavior by demonstrating that ER difficulties mediated the relationship between trait negative affect and trait physical aggression in both males and females. By simultaneously examining the specific facets of emotion dysregulation in a multivariate model, this study provided preliminary evidence for the aspects of emotion dysregulation that may account for this association, namely difficulties inhibiting impulsive behaviors when distressed (in both sexes), and limited emotional awareness (in males only).

Findings are consistent with prior research showing a relationship between negative affect and aggression as well as research demonstrating sex differences in this association (Knight et al., 2002). Negative affect was more strongly associated with physical aggression in males, and this appears largely driven by sex differences in the negative affect–emotion regulation–aggression relationship. Specifically, a pattern arose where males demonstrated greater effect magnitudes in negative affect's prediction of emotional nonacceptance and limited access to ER strategies; as well as in the prediction of physical aggression by impulse control difficulties and lack of emotion awareness. Given that males exhibit a higher prevalence of externalizing disorders (Kessler et al., 1994); these results are consistent with research suggesting that strategies of responding to negative affect may differ across sexes.

This study expands upon prior work, in that it both highlights emotion dysregulation as a potential mechanism explaining the link between negative affect and aggression, and identifies the differential association of specific aspects of dysregulation across sexes. In males, both difficulties with emotional awareness and difficulties controlling impulsive behaviors when distressed mediated negative affect and aggression. In females, difficulty controlling

impulsive behaviors when distressed was the singular facet of emotion dysregulation that demonstrated a mediation effect, though the magnitude of this effect was attenuated as compared to men. These findings suggest that negative affect may increase one's propensity for physical aggression when one experiences emotions as overwhelming and has difficulty tolerating distress. In men, this may be compounded by problems acknowledging emotions and directing attention to information emotions provide, which may result in further dysregulation. As research suggests women generally tend to exhibit more emotional awareness than men (Barrett, Lane, Sechrest, & Schwartz, 2000), this process may be less critical among female aggressors.

Several aspects of emotion dysregulation did not mediate the association between negative affect and aggression in this study. While all six dimensions of the DERS positively correlated with physical aggression (r 's ranging from .15 to .40), four subscales (Goals, Nonacceptance, Strategies, and Clarity) did not demonstrate indirect effects. It is possible that multicollinearity among mediators contributed to these null findings, therefore reflecting a sample-specific effect. Further research is necessary however; as there are alternative hypotheses. For example, regarding the Strategies subscale, it may not necessarily be one's belief about their ability to manage emotions that is key in influencing aggression, but instead their ability to flexibly utilize regulatory strategies (see Werner & Gross, 2010).

Findings should be considered preliminary in light of the limitations of this study. The use of an undergraduate sample limits the generalizability of findings to more severely and chronically violent individuals. While the ordering of variables in this study is supported both theoretically and statistically, the cross-sectional design does not allow for a causal test of mediation, limiting our ability to specify the directionality of effects. Also, variables were measured through self-report, which can result in inflated correlations, and are prone to influences from memory biases, social desirability, or willful deception.

With these limitations in mind, this study also had notable strengths, including the use of a well-validated multidimensional measure of ER so that a multiple mediator model could be examined. Frequently, ER is measured as a single construct which may obscure a more detailed understanding of the relative importance of specific construct facets. By accounting for the simultaneous and shared effects of each of the six DERS subscales, our study was able to explore the facets of emotion dysregulation that appear most important in understanding the link between negative affect and

aggression. Furthermore, conditional process bootstrapping procedures were utilized to address the power-related problems inherent in multiple statistical tests.

5. Conclusion and future directions

Within an ER framework, aggression can be thought of as a maladaptive resolution to the problem of emotions perceived to be intolerable. Findings from the present study provide preliminary support that physical aggression may function as an attempt to alleviate distressing negative emotions. Replicating and expanding this area of inquiry in more chronically violent samples is important, and this may have notable treatment implications. Specifically, treatments designed to alter one's relationship with emotions through increasing emotional awareness and promoting effective distress tolerance strategies may prove helpful.

Future studies should also employ longitudinal methods using multiple modes of measurement to examine the temporal sequencing of negative affect, emotion dysregulation, and aggression for a stricter and more ecologically valid test of mediation. Additionally, as the current study focused on these constructs as traits, research examining state-based measurements of negative affect, ER, and aggression are important. The role of state negative affect has been emphasized in theories of aggression (Berkowitz, 1990), and additional experimental research incorporating assessment of ER variables will add to the generalizability of these findings. Finally, further research examining the links between positive affect and ER as they relate to aggression is needed. Prior studies have demonstrated that anger elicitation is associated with increased positive affect (Harmon-Jones, Harmon-Jones, Abramson, & Peterson, 2009), and positive outcome expectancies are associated with aggression (Kashdan, Collins, & Elhai, 2006). Given that aggression is an approach behavior, it may be precipitated by dysregulation of either negatively or positively valenced states. Ultimately, through a better understanding of the mechanisms underlying the development, maintenance, and treatment of aggressive behavior, the development of empirically-validated therapies for this difficult population will be advanced.

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