

## Parental psychological control and aggression in youth: Moderating effect of emotion dysregulation



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### ABSTRACT

Previous research shows that parent psychological control and child emotion dysregulation are both associated with the development of aggression in children. This longitudinal study sought to clarify these relations by examining emotion dysregulation as a moderator of the associations between psychological control and relational and physical aggression. Participants were 271 elementary school students ages 8–12 ( $M = 9.31$  years;  $SD = 0.98$ ) and their primary classroom teachers. Children completed measures of parental psychological control and emotion dysregulation at T1, while teachers rated children's relational and physical aggression at T1 and six months later at T2. Emotion dysregulation significantly moderated the association between psychological control and both forms of aggression, with no sex differences evident. Results suggest that psychologically controlling parenting strategies contribute to increased relational and decreased physical aggression among emotionally well-regulated children and the opposite pattern among emotionally dysregulated children. Implications for intervention and future research are discussed.

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According to developmental models of antisocial behavior, children's aggressive behavior emerges through a series of reciprocal behavioral processes that unfold between biological and environmental factors across settings and over time (Dishion & Patterson, 2006; Granic & Patterson, 2006; Patterson, DeBaryshe, & Ramsey, 1989; Patterson & Yoerger, 1993). Specifically, during early and middle childhood, the coercive interplay between poor parenting practices and a child's biological and temperamental vulnerabilities sets the stage for the development and reinforcement of aggressive behavior. Indeed, evidence has emerged to support the notion that coercive family processes (e.g., Kuppens, Laurent, Heyvaert, & Onghena, 2013; McFadyen-Ketchum, Bates, Dodge, & Pettit, 1996) and child characteristics such as emotion regulation and temperament (e.g., Ramsden & Hubbard, 2002; Li, Zhang, Li, Wang, & Zhen, 2012) influence the development of aggression.

The developmental psychopathology perspective examines developmental pathways to adaptive and maladaptive outcomes (Beauchaine, 2003; Cicchetti & Rogosch, 1996; Silk et al., 2007). Developmental psychopathology emphasizes the interplay between child characteristics, including biology, genetics, psychology, and environmental factors across development, encouraging examination of interactions between these variables (e.g., why do some children with a certain risk factor go on to

develop a poor outcome, while others develop typically?; Hart & Marmorstein, 2009). Family processes may confer risk for maladaptive outcomes for youth; however, these factors may function as non-specific risk factors, increasing the likelihood of a poor outcome, whereby the specific outcome is determined through complex interactions with the child's characteristics and exposure to other risk and protective factors.

Within emotion regulation theory, emotion dysregulation refers to an underlying deficit in one's ability to identify, respond to, or manage a broad spectrum of emotions (Gross & Jazaieri, 2014). Inherent within this theory is the important role emotion regulation plays in the development and maintenance of a myriad of psychosocial concerns (e.g., Helmsen, Koglin, & Petermann, 2012; Suveg, Hoffman, Zeman, & Thomassin, 2009). In a recent review, Benavides (2015) identified numerous studies that demonstrated better emotion regulation served a buffering functioning for youth exposed to a variety of extrinsic risk factors, including domestic violence (Lee, 2001), and poverty (Prelow & Loukas, 2003). Such findings exemplify emotion regulation as an important child characteristic that may interact with other risk factors, serving to either buffer against, or exacerbate the impact of numerous environmental risk factors. Taken together, these theoretical frameworks emphasize the importance of understanding interactions between child characteristics, such as emotion regulation, and environmental factors.

Specific to the current study, child emotion dysregulation may interact with parenting practices to increase the risk of developing a maladaptive outcome. When in an environment in which parents are manipulating emotions, and there is poor emotional control, aggression and other acting out behaviors may be particularly likely. Conversely,

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better emotion regulation may serve to buffer the impact of poor parenting practices, reducing the risk of maladaptive outcomes. The central aim of the current study was to elucidate how parenting interacts with children's emotion regulation to influence particular forms of aggressive behavior. Specifically, we longitudinally examined the effect of parent psychological control on children's physical and relational aggression, with child emotion dysregulation as a possible moderator of these associations.

### Forms of aggression

A substantial body of research has demonstrated that aggressive behavior has deleterious effects on children's development and is associated with a host of long-term adjustment difficulties (for a review, see Vitaro & Brendgen, 2012). Aggression is commonly distinguished into subtypes according to the form that the behavior takes, and previous research has demonstrated that these forms of aggression may have different etiologies and developmental pathways (e.g., Crick, 1996). Physical aggression involves harming another by means of physical force or threat of physical force, and it includes acts such as hitting, kicking, pushing, or forcibly taking objects (Dodge, Coie, & Lynam, 2006). Relational aggression, on the other hand, refers to the manipulation of social relationships in order to cause harm, and it comprises behaviors such as spreading lies, rumors, or secrets, threatening to withdraw friendships, ignoring, and social ostracism (Crick & Grotpeter, 1995).

Extant evidence suggests that physical and relational forms of aggression follow distinct trajectories across developmental periods, such that physical aggression peaks in early childhood and then gradually declines throughout middle childhood (Dodge et al., 2006), while relational aggression increases from middle childhood into early adolescence (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Murray-Close, Ostrov, & Crick, 2007). Developmental theories of aggression posit that these distinct trajectories occur, in part, due to varying predictors and differential interactions between environmental and child characteristics (Bonica, Arnold, Fisher, Zeljo, & Yerushova, 2003; Dionne, Tremblay, Boivin, Laplante, & Pérusse, 2003; Dishion, Duncan, Eddy, Fagot, & Fetrow, 1994; Grotpeter & Crick, 1996). Namely, developmental models of physical aggression stipulate that the decline in aggressive behaviors throughout middle childhood is credited to social modeling, such that children learn more effective methods of interacting and communicating with others in conjunction with neural development that better equips children to effectively self-regulate (Tremblay & Nagin, 2005). Consequently, however, the same factors that may function to reduce physical aggression, may also serve to increase relational aggression, which inherently requires more developed cognitive and social skills (Bjorkqvist et al., 1992). Indeed, there is evidence that some youth who exhibit early physical aggression go on to display relational aggression, either in place of, or in addition to, physical aggression (Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007). The overlap between physical and relational aggression implies some shared risk factors between both forms that necessitates further inquiry and examination of these forms separately.

### Parental psychological control and aggression

Psychological control is characterized by emotional manipulation on the part of the parent, using guilt induction and excessive personal control as a means of using the parent–child relationship as capitol for achieving their own ends (Barber, 1996). Psychological control differs from other parenting practices such as behavior control (limit setting and parental monitoring) in that appropriate behavioral control (i.e., not too limited, or too excessive) has been shown to be protective against physical aggression in children (Mills & Rubin, 1998; Nunes, Faraco, & Vieira, 2013), whereas psychological control has been proposed as a source of risk for both forms of aggressive

behavior (Albrecht, Galambos, & Jansson, 2007; Kuppens et al., 2013; Loukas, Paulos, & Robinson, 2005; Murray, Haynie, Howard, Cheng, & Simons-Morton, 2013). Social learning theory supports the link between parental psychological control and both forms of aggression, in that psychologically controlling parents model poor methods of interacting and responding to others, and fail to model prosocial behaviors (Hart, Ladd, & Burleson, 1990; Nelson, Hart, Yang, Olsen, & Jin, 2006), which may increase youth's risk for engaging in aggressive behaviors with others. Attachment theory (Bowlby, 1973) may also explain associations between psychological control and both forms of aggression, such that youth exposed to psychologically controlling parents may fail to understand positive social relationships, and believe others to be antagonistic, which in turn may contribute to increased aggressive responding (Michiels, Grietens, Onghena, & Kuppens, 2008; Simons, Paternite, & Shore, 2001). While parental psychological control increases risk for youth's aggressive behavioral overall, it may be especially important in the development of relational aggression. Consistent with social learning theory (Patterson, 1982), psychological control may be an especially salient risk factor for relational aggression as youths may model the specific strategies modeled by their parents, such as social manipulation as a means of goal attainment (Casas et al., 2006; Nelson et al., 2006). Indeed, previous research indicates that psychological control is a markedly strong risk factor for youth relational aggression (Kuppens et al., 2013). Given the documented differences in associations among psychological control and physical and relational aggression it is necessary to consider each form separately when examining the predictive role of parental psychological control in youths' aggressive behavior.

### Emotion regulation and aggression

Previous research has found a consistent link between youth emotion dysregulation and aggression. This association has been established longitudinally, such that early experience of emotion dysregulation, defined here as dysregulated expression of anger and sadness, contributes to later relational and physical aggressive behaviors (McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011; Röhl, Koglin, & Petermann, 2012). For example, McLaughlin et al. (2011) demonstrated that emotion dysregulation predicted increases in both forms of aggressive behavior over a 7-month interval in a sample of adolescents. Moreover, Calvete and Orue (2012) examined the moderating role of adaptive emotion regulation strategies between adolescents' anger and aggression. They found that the relation between anger and both forms of aggression was significantly weaker for adolescents who reported more effective emotion regulation.

This body of the literature indicates that emotion regulation may influence the impact of other risk factors on the development of aggressive behaviors. Indeed, in a previous cross-sectional study, Cui, Morris, Criss, Houlberg, and Silk (2014) found that anger regulation moderated the association between parental psychological control and older adolescents' aggression. Specifically, parental psychological control was significantly, positively correlated with aggression only for older adolescents with poor anger regulation; however, for older adolescents with better control over feelings of anger, psychological control did not predict aggressive behavior. Importantly, however, Cui and colleagues did not differentiate between the forms of aggression displayed by the adolescents in their sample, rather generating a composite measure of aggression, which has implications for long-term outcomes (Vitaro & Brendgen, 2012). Further, Cui and colleagues' study included an adolescent sample (mean age = 13.37), a time when parental behaviors may be less influential than during earlier developmental periods.

Finally, previous work demonstrates the importance of considering multiple emotions in evaluating associations between both forms of aggression and emotional functioning, with literature supporting both anger and sadness dysregulation contributing to general aggressive behavior (McLaughlin et al., 2011; Sullivan, Helms, Kliewer, & Goodman,

2010; Zeman, Shipman, & Penza-Clyve, 2001). Methodologies across studies have been mixed with some studies looking at emotions discretely (e.g., Sullivan et al., 2010) while others have generated composite variables of dysregulation including multiple emotions (e.g., McLaughlin et al., 2011). On the whole, findings emphasize the importance of considering multiple emotions when examining associations between emotion dysregulation and aggression.

Youth who experience parenting styles that rely on guilt and emotionally controlling behavior are at risk for exhibiting aggressive behavior, and this influence may be compounded when there is also an inability to regulate emotions effectively. When children experience emotion dysregulation, marked by an inability to identify emotions and effectively communicate with others, they concurrently demonstrate difficulty controlling their behaviors and responding adaptively to their environment (Cole, Michel, & Teti, 1994). Thus, when in an environment in which parents are manipulating emotions, and there is poor emotional control, aggression and other acting out behaviors may be particularly likely. In contrast, psychologically controlling parenting may have less influence on youth who have good emotion regulation given their ability to effectively communicate emotional needs to others. Taken together, outcomes for youth who experience psychological control likely differ in accordance with their ability to regulate emotions, such that youth who are more dysregulated display maladaptive behaviors, whereas better regulated youth are protected against the possible damaging experience of psychologically controlling parents. Accordingly, more research examining the role of emotion dysregulation in the associations between parental psychological control and forms of aggression is needed.

### Sex differences

Whereas physical aggression has consistently been shown to be more prevalent among boys than girls (e.g., Dodge et al., 2006), studies have yielded mixed findings regarding sex differences in relational aggression (for a meta-analytic review, see Card, Sawalani, Stucky, & Little, 2008). Further, there is some evidence suggesting that the association between psychological control and relational aggression may be more consistent for girls than boys (Casas et al., 2006; Nelson et al., 2006). This may be that girls are more likely to exhibit relational than physical aggression (Murray-Close et al., 2007) and rate this form of aggression as more harmful than boys (Murray-Close, Crick, & Galotti, 2006). Taken together, emotionally dysregulated youth with psychologically controlling parents may be at increased risk for aggressive behavior. Specifically, for girls this may be especially true when considering relational aggression, whereas for boys the effect may be most pronounced when considering physical aggression.

### Current study

The present study sought to further elucidate longitudinal associations between parental psychological control, children's emotion dysregulation, and forms of aggression among elementary school-aged children by examining whether emotional dysregulation moderated the associations between parental psychological control and physical and relational forms of aggression. High levels of both parental psychological control and emotion dysregulation were expected to predict increases in both forms of aggression. Additionally, emotion dysregulation was expected to moderate the relation between parental psychological control and both forms of aggression, such that parental psychological control would be most strongly associated with high levels relational and physical aggression when levels of emotion dysregulation were also high. Finally, due to the role of sex differences in exhibited aggression and in associations between psychological control and aggression, sex differences in these associations were examined. Interaction effects were expected to follow similar patterns for boys and girls; however, associations in the physical aggression models were expected to be more

pronounced for boys than girls, whereas associations in the relational aggression models were expected to be stronger for girls than boys.

## Methods

### Participants

Participants in the current study were 271 children (48.7% male) and their teachers, recruited from a rural Midwest town. Participants ranged from 8–12 years of age ( $M = 9.31$ ;  $SD = .98$ ) and were enrolled in grades 3–5. Recruitment took place at the elementary school during parent–teacher conferences. Researchers set up an information table in the school hallway and provided information about the study and answered questions. Interested parents provided written consent for their children to participate in the study. Students also provided verbal assent prior to their participation. Of the 381 3rd through 5th graders, written consent was obtained for 279 students (73.2%). Of these 279 consented students, all (100.0%) completed the study survey. In total 17 classrooms contributed data, including six 3rd grade classes, five 4th grade classes and six 5th grade classes.

Students' teachers were asked to complete surveys assessing a wide array of behavioral and emotional functioning for each student at the initial data collection and 6 months later. At the time of the child survey, teachers completed surveys for each of these students. Approximately 6-months later, teachers completed the same surveys for 274 of the 279 students, as five students had moved out of the school district in the interim. For the study variables of relevance to the current study, 271 contained full sets of data (Child Survey, Time 1 Teacher Survey, and Time 2 Teacher Survey), which were used in analyses. Participants are representative of the community from which they were drawn, with the majority (>80%) of the students being White. Approximately 40% of students enrolled at the school qualify for reduced-fee or free lunches (K–12 Reports: County, District and School Reports, 2013). By grade, the sample distribution was as follows: 3rd grade ( $n = 96$ ; 35.4%), 4th grade ( $n = 79$ ; 29.2%), and 5th grade ( $n = 96$ ; 35.4%).

### Measures

#### Demographics

Students completed a survey assessing several demographic variables of relevance to other study variables, including age and sex.

#### Parental psychological control

Students were asked to respond to the 10-item Psychological Control Scale (PCS; Barber, 1996). Each item began with the prompt, "My parent..." and children were asked to rate behaviors such as "...often interrupts me," "...blames me for other family members' problems," or "...brings up my past mistakes when she/he criticizes me" on a three-point Likert scale of "1 – Not like my parents," "2 – Somewhat like my parents," or "3 – A lot like my parents." When completing the PCS, students were prompted to answer items considering their parent(s)/caregiver(s) with whom they currently reside. The PCS is a widely used measure of parental psychological control and has demonstrated both concurrent and predictive validity for a number of youth psychosocial outcomes (Barber, 1996; Bean, Barber, & Crane, 2006). In the current study, mean scores for response ratings were computed, with higher scores indicating greater perceived parental psychological control. Internal consistency for this measure was adequate in the current sample ( $\alpha = .77$ ).

#### Emotion dysregulation

To assess for emotion dysregulation, students responded to the Children's Emotion Management Scale (CEMS; Zeman et al., 2001). Students were given the Sad and Mad versions of the scale, which yields dysregulation, inhibition, and coping subscales of both negative affect and anger. The CEMS consists of 12 items in the Sad version and 11

items in the Mad version. The scale yields a total Dysregulation scale by using six items, three items from each version (a method utilized in previous work, e.g., Folk, Zeman, Poon, & Dallaire, 2014; McLaughlin et al., 2011), assessing the degree to which students have difficulty regulating these emotional experiences (e.g., when sad whining/fussing; when angry, slamming doors, attacking source of anger). Students responded to each item by choosing “Hardly-ever – 1,” “Sometimes – 2,” or “Often – 3,” as to whether the items described their own behavior. Scores were generated by taking the mean of student’s responses on the six items. Internal consistency for this measure was modest ( $\alpha = .63$ ); however, this is partially due to the small number of items included in the measure, as for a scale with only six items, Cronbach’s alpha may produce a biased (i.e., poorer) reliability estimate (Cronbach, 1951). Further note that the low alpha is consistent with previous studies (.54–.69; Harrist, Hubbs-Tait, Topham, Shriver, & Page, 2013; Hurrell, Hudson, & Schniering, 2015; Ma & Li, 2014).

#### Physical and relational aggression

At Time 1 and Time 2, teachers reported each child’s use of physical and relational aggression using an adapted form of Crick and Bigbee’s (1998) measure of aggression. The scale consists of six Likert-scale items. Teachers responded to three items assessing physical aggression (e.g., hits, kicks, or punches others) and three items assessing relational aggression (e.g., keeps others from being in a group) for each student. Response choices ranged from “Never – 1” to “Almost always – 5.” Both the physical (initial  $\alpha = .78$ ; follow-up  $\alpha = .85$ ) and relational (initial  $\alpha = .85$ ; follow-up  $\alpha = .89$ ) aggression scales demonstrated good internal consistency.

#### Procedures

All study procedures were approved by the researchers’ institutional review board and the school’s administration. On the day of student data collection, trained study staff (graduate researchers and undergraduate research assistants) visited each of the 3rd, 4th, and 5th grade classrooms to administer the child surveys. Teachers and school staff left the classroom along with nonconsented students prior to data collection. All 279 (100%) consented students provided assent and completed the survey. Survey items were read aloud by researchers while students followed along and responded on their own paper copy. Other members of the research team were available to answer questions and provide assistance as needed. Surveys were typically completed within 25 min. For student participation, each classroom received a \$50 donation for school supplies.

In addition to child surveys, teacher completed surveys at two time points: once approximately at the same time as the child survey and again approximately 6 months later. The procedure at both time points was the same. Teachers were invited to participate during an in-service meeting. Those teachers (100%) who provided written consent were then provided with student rosters and anonymizing study ID numbers for surveys. Next, an email containing study information and a link to an online survey was sent to each consented classroom teacher. Surveys were brief, requiring approximately 5–10 min to complete for each student. At each time point, teachers were compensated with \$50 for their full participation.

#### Data analysis

Variables were examined to test for violations of normality prior to conducting analyses.<sup>1</sup> All independent variables were mean-centered prior to analyses; accordingly, unstandardized betas are reported.

<sup>1</sup> As aggression variables exhibited nonnormality, ordinary least square (OLS) regression analyses were rerun using maximum-likelihood estimation (MLR). As all substantive results using MLR followed the same pattern as using OLS regression, values presented in the results reflect the OLS analyses.

Cross-product terms were created in order to model the interaction between emotion dysregulation and parent psychological control. Interaction terms with sex were also created, thereby allowing for the evaluation of possible sex differences in the first- and second-order effects (Preacher, Rucker, & Hayes, 2007).

Study aims were evaluated utilizing multiple regression analyses, examining the relational and physical forms of aggression in separate models. First, when predicting physical aggression at time two, a first-order effects model that included students’ age and sex, time one physical aggression, time two relational aggression (to partial out variance associated with the timing of the outcome assessment), parental psychological control, and emotion dysregulation was estimated. Interaction terms between parental psychological control, emotion dysregulation and sex were then added to the model to determine moderating and sex effects. These same steps were taken to examine relational aggression as an outcome, whereby analyses controlled for relational aggression at time one and physical aggression at time two. For non-significant three-way interactions, two-way interactions were examined, including the interaction term for psychological control and emotion dysregulation.

When interactions were found to be significant, follow-up simple slope analyses were completed to determine the nature of the moderation effects. Consistent with previous literature (Aiken & West, 1991), simple slope analyses were conducted by examining the association between parental psychological control and forms of aggression at high (+1 SD) and low (–1 SD) levels of emotion dysregulation.

## Results

#### Descriptive statistics

T-tests were conducted to determine sex differences in study constructs. Significant differences between boys and girls were found for emotion dysregulation, psychological control, physical aggression at Times 1 and 2 and relational aggression at Time 2 ( $t_s = -2.1$ – $3.50$ ,  $p_s = .001$ – $.03$ ). Boys exhibited higher levels of emotion dysregulation, psychological control, and physical aggression than girls. In contrast, girls exhibited higher levels of teacher-reported relational aggression at Time 2 relative to boys. Descriptive statistics and correlations for study variables by sex are listed in Table 1. Emotion dysregulation was positively associated only with Time 2 physical aggression for girls, whereas it was positively associated with Time 1 relational and physical aggression, and Time 2 physical aggression for boys. Psychological control was not significantly associated with any study variable for boys, but was positively associated with emotion dysregulation and negatively associated with age for girls. For boys, age was only negatively associated with Time 2 physical aggression. Time 1 relational aggression was positively associated with Times 1 and 2 physical aggression, and Time 2 relational aggression for boys, but only positively associated with Time 1 physical aggression and Time 2 relational aggression for girls. Time 1 physical aggression was also positively associated with Time 2 relational and physical aggression for girls and boys.

#### Physical aggression regression models

In the first order-effects model emotion dysregulation significantly predicted physical aggression, such that high levels of emotion dysregulation predicted increases in physical aggression; however, parental psychological control did not significantly predict physical aggression ( $p = .53$ ). Sex was not a significant moderator of any other predictors (emotion dysregulation, parent psychological, or emotion regulation  $\times$  parental psychological;  $B_s = -.30$  to  $-.06$ ;  $p_s = .29$ – $.50$ ), suggesting that associations were similar for boys and girls. As sex was not a significant moderator of any other predictors, a more parsimonious model examining the interaction between psychological control and emotion dysregulation was estimated.

**Table 1**  
Correlations of study variables by sex.

Measures	1	2	3	4	5	6	7
1. Age	–	–.16	–.12	–.04	–.12	–.11	–.18*
2. T1 EDR	.13	–	.15	.21*	.29**	.14	.29**
3. T1 PPC	–.23**	.20*	–	.07	.08	.10	.13
4. T1 Rel Agg	.10	.12	.10	–	.58**	.45**	.48**
5. T1 Phy Agg	–.14	.16	.14	.32**	–	.53**	.55**
6. T2 Rel Agg	.02	–.01	.12	.72**	.19*	–	.50**
7. T2 Phy Agg	–.02	.21*	.15	.15	.57**	.14	–
<i>Boys</i>							
Mean	9.43	1.56	1.48	1.25	1.18	1.24	1.19
SD	1.01	.45	.40	.46	.40	.50	.48
Minimum	8	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	12	3.00	3.00	3.00	3.00	3.67	3.67
<i>Girls</i>							
Mean	9.20	1.44	1.35	1.35	1.06	1.40	1.04
SD	.94	.36	.31	.71	.31	.72	.18
Minimum	8	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	11	3.00	2.50	4.00	4.00	5.00	2.33

Note. Correlations for girls are listed below the diagonal, and correlations for boys are listed above the diagonal. T1 EDR = Time 1 emotion dysregulation. T1 PCC = Time 1 parental psychological control.

Rel Agg = relational aggression. Phy Agg = physical aggression. SD = standard deviation.

\*  $p < .05$ .

\*\*  $p < .01$ .

Emotion dysregulation moderated the association between parental psychological control and physical aggression (see Table 2). At low levels of emotion dysregulation, parental psychological control negatively predicted physical aggression ( $B = -.19, p = .02$ , see Fig. 1). At high levels of emotion dysregulation, parental psychological control positively predicted physical aggression ( $B = .20, p = .004$ ). That is, the highest levels of physical aggression were found when both psychological control and emotion dysregulation were high.

#### Relational aggression regression models

In the first-order effects regression model, both parental psychological control and emotion dysregulation were not significant predictors of relational aggression (see Table 3). Sex was not a significant moderator of any other predictors (emotion dysregulation, parent psychological, or emotion regulation  $\times$  parental psychological;  $B_s = -.22-.03$ ;  $p_s = .13-.87$ ), suggesting that associations were similar for boys and girls. As sex was not a significant moderator of any other predictors, a more parsimonious model examining the interaction between psychological control and emotion dysregulation was estimated.

A significant interaction between psychological control and emotion dysregulation was found (see Table 3). Contrary to expectations, simple

**Table 2**  
Multiple regression analysis predicting physical aggression.

	First order effects model		Interaction effects model	
	B	95% CI	B	95% CI
Age	–.02	[–.06, .02]	–.03	[–.07, .01]
Sex	–.10**	[–.18, –.03]	–.11**	[–.19, –.04]
T1 Phy Agg	.44**	[.33, .55]	.42**	[.31, .53]
T2 Rel Agg	.09*	[.02, .15]	.11**	[.05, .17]
T1 Psych control	.03	[–.07, .14]	.01	[–.10, .11]
T1 Emotion Dysreg	.12**	[.03, .21]	.12**	[.03, .21]
T1 Psych control $\times$ EDR	–	–	.47**	[.22, .71]
R <sup>2</sup>	.35**		.38**	
$\Delta R^2$			.03**	

Note. Rel Agg = relational aggression. Phy Agg = physical aggression. Emotion Dysreg = emotion dysregulation. Psych Control  $\times$  EDR = interaction term. CI = confidence interval.

\*  $p < .05$ .

\*\*  $p < .01$ .

slope analyses indicated that at low levels of emotion dysregulation, parental psychological control positively predicted relational aggression ( $B = .52, p < .001$ , see Fig. 2). At high levels of emotion dysregulation, parental psychological control negatively predicted relational aggression ( $B = -.28, p = .008$ ). That is, the highest levels of relational aggression were found when levels of psychological control were high and emotion dysregulation was low.

#### Discussion

The present study extended the current literature by examining emotion dysregulation as a moderator of the links between parental psychological control and physical and relational forms of aggression. Results from the current study supported the moderating effect of emotion dysregulation between parental psychological control and the different forms of aggression in youth. Findings suggest that the links between psychological control and physical and relational aggression depends on levels of emotional dysregulation and the forms of aggression examined. Specifically, simple slope analyses revealed that this moderating effect differed based on the form of aggression. Findings are discussed in turn.

Current findings extend the work of Cui et al. (2014) by indicating that the interaction between parental psychological control and emotion dysregulation may vary by the specific aggression outcome for youth. Consistent with our hypothesis, at high levels of emotion dysregulation, parental psychological control predicted increases in physical aggression, such that youth who experience excessively controlling and manipulative environments in conjunction with dysregulation of emotional expression may be more likely to respond maladaptively (i.e., with physical aggression). However, at low levels of emotion dysregulation, parental psychological control was associated with decreased physical aggression. Cui et al. (2014) observed a similar pattern of findings whereby psychological control predicted greater aggression for older youth who exhibited more anger dysregulation. Data on developmental trajectories of physical aggression indicate that for a majority of children aggressive behaviors will decline across middle childhood (NICHD, 2004). According to social learning theory, this may occur as a function of exposure to models of appropriate social coping and typical neurological development (Tremblay & Nagin, 2005). In contrast, youth who are exposed to maladaptive social environments such as psychologically controlling parents, in conjunction with disrupted emotional functioning, physical aggression is likely to increase. Further, in the absence of dysregulated emotional functioning youth may be less likely to engage in physical aggression, despite exposure to a maladaptive model of social functioning, such that better regulation functions as a protective factor against psychologically controlling parents. Theories of normative trajectories of physical aggression in youth emphasize the importance of both social models and neurological development (Tremblay & Nagin, 2005), and therefore interactions between these two factors likely result in different developmental trajectories of physical aggression.

In contrast, at low levels of emotion dysregulation, parental psychological control was associated with increases in relational aggression; whereas at high levels of emotion dysregulation, parental psychological control was negatively associated with relational aggression. Evidence from social learning models of relational aggression found that children may increase relational aggression when similar behaviors are modeled for them (Coyne, Archer, & Eslea, 2004). Youth with better emotion regulation may be better equipped to imitate strategies employed by their parents and ultimately engage in relational aggression when they experience parental psychological control. Consistent with this notion, previous work examining neurobiological mechanisms has found an association between emotion regulation and imitation. For example, in one functional magnetic resonance imaging study, Vrticka et al. (2013) found that when participants were instructed to imitate facial expressions, they exhibited increased neural activity in areas of the

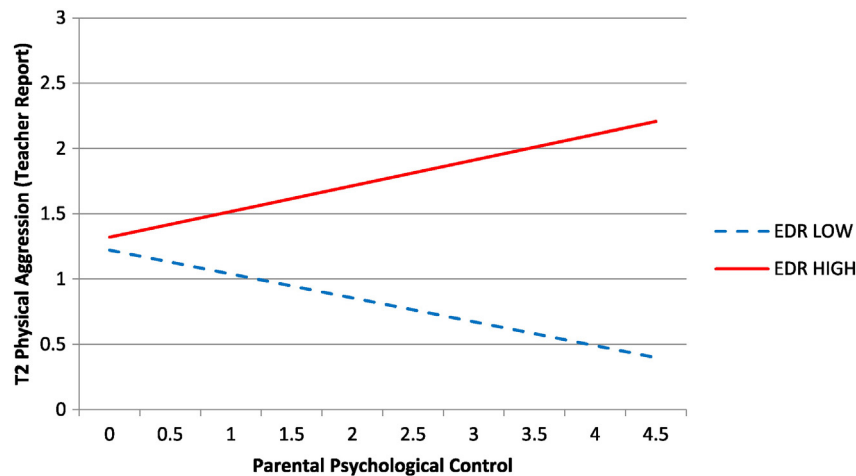


Fig. 1. The association between parental psychological control and teacher-reported physical aggression at high (EDR High) and low (EDR Low) levels of emotion dysregulation.

brain associated with emotion regulation and executive functioning. This evidence lends further support to the view that effective imitation, in this case youth engaging in relational aggression when their parents model similar behaviors, requires better self-regulation. Applying this perspective to the present findings, it is possible that youth who have difficulty regulating their emotions also have difficulty imitating and learning the behaviors that are modeled to them in their social environments.

Moreover, while surprising, the interaction predicting relational aggression aligns with previous work by Tackett, Kushner, Herzhoff, Smack, and Reardon (2014) that identified a negative correlation between emotional instability and relational aggression. This study also found that relational aggression was differentially related to various aspects of emotional instability (e.g., negatively associated with anxiety, but positively with depression). Taken together, results from the current study suggest that emotion regulation's association with relational aggression may function differently based on the definition, or aspect of regulation being studied. Specifically, for the current study dysregulation was conceptualized as maladaptive emotional expression of mad and sad; therefore, it is theoretically reasonable that other maladaptive emotion regulation strategies (e.g., poor emotion coping), but not dysregulated emotional expression, predict relational aggression. Discrepant findings across studies, therefore, may represent an artifact of methodological and measurement differences. Additional research is needed to delineate these associations.

Although the current study did not distinguish between the functions of aggressive behavior, it is instructive to consider that aggression (physical and relational) can be understood in an alternative framework,

according to the function of the aggressive behavior—reactive aggression (retaliatory behaviors responding to a perceived slight) or proactive aggression (instrumental acts aimed to achieve a goal; Vitaro & Brendgen, 2012). The general literature linking functions of aggressive behavior with emotion regulation point towards better emotion regulation for proactive aggression (Card & Little, 2006; Ostrov, Murray-Close, Godleski, & Hart, 2013), and poor emotion regulation for reactive aggression (e.g., Card & Little, 2006; Marsee & Frick, 2007; Vitaro & Brendgen, 2012) across both forms of aggression. However, there is some evidence to suggest that relational aggression, regardless of the function, requires at least some self-regulation (Dane & Marini, 2014; Ostrov et al., 2013). Indeed, Dane and Marini (2014) found that youths who engaged in reactive relational aggression experienced low frustration tolerance, but strong effortful control, whereas Ostrov et al. (2013) found that youth who engaged in proactive relational aggression reported increases in emotional regulation skills longitudinally. It is possible that the interaction between psychological control and better emotion regulation predicts increases in both functions of relational aggression. Meaning that youth with psychologically controlling parents, and better emotion regulation, may be more likely to engage in both functions (i.e., reactive and proactive) of relational aggression. However, this may not be the case for physical aggression, particularly reactive physical aggression; hence the differences across form of aggression evident in the current study. Importantly, since the function of aggressive behavior was not the focus of the current study more research is needed to consider the interplay between the forms and functions of aggressive behavior in relation to emotion regulation and parenting behaviors.

Contrary to hypotheses, the current study failed to find support for sex differences in associations. Lack of sex differences may be in part due to the age range of the current study sample. Indeed, previous work suggests that sex differences in aggression, especially in regards to relational aggression, become more pronounced during adolescence, than elementary-school age (Bjorkqvist et al., 1992; Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Keenan & Shaw, 1997). Therefore the sample represented in the current study may represent a period of transition whereby sex differences are not evident.

#### Limitations, future directions, and treatment implications

The present study has some methodological limitations that are important to note when considering the results. All measures utilized were based on rating scale data, therefore increasing the risk of common method variance. The present study utilized information from both student and teacher reports; however, children alone reported on both parental psychological control and emotion dysregulation. While previous research has indicated that children six years and older can

Table 3  
Multiple regression analysis predicting relational aggression.

	First order effects model		Interaction effects model	
	B	95% CI	B	95% CI
Age	-.04	[-.10, .02]	-.02	[-.07, .04]
Sex	.12*	[.00, .24]	.14*	[.03, .26]
T1 Rel Agg	.63**	[.54, .73]	.64**	[.55, .73]
T2 Phy Agg	.24**	[.07, .41]	.31**	[.15, .48]
T1 Psych control	.07	[-.09, .24]	.12	[-.04, .27]
T1 Emotion Dysreg	-.13	[-.27, .02]	-.13	[-.27, .01]
T1 Psych control × EDR	-	-	-.97**	[-1.35, -.60]
R <sup>2</sup>	.45**		.50**	
ΔR <sup>2</sup>			.05**	

Note. Rel Agg = relational aggression. Phy Agg = physical aggression. Emotion Dysreg = emotion dysregulation. Psych control × EDR = interaction term. CI = confidence interval.

\*  $p < .05$ .

\*\*  $p < .01$ .

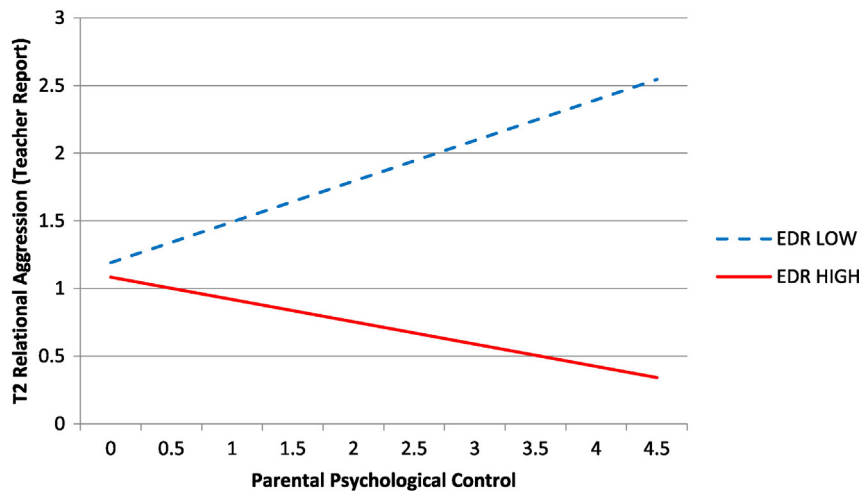


Fig. 2. The association between parental psychological control and teacher-reported relational aggression at high (EDR High) and low (EDR Low) levels of emotion dysregulation.

adequately provide self-report data (Riley et al., 2004), future studies would benefit from a multi-informant approach for parenting behaviors and children's emotion regulation. Assessment of participants' aggressive behavior was limited to teacher-report, and therefore did not consider behavior outside of the school context. Additionally, previous work suggests that peers may actually be better reporters of aggressive behavior (Clemans, Musci, Leoutsakos, & Jalongo, 2014), and therefore future work should consider multiple informants of children's aggressive behaviors. As previously noted, the internal consistency of the measure of emotion dysregulation was low. Although we note that significant results were evident, future research using a more psychometrically sound measure is warranted. Prompts provided during the current study did not allow for consideration of differential associations contingent on different parental figures (i.e., mothers and fathers). Future studies would benefit from examining individual parents separately to identify possible differences between parents, as has been seen in previous work (e.g., Casas et al., 2006; Teetsel, Ginsburg, & Drake, 2014). Moreover, causal interpretations are limited, given the non-experimental design of the study. Finally, the sample for the present study included predominantly Caucasian youth, and therefore limits generalizability of study findings for non-Caucasian youth.

Despite its limitations, the current study extends previous work and provides important guidelines for next steps. Theoretically, emotion dysregulation is a multi-faceted construct that encompasses numerous components related to emotion expression, intensity and duration, coping responses to various emotions and ability to implement desired coping responses (Adrian, Zeman, & Veits, 2011). Future studies should integrate other methods and types of emotion dysregulation and explore how they may differentially relate to aggression. Additionally, research has demonstrated that parental behavior may also interact with child characteristics or behavior (Crockenberg & Leerkes, 2006; Crockenberg, Leerkes, & J6, 2008) and thus future research may also examine the moderating impact of parental behavior in associations between youths' emotional functioning and aggressive behaviors. Consistent with and extending upon recent evidence (e.g., Akcinar & Baydar, 2014), the findings of the current study indicate the need to further evaluate the association between parental psychological control and various forms of aggressive behavior in youth, as this association is likely influenced by other individual or environmental characteristics. For example, future research should examine additional parenting behaviors, such as behavioral control in predicting children's aggressive behavior. Previous work indicates that behavioral control is an important predictor of youth's behavior, and is associated with threshold effects, such that too much behavioral

control can be maladaptive, whereas appropriate control may be protective (Smetana, Villalobos, Tasopoulos-Chan, Gettman, & Campione-Barr, 2009; Zahn-Waxler, Radke-Yarrow, & King, 1979).

Results from the present study may also have important implications for the prevention and treatment of children's aggressive behavior. For youth who experience psychological control, emotion regulation strategies with the aim of improving emotion regulation for the purpose of engaging in prosocial behaviors may be an important focus of treatment. Indeed, previous work utilizing both biological and self-report measures of emotion regulation found that adolescents who experience initial physiological reactivity to stress, followed by a period of decrease in physiological stress responding reported both better emotion regulation and greater prosocial behavior (Cui et al., 2015). Such findings indicate that emotion regulation strategies that help children identify and label emotions early, and develop adaptive coping strategies in response to negative emotional experiences may help increase prosocial behaviors.

Previous intervention research suggests that teaching constructive communication and problem-solving skills benefit students and may protect against negative outcomes associated with aggression (Wasserman & Miller, 1998). While it remains unclear whether such programs could buffer negative consequences of aggression, or effect change on aggression itself, these may be important targets of intervention, by providing students an alternative to what is modeled for them in their interactions their parents. School-based communication and problem-solving skills training may assist emotionally-dysregulated youth find adaptive alternatives to physical aggression (Lochman & Wells, 2002; Lochman, Powell, Boxmeyer, & Jimenez-Camargo, 2011). Similarly, interventions that focus on developing a strong school community with an emphasis on prosocial behavior may benefit students otherwise prone to imitate behavior their parents exhibit. Parents who engage in psychological control may lack understanding of developmentally appropriate behaviors, or the tools and strategies necessary to increase compliance and communicate effectively with their child (Pomerantz & Eaton, 2001). Effective interventions targeting psychological control involve increasing parents' flexibility (i.e., adapting to their child, rather than expecting their child to adapt to them; Akai, Guttentag, Baggett, & Noria, 2008). Psychologically controlling parents also tend to exhibit lower levels of social or emotional support (Reed, Ferraro, Lucier-Greer, & Barber, 2014). Targeted interventions may assist parents in developing appropriate disciplinary skills (e.g., appropriate behavioral control) and increase social support to benefit the parent-child relationship. Such interventions may effect change in psychological control, as well as provide an adaptive model for youth behavior.

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