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Children's perceptions of emotion regulation strategy effectiveness: links with attachment security

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ABSTRACT

Six- and nine-year-old children ($N = 97$) heard illustrated stories evoking anger in a story character and provided evaluations of the effectiveness of eight anger regulation strategies. Half the stories involved the child's mother as social partner and the other half involved a peer. Attachment security was assessed via the Security Scale. Children reported greater effectiveness for seeking support from adults and peers in the peer context than the mother context, but perceived venting as more effective with mothers. Children with higher security scores were more likely to endorse problem solving and less likely to endorse aggression in both social contexts than those with lower security scores. Early evidence for gender differences was found in that boys endorsed the effectiveness of distraction while girls endorsed venting their emotion.

Establishing effective ways of regulating emotion is a critical achievement of childhood as it underpins the development of social competence and long-term psychosocial adjustment (for a review, see Eisenberg, Hofer, & Vaughan, 2007). Emotion regulation consists of "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions" (Thompson, 1994, p. 27). The development of emotion regulatory competence begins early in childhood in the context of parent–child relationships and is refined in middle childhood as self-regulatory skills are extended to peer relationships.

Attachment researchers have long been interested in the development of emotion regulation as one contribution of a secure attachment to social competence and as an aspect of the internal working models associated with secure or insecure attachment (Cassidy, 1994). There is considerable evidence that securely-attached children are more capable of emotion self-regulation in early childhood (Thompson & Waters, 2010) and middle childhood (Brumariu, 2015) as reflected in behavioral observations, maternal or teacher report, and (less commonly) physiological measures. Yet as an aspect of their mental representations of experience, little is known of how children think about the effectiveness of alternative emotion regulation strategies and how this thinking is

associated with attachment security. The purpose of this study was to assess children's judgments of the effectiveness of strategies for regulating anger in relation to mother–child attachment security, and also to examine the association of these judgments with age, gender, and the social context of the anger-eliciting event. We focused on the regulation of anger because of its significance for social interactions in middle childhood. We examined children's evaluations of emotion regulation strategies in different social contexts to understand whether strategies perceived as effective in relation to the attachment figure would be generalized to the peer context, as some findings in middle childhood suggest (Brumariu, 2015).

Children's perceptions of the effectiveness of emotion regulation strategies

Research on children's emotion regulation has long relied on parents' reports of children's regulatory behaviors, and with good reason. Parents are uniquely suited to report on their children's behavior because their perspectives are based on rich histories of observations of their children in a variety of situations. Nevertheless, some research suggests that parents are not necessarily as accurate at reporting their children's emotional states as is often assumed, and their reports of children's emotions often contradict children's self-reports (Levine, Stein, & Liwag, 1999; Waters et al., 2010). The same is likely to be true of teachers' evaluations of children's emotion regulation.

When carefully assessed, however, children's self-reports can provide important understanding of how children are thinking about their emotion regulation and how this changes with age. Several recent studies have shown that children as young as three or four can provide basic evaluations of emotion regulation strategies and their utility (Dennis & Kelemen, 2009; Sayfan & Lagattuta, 2009; Thompson, Virmani, Waters, Meyer, & Raikes, 2013). These studies show, in general, that preschool-age children perceive the effectiveness of emotion regulation strategies on an emotion-specific basis, with problem-solving deemed most effective in managing anger, for example, and distraction or reappraisal most relevant to regulating fear. Children of this age rate venting emotion as a generally less effective strategy, although they perceive it as more effective for regulating anger than for other emotions. There has been little research, however, on emotions and their regulation in middle childhood. In a meta-analytic review of children's emotion expression, for instance, only 28 of 164 studies involved children ages six to 12 years (Chaplin & Aldao, 2013). This current study addresses this gap in the literature.

Studies that examine children's developing perceptions of the effectiveness of alternative emotion regulation strategies can complement research on the strategies that children are observed using. Prior research indicates that younger children turn to adults to help manage their emotions and when left to their own devices rely primarily on behaviorally-oriented emotion regulation strategies such as perceptually disengaging from upsetting stimuli (e.g., covering their eyes), removing themselves for upsetting situations, or expressing their emotion outright (i.e., venting) (Thompson, 2011). Although there is some evidence that even preschool-aged children are sensitive to cognitively-oriented emotion regulation strategies (Sayfan & Lagattuta, 2009), the early grade school years is generally the period in which children recognize the utility of cognitively-oriented mental strategies for regulating emotion (Davis, Levine, Lench, &

Quas, 2010; Flavell, Flavell, & Green, 2001). One study found that five-year-old children understand the causes of emotion, seven-year-old children understand that one can choose not to express an emotion, and nine-year-old children understand that emotions can be regulated cognitively (Pons, Harris, & De Rosnay, 2004). In the current study, we examined developmental changes in children's perceptions of emotion regulation strategy effectiveness using eight distinct strategies that included behavioral strategies like distraction or problem solving as well as cognitive strategies like reappraisal in a sample of six- and nine-year-old children.

Mother–child attachment and emotion regulation

Children's emotional skills develop in the caregiver–child relationship and attachment theorists have posited that the security of attachment is fundamental to the development of children's emotion regulation (Cassidy, 1994). In a secure attachment relationship, the child learns that negative emotions can and should be addressed and resolved in positive ways because the parent responds to the child's emotional communication appropriately and supportively. Securely-attached young children have been found to manage their emotions more competently in studies of young children (see Thompson, 2016, for a review) and the same has been found in the more limited number of studies of middle childhood (Brumariu, 2015). Older children who are securely attached have, in particular, been reported by their mothers to use more constructive self-regulatory strategies (Contreras, Kerns, Weimer, Gentzler, & Tomich, 2000), to self-report more positive mood and less negative mood (Kerns, Abraham, Schlegelmilch, & Morgan, 2007), and to use more emotion-relevant social support based on maternal reports (Abraham & Kerns, 2013; for a review, see Brumariu, 2015). Attachment researchers have rarely examined attachment security in relation to children's own perceptions of emotion regulation at this age, however, which might reflect aspects of internal working models of relationships.

Over the course of early childhood, children develop internal working models of attachment and these models influence their experience in other relationships. Representations of emotion and emotion regulation are likely to be important to these mental models because of the significance of emotion and its expression to relationships. For example, securely-attached children develop a more insightful understanding of emotion and its causes early in life (for a review, see Thompson, 2016). With respect to emotion regulation, one study with preschool-age children found that securely attached children were significantly less likely to endorse emotional venting as an effective self-regulatory strategy compared to insecurely-attached children (Thompson et al., 2013). One study of older children reported that securely-attached fourth-graders scored higher on a self-report composite measure of constructive anger regulation strategies, although it was not possible to determine which specific strategies were higher in secure children (Schwarz, Stutz, & Ledermann, 2012).

In this study, therefore, we examined judgments of emotion regulation strategies in children as a means of further understanding this aspect of children's representations of how to function in relationships. We sought first to determine whether the pattern of associations between attachment security and judgments of emotion regulation was

comparable for contexts involving the attachment figure (mother) and contexts involving a peer.

Emotion regulation and the social context

While young children's emotion regulation skills develop in the context of parent–child relationships, children's social worlds expand during middle childhood to include peers as salient social partners as well. Peer relationships provide a social context in which self-regulatory skills learned in the family can be generalized (Brumariu, 2015). But peer interactions place special demands on children's emotion regulation capacities as peer relationships tend to be structured heterarchically rather than hierarchically as the parent–child relationship is. The similar viewpoints of same-aged peer companions can provide singular opportunities for emotional connection, but similarities also present unique challenges (Thompson & Waters, 2010). Managing frustration, such as over the loss of a desirable toy, may be easier for a child when the social partner is invested in helping him successfully resolve the negative emotion, as parents often are, than when the social partner is equally frustrated by the situation or engaged in her own competitive pursuit, as may be the case with a peer. Certain emotion regulation strategies (e.g., venting emotion, seeking social support) may be viewed differently in peer as compared to adult social contexts. The grade school years are likely a particularly significant period for the development of these context-specific regulatory skills because of the greater complexity of peer relationships at this time and their relevance to success in a variety of domains.

The few studies that have examined how children's emotion regulation strategies vary by social partner suggest that the identity of the social partner influences the way children approach emotion regulation. An observational study of preschoolers found that children used emotion regulation strategies such as venting for anger directed at an adult and emotion regulation strategies of assertion and active resistance for anger directed at a peer (Fabes & Eisenberg, 1992). In contrast, Underwood and colleagues (1992) found that grade schoolers tended to endorse display rule usage like masking one's facial expression of emotion more readily when angry with a teacher as compared to a peer. Between parents and peers, emotion display rule research has found that children endorse masking their expressions of negative emotion when they are with a peer more than when they are with a parent (Zeman & Garber, 1996). Along the same lines, children anticipate negative relational consequences for expressing their negative emotions to friends more than to mothers (Shipman, Zeman, & Stegall, 2001).

Comparisons of children's regulatory responses in mother and peer scenarios are complicated by the fact that these scenarios often differ in ways unrelated to the identity of the social partner. In Fabes and Eisenberg's (1992) study, for instance, adult-focused conflict tended to involve issues with compliance while peer-focused conflict tended to involve ownership disputes. In the current study, we used stimuli in which the identity of the social partner was the only substantive variation between the story sets. Thus, we tested hypotheses regarding children's perceptions of emotion regulation in relation to mother versus peer without confounding other features of the social context.

Gender and emotion regulation

In studies of adolescents and adults, a gender-specific pattern of emotion regulation is apparent. Based on a meta-analysis of sex differences in coping behavior, Tamres, Janicki, and Helgeson (2002) concluded that women are significantly more likely than men to seek social support and marginally more likely to vent their emotion. While men are no more likely than women to use an avoidant strategy in general, they are more likely to use avoidance or withdrawal strategies in the context of a relational stressor specifically. Gender differences in emotion regulation strategy use are important, in part, because of the link between certain strategies and risk for psychopathology. For instance, seeking emotional support is negatively associated with depressive symptoms while reliance on suppression is positively associated with them (Nolen-Hoeksema & Aldao, 2011). Investigating the emergence of these differences during childhood could add to our understanding of risk for psychopathology.

When are gender differences in emotion regulation first evident? Gender differences in the expression of externalizing emotion like anger wherein boys express more than girls have been found in early and middle childhood (Chaplin & Aldao, 2013). While female preferences for expressing internalizing emotion and seeking social support and males' tendency to avoid have been observed in adolescents (Chaplin & Aldao, 2013; Perry-Parish & Zeman, 2011; Wierzbicki, 1989), few studies have examined these patterns in younger samples. We expected gender differences to emerge early since there is evidence that differential socialization of emotion begins in childhood. Parents talk about emotions differently with preschool-age boys and girls, focusing more on the emotion itself with daughters and more on the causes and consequences of the emotion with sons (Fivush, 1989). Given that parents may punish emotion expression in boys more than in girls (Garside & Klimes-Dougan, 2002; Klimes-Dougan et al., 2007), it may not be surprising that girls express emotions more openly and report expecting support following the expression of emotion to others, while boys expect more negative responses (Zeman & Shipman, 1997). Based on these findings of gender-specific emotion socialization in early childhood, we examined perceptions of emotion regulation in middle childhood with the expectation that the patterns seen in older samples, such as males preferring to avoid emotional expression and females preferring to express emotion or seek social support, are already evident in this under-studied developmental period.

Hypotheses

In the current study, we examined six- and nine-year-olds' ratings of the effectiveness of emotion regulation strategies for anger using the same sample and an adaptation of the interview technique introduced in our previous work (Waters & Thompson, 2014). In that study, we designed anger- and sadness-eliciting stories that lacked a causal agent to compare children's emotion regulation strategy appraisals for two different emotions. Here we manipulated the anger-eliciting social context by varying the identity of the causal agent (i.e., parent or peer). We investigated whether children's perceptions of strategy effectiveness differed as a function of their age, attachment security, social context, or gender. Our hypotheses were:

(1) Children will rate problem solving as the most effective strategy for regulating anger, consistent with previous research. They will also rate more constructive strategies such as cognitive appraisal as more effective than less constructive strategies like venting.

(2) Children with higher attachment security scores will rate constructive strategies like problem solving as more effective and maladaptive strategies like aggression less effective in both mother and peer social contexts than children with lower attachment security scores.

(3) Children will rate venting emotion as more effective in the context of mother as the social partner than in the context of a peer as the social partner, and they will rate seeking adult or peer support, and aggression (Fabes & Eisenberg, 1992), as more effective in the context of a peer as the social partner than in the context of mother as the social partner.

(4) Younger children will rate cognitive appraisal and seeking peer support as less and venting emotion, distraction, or seeking adult support more effective than older children will.

(5) Boys will rate distraction or doing nothing as more effective than girls will and girls will rate venting and seeking peer support as more effective than boys will.

Methods

Participants

The sample consisted of 97 children (49 girls) and their mothers ($M = 40.3$ years, $SD = 6.22$) recruited from first grade ($n = 48$; $M = 6.8$ years, $SD = .37$) and fourth grade ($n = 49$; $M = 9.73$ years, $SD = .34$) classrooms. The sample was ethnically and educationally diverse with 59% of children reported as European American, 24% multiethnic, 9% Latino, 8% Asian American, African American, or other. Eighteen percent of mothers had graduated from high school or had a GED, 12% had a technical or associate degree, 51.5% had a bachelor's degree, and 17.5% had master's degree or doctorate.

To establish a sufficient sample size, an a priori power analysis was conducted via the computer program G*Power Version 3 (Erfelder, Faul, & Buchner, 1996). Power was assessed for repeated measure multivariate analysis of variance with two groups and two measurements. For these analyses, alpha was set at .05. According to these analyses, a sample size of 90 children gives a power of .94 to detect an effect size of Cohen's $d = 0.25$ (Cohen, 1960). Thus the 97 children recruited for this study has power well above the widely accepted standard of .80.

Procedures and measures

Participants were recruited through the laboratory participant database, flyers posted in the community, and through elementary schools in the area. Data collection occurred either at the university laboratory or the child's school site, based on ease of access for the participant. Children participating at their school site completed the study measures in a quiet, private conference room during the school day. The anger regulation

interview was administered before the attachment measure to avoid confounding children's regulation reports with activation of the attachment system. Families were compensated for their participation and the institutional review board approved all study protocols and materials.

The experimenter began with a warm-up story to familiarize children with the procedure and orient them to identify with the target character, who was gender matched to them. Children also identified a peer who was familiar to them (but not a best friend) who would be in the peer stories. In the anger regulation task children heard four stories, two of which involved the mother as the social partner and two involving the familiar peer as the social partner. In one story for each partner (mother or peer), the narrative described the partner breaking a promise to the target child; in the other, the partner took away the target child's possession. The stories were counterbalanced and presented in the second person (i.e., with the participant in the role of the target child). Each story was told via narration with five picture card drawings following this sequence: the target child expressing happiness in the company of the social partner, the anger-eliciting event occurring, the target child expressing anger, a question mark card, and finally the target child expressing happiness again. Participants were prompted to identify the target child's negative emotion with the third picture card and identification of the correct emotion, anger, was confirmed before participants made their emotion regulation judgments. Children as young as two accurately identify basic emotional expressions in others (Denham, 1986) and all participants correctly identified the negative emotion expressed by the target character when prompted.

The fourth card was a picture of a question mark to signify that the participant needed to complete the story with the strategy picture cards. The participant was asked to imagine him/herself in the story, insert each of the eight strategy cards into the blank space, and imagine whether that strategy would help make the target child happy again as depicted in the final card. The participant then sorted each of the strategy cards into one of two piles according to whether the strategies were "helpful" or "unhelpful." These piles were marked by a thumb-up and thumb-down graphic. Once all eight strategy cards were sorted, double thumb-up and double thumb-down graphics were introduced to indicate "very helpful" and "very unhelpful" and the participant sorted the cards designated "helpful" further into either "helpful" or "very helpful." The same was done for the cards designated "unhelpful." The result, following Harter's (1982) method for children's self-reports, was that each strategy card was sorted into one of four categories, receiving an effectiveness score ranging from 1 (very unhelpful) to 4 (very helpful).

Emotion regulation strategy ratings

The strategies were taken from Eisenberg and colleagues' (1993) emotional coping measure and Causey and Dubow (1992) coping measure and were consistent with many other studies in the research literature. The eight strategy cards were as follows:

(1) Problem Solving: the target child takes appropriate action to remedy the situation (e.g., talking to the social partner about his/her actions)
(2) Seeking Adult Support: the target child asks another adult for assistance

(3) Cognitive Reappraisal: the target child thinks about something, depicted via a thought bubble overhead
(4) Seeking Peer Support: the target child asks a different peer for assistance
(5) Venting Emotion: the target child expresses strong anger in the face and body
(6) Aggression: the target child yells at the causal agent
(7) Distraction: the target child turns to a different activity altogether (i.e., reading a book)
(8) Doing Nothing: the target child stands alone with no facial expression

Attachment security

Participants' attachment security was measured using the Security Scale (Kerns, Klepac, & Cole, 1996), which assesses children's perceptions of their attachment relationship with their mother and yields a continuous measure of attachment security. It is the most widely used and best validated measure of attachment security in middle childhood and is appropriate for use with children as young as first grade (Diener, Isabella, Behunin, & Wong, 2008). Participants rated 11 items (alpha = .70) with regards to which type of two kids was more like them on a 4-point Likert scale of "really true for me" to "not at all true for me" following the Harter (1982) method described above. A sample item reads, "Some kids find it easy to trust their mom BUT Other kids are not sure if they can trust their mom."

Results

We tested for differences between the two trials within each social partner condition. Strategy effectiveness ratings were statistically significantly correlated (all ps < .01) within the two trials of mother stories. Concordance was highest for Aggression ($r = .73$) and lowest for Avoidance ($r = .29$). For the other six strategies, concordance ranged from $r = .40$ to $r = .65$. We examined concordance in the six-year-old subsample and nine-year-old subsample separately and found substantively the same pattern of associations. Across the two trials of peer stories, strategy effectiveness ratings were statistically significantly correlated (all ps < .01). Again, concordance was highest for Aggression ($r = .70$) and lowest for Avoidance ($r = .17$). For the other six strategies, concordance ranged from $r = .45$ to $r = .66$. We examined concordance in the six-year-old subsample and nine-year-old subsample separately and found substantively the same pattern of associations. Thus we averaged the ratings across the two trials to create eight strategy effectiveness ratings for the mother social context and peer social context conditions, respectively. Descriptive statistics for the emotion regulation strategy effectiveness ratings and attachment security score appear in Table 1. Because the Problem Solving, Aggression, and Doing Nothing strategies were skewed, logarithmic transformations were performed. Findings from analyses including the transformed variables were not substantively different from those including the non-transformed variables so the latter are presented for ease of interpretation.

Bivariate analyses (Table 2) revealed that individual strategy effectiveness scores were positively correlated for the two social contexts. Participants who endorsed the

Table 1. Descriptive statistics for study variables.

Story context	Emotion regulation strategy	Full sample	Six-year-olds	Nine-year-olds	Girls	Boys
Mother						
	Problem Solving	3.45 (0.68)	3.45 (0.62)	3.46 (0.73)	3.48 (0.67)	3.42 (0.69)
	Seeking Adult Support	2.79 (0.93)	3.11 (0.83)	2.48 (0.94)	2.87 (0.92)	2.72 (0.96)
	Cognitive Appraisal	2.93 (0.91)	2.93 (0.86)	2.94 (0.96)	2.82 (0.89)	3.05 (0.92)
	Seeking Peer Support	2.63 (0.86)	2.75 (0.91)	2.52 (0.80)	2.57 (0.91)	2.70 (0.80)
	Venting Emotion	2.24 (0.92)	2.36 (0.92)	2.12 (0.91)	2.44 (0.94)	2.04 (0.86)
	Aggression	1.35 (0.75)	1.30 (0.67)	1.40 (0.84)	1.51 (0.87)	1.19 (0.76)
	Distraction	2.95 (0.74)	2.93 (0.74)	2.97 (0.75)	2.83 (0.79)	3.07 (0.66)
	Doing Nothing	1.71 (0.73)	1.74 (0.79)	1.67 (0.59)	1.56 (0.59)	1.85 (0.76)
Peer						
	Problem Solving	3.42 (0.74)	3.43 (0.68)	3.42 (0.81)	3.54 (0.64)	3.30 (0.82)
	Seeking Adult Support	2.99 (0.81)	3.45 (0.54)	2.55 (0.79)	3.12 (0.71)	2.86 (0.89)
	Cognitive Appraisal	2.95 (0.84)	2.94 (0.85)	2.97 (0.85)	2.88 (0.80)	3.03 (0.89)
	Seeking Peer Support	2.89 (0.86)	3.01 (0.85)	2.78 (0.86)	2.99 (0.85)	2.79 (0.87)
	Venting Emotion	2.14 (0.94)	2.35 (0.98)	1.93 (0.79)	2.31 (0.96)	1.97 (0.90)
	Aggression	1.32 (0.70)	1.25 (0.59)	1.39 (0.79)	1.42 (0.81)	1.22 (0.54)
	Distraction	2.94 (0.64)	2.89 (0.67)	2.98 (0.62)	2.76 (0.62)	3.13 (0.61)
	Doing Nothing	1.83 (0.79)	2.03 (0.90)	1.63 (0.60)	1.72 (0.71)	1.94 (0.85)
Attachment Security		3.34 (0.43)	3.36 (0.42)	3.31 (0.43)	3.32 (0.38)	3.35 (0.47)

Mean (Standard Deviation).

effectiveness of, for instance, Venting Emotion for regulating anger toward mother also tended to endorse the effectiveness of that strategy for regulating anger toward a peer. This was true for all eight strategies. Several consistent patterns emerged within both social contexts. The endorsement of Problem Solving was negatively associated with the endorsement of Aggression; the endorsement of Seeking Adult Support was positively associated with the endorsement of Seeking Peer Support; and the endorsement of Seeking Peer Support was positively associated with the endorsement of Distraction. Attachment security scores were positively associated with Problem Solving and negatively associated with Aggression.

An 8 (strategy) x 2 (social partner) x 2 (age group) x 2 (gender) x 2 (research setting) repeated measures analysis of variance design, with an alpha cutoff of .05, was used with strategy and partner as within-subject factors and the other factors between-subject. Because neither the main effects nor any of the interaction effects including the research setting variable were significant, the variable was dropped from analyses.

Multiple main effects and interaction effects were found, in support of several study hypotheses. There was a main effect for strategy, $F(7, 87) = 79.68$, $p < .001$, $\eta^2 = .87$. We used Bonferroni corrected post-hoc comparisons with an alpha cutoff of .05 and found four distinct groupings of strategies based on perceived effectiveness. Children rated Problem-Solving as statistically significantly more effective than the other seven strategies. Children rated Adult Support Seeking, Peer Support Seeking, Cognitive Reappraisal, and Distraction as comparably effective to each other and statistically significantly more effective than Venting Emotion, Doing Nothing, or Aggression. They rated Venting Emotion and Doing Nothing as comparably effective to each other and statistically significantly more effective than Aggression, which was rated the least effective emotion regulation strategy. We found a main effect for grade, $F(1, 93) = 7.71$, $p = .007$, $\eta^2 = 0.08$. Younger children gave higher overall effectiveness ratings compared to older children. A main effect for social partner also emerged, $F(1, 93) = 6.86$, $p = .01$, $\eta^2 = 0.07$, indicating

Table 2. Bivariate correlations between strategy effectiveness in mother and peer contexts and attachment security.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Mother PS																
2. Mother SA	.10															
3. Mother CA	.12	-.04														
4. Mother SP	.10	.29**	.16													
5. Mother VE	.22*	.08	.02	.15												
6. Mother AG	-.29**	.03	-.27**	-.20	-.05											
7. Mother DS	-.01	-.16	.38**	.24*	-.05	-.16										
8. Mother DN	.03	.01	.13	.25*	.001	-.21*	.34**									
9. Peer PS	.61**	.07	.22*	-.001	.01	-.44**	.12	.04								
10. Peer SA	.12	.60**	.11	.30**	.05	-.04	.01	.06	.17							
11. Peer CA	.15	-.07	.76**	.28**	.15	-.33**	.50**	.08	.19	.02						
12. Peer SP	.10	.44**	.15	.48**	.19	-.18	.18	.05	.15	.45**	.14					
13. Peer VE	.26*	.09	.10	.04	.83**	-.12	.06	.06	.15	.07	.23*	.15				
14. Peer AG	-.32**	-.05	-.26*	-.07	-.09	.89**	-.08	-.09	-.47**	-.12	-.28**	-.20*	-.16			
15. Peer DS	.04	.05	.18	.30**	.02	-.29**	.49**	.39**	.02	-.11	.34**	.18	.04	-.20*		
16. Peer DN	-.02	.15	.06	.02	.10	.04	.12	.70**	-.07	.11	-.09	.02	.12	-.01	.22	
17. Attachment security	.32**	.07	.01	.09	-.02	-.37**	.15	.02	.42**	.08	.17	.17	.06	-.47**	.16	-.13

PS = Problem Solving; SA = Seeking Adult Support; CA = Cognitive Appraisal; SP = Seeking Peer Support; VE = Venting Emotion; AG = Aggression; DS = Distraction; DN = Doing Nothing.
* $p < .05$; ** $p < .001$.

that greater overall strategy effectiveness was endorsed in the peer social partner context than in the mother social partner context.

The strategy by grade interaction effect was statistically significant, $F(7, 87) = 5.38$, $p < .001$, $\eta^2 = 0.30$. As hypothesized, Seeking Adult Support was rated as more effective by younger children than older children, $t(95) = 5.53$, $p < .001$, 95% CI [0.50, 1.04]. Venting was rated marginally more effective by younger children than older children, $t(95) = 1.88$, $p = .064$, 95% CI [−0.19, 0.69]. We also found a statistically significant interaction effect for strategy and gender, $F(7, 87) = 2.79$, $p = .012$, $\eta^2 = 0.18$. As hypothesized, Distraction was rated as more effective by boys than girls, $t(95) = −2.62$, $p = .01$, 95% CI [0.07, 0.54], while Venting Emotion was rated as more effective by girls than boys, $t(95) = 2.07$, $p = .041$, 95% CI [−0.72, −0.15]. There was also a marginal effect wherein Doing Nothing was rated as more effective by boys than girls, $t(95) = −1.84$, $p = .068$, 95% CI [−0.19, 0.53]. Finally, an interaction of strategy and social partner emerged, $F(7, 87) = 3.0$, $p = .007$, $\eta^2 = 0.19$. As hypothesized, effectiveness of Seeking Adult Support was more highly endorsed when a peer was the social partner than when mother was, $t(96) = −2.5$, $p = .015$, 95% CI [−0.36, −0.04]. The same was found for Seeking Peer Support, $t(96) = −2.9$, $p = .005$, 95% CI [−0.43, −0.08]. There was also a marginal effect that Venting Emotion was perceived as more effective in the context of mother as social partner than in the context of peer as social partner, $t(96) = −1.90$, $p = .061$, 95% CI [−0.005, 0.21].

Multiple linear regressions (Table 3) were used to test the hypotheses regarding the association of mother–child attachment security scores with emotion regulation strategy effectiveness ratings. First, we used ANOVA to test for age or gender differences in attachment security and neither were statistically significant, $F(1,94) = 0.15$, $p = .70$, or gender, $F(1,94) = 0.71$, $p = .55$. Separate regressions were run for each social context with the strategy effectiveness rating as the dependent variable. For each regression equation, age and gender were entered as control variables, followed by attachment security scores.

In the mother social context condition, the model predicting Problem Solving effectiveness ratings was significant, $F(3, 91) = 3.91$, $p = .01$, $R^2 = .09$, with a main effect for attachment security score. Children with higher scores on Kerns' attachment security scale rated Problem Solving as a more effective strategy than children with lower scores on the attachment security scale. The model predicting Aggression ratings was statistically significant, $F(3, 91) = 6.31$, $p = .001$, $R^2 = .15$, with a marginally significant main effect for gender and a statistically significant effect for attachment security. Children with higher scores on the attachment security scale rated Aggression toward mother as less effective than children with lower scores on the attachment security scale.

In the peer social context condition, the model predicting Problem Solving effectiveness ratings was statistically significant, $F(3, 91) = 8.69$, $p < .001$, $R^2 = .20$, with statistically significant effects of gender and attachment security scores. Girls rated Problem Solving as a more effective strategy for managing anger at a peer than boys did and children with higher scores on Kerns' attachment security scale rated Problem Solving as more effective children with lower scores on the attachment security scale did. Finally, the model predicting Aggression effectiveness ratings was statistically significant, $F(3, 91) = 5.83$, $p < .001$, $R^2 = .13$, with a statistically significant effect of attachment security scores. Children with higher scores on the attachment security scale rated Aggression as

Table 3. Hierarchical regressions predicting problem solving and aggression effectiveness ratings in mother and peer contexts.

	Mother context										Peer context									
	Problem solving					Aggression					Problem solving					Aggression				
	B	SE	β	t	95% CI	B	SE	β	t	95% CI	B	SE	β	t	95% CI	B	SE	β	t	95% CI
Age	0.03	0.04	0.07	0.65	[−0.06, 0.11]	0.02	0.04	0.04	0.38	[−0.07, 0.10]	0.01	0.04	0.03	0.29	[−0.08, 0.1]	0.02	0.04	0.04	0.42	[−.06, 0.1]
Gender	0.11	0.13	0.08	0.82	[−0.15, 0.37]	0.25	0.14	0.17	1.82+	[−0.02, 0.51]	0.31	0.14	0.21	2.26*	[0.04, 0.57]	0.14	0.12	0.11	1.17	[−0.1, 0.39]
Attachment security	0.51	0.15	0.33	3.32**	[0.21, 0.82]	−0.61	0.16	−0.37	−3.84**	[−0.93, −0.29]	0.74	0.16	0.43	4.68**	[0.43, 1.06]	−0.57	0.15	−0.38	−3.93	[−0.86, −0.28]

+p < .10; *p < .05; **p < .01.

a less effective strategy for managing anger at a peer than children with lower scores on the attachment security scale.

Discussion

Children who recognize the usefulness of constructive strategies for managing negative emotions like anger, especially during interaction with important social partners, are likely at an advantage in terms of developing social competence and adjustment. The current study is one of only a few to examine children's perceptions of emotion regulation and the first of which we are aware to evaluate the impact of attachment and the social context on older children's understanding of the utility of emotion regulation strategies for anger. Our findings indicate that school-aged children have sophisticated perceptions of the effectiveness of emotion regulation strategies and that the identity of the social partner in an emotional situation plays a role in children's perceptions of strategy effectiveness. Our findings also support the view that more securely attached children, at least as measured by scores on the Kerns' security scale, perceive more constructive self-regulatory strategies as more effective than less securely attached children and, conversely, more securely attached children endorse self-regulatory strategies that are more likely to impair relationships as less effective than less securely attached children do.

In line with our hypotheses, children reported problem solving to be a more effective strategy than the other seven strategies and aggression to be a less effective strategy than the other seven strategies. This was especially apparent for children with secure attachment relationships. This difference in judgments is consistent with predominant socialization messages from adults regarding how to manage anger toward a social partner, in which talking to the person, for example, is encouraged over using verbal or physical aggression, and is likely to be consistent with children's direct experience of the consequences of problem solving and aggression for emotion management. Interestingly, there were no overall differences in children's effectiveness ratings of different strategies when children responded to anger and sadness stories without a causal agent (Waters & Thompson, 2014), although they rated problem-solving effectiveness higher for anger stories than for sadness stories.

Our findings also suggest that children may learn to adopt distraction as a useful tool of their own in their emotion management repertoire and that they perceive seeking an adult's support as quite useful as well. Children also reported that talking to a peer about her emotions is comparably effective to seeking support from an adult, indicating the increasing salience of peer relationships in children's social-emotional lives. Consistent with the adaptive nature of cognitive reappraisal shown in the adult literature (John & Gross, 2004), children of both ages identified the value of using cognitive thought processes for changing one's emotional experience.

While rated more effective than aggression, expressing one's anger openly (i.e., venting) or doing nothing in the face of the anger-eliciting situation were rated as poorer regulatory strategies than the other five strategies. Therefore, children appreciate that simply releasing their emotions is not a particularly constructive means of coping with anger, but mounting no behavioral or cognitive response to address the experienced anger does not help manage it either. This finding is consistent with preschool

children's reports on the relative ineffectiveness of venting (Dennis & Kelemen, 2009; Thompson et al., 2013) and again highlights children's sophisticated thinking about emotion regulation.

As one of the first studies to examine attachment security in relation to children's representations of the effectiveness of emotion regulatory strategies, it extends the literature on the components of internal working models generated through secure and insecure attachment relationships. Our findings align with studies using maternal report (e.g., Abraham & Kerns, 2013; Contreras et al., 2000) suggesting that secure attachment relationships are marked by a more discriminating appraisal of the effectiveness of strategies of emotion management. As hypothesized, children with higher scores on the attachment security scale were more likely to view problem solving as an effective strategy in both mother and peer social contexts than children with lower scores on the attachment security scale. They were also less likely to view aggression as effective in both contexts than children with lower scores on the attachment security scale. Viewed in this light, it appears that securely-attached children are more likely to manage their anger by engaging a social partner in problem-solving and, when that partner is the mother, this may be based on their belief that the attachment figure continues to be available to support the child and help to repair the situation. By contrast, the anger regulatory approach of insecurely-attached children appears to be less oriented toward constructive social engagement with partners and instead an aggressive, offensive stance that either assumes that others (including the attachment figure) are not reliable sources of support or rejects the support that may be offered.

Mother–child attachment security scores were comparably associated with children's perceptions of emotion regulation in maternal and peer contexts. This finding is consistent with the results of others' work that more securely attached children demonstrate greater peer competence (see Groh et al., 2014, for a review). Given that children first learn emotion regulatory skills through interactions with their attachment figures, the association of attachment security with strategy effectiveness in both mother and peer contexts may reflect a generalization of strategies from the parent–child relationship to relationships with peers (Brumariu, 2015). Our results expand understanding of the representational influences deriving from the security of attachment and their extension to other relationships of middle childhood.

In the current study, the influence of the social partner on emotion regulation strategy effectiveness was examined specifically in situations where the social partner was also the causal agent of the child's anger (by contrast with Waters & Thompson, 2014). This is a common feature of anger-eliciting circumstances and also a particular challenge for emotion regulation. Our hypotheses were partially supported. As hypothesized, children reported that seeking emotional support from a peer was more effective in the peer social context than in the mother social context. By first grade, children recognize that a friend can offer useful emotional support when upset with another peer. This may reflect children's growing awareness that other children can offer relevant perspectives on peer disputes and that they may even serve as mediators in these kinds of situations. Their greater endorsement of the effectiveness of adult social support in the peer context compared to the mother context may also reflect the value of adults as mediators of peer conflict, as well as sources of understanding. Contrary to our hypotheses (and Fabes & Eisenberg, 1992), however, children did not rate

aggression more highly in a peer context than the mother context for managing anger, perhaps because of its social maladaptiveness.

Children also reported that venting anger was more effective in the content of mother than peer, suggesting that they find the parent–child relationship a more supportive environment for expressing anger than a peer setting. Mothers are likely to be more responsive to children's anger expressions than their peers. Overall, this initial examination of children's attention to social context when managing emotion revealed that grade school children are indeed sensitive to the micro-cultural differences between the world of family and the world of peers, and to the different sources of social support available in them.

The developmental picture that emerges from this work regarding judgments of emotion regulation strategy effectiveness offers a new appreciation of the conceptual capabilities of six-year-olds. There were no age differences in children's endorsements of seeking peer support or cognitive appraisal because six-year-olds recognized the utility of receiving emotional support from a friend or thinking through the situation to the same extent that nine-year-olds did. This finding aligns with a study by Davis and colleagues (2010), in which the majority of the sample of five- and six-year-old children generated cognitive emotion regulation strategies such as cognitive distraction and reappraisal when probed via free-response for effective strategies. Our results, therefore, contribute to growing evidence that young children deserve more credit for mentalistic emotion regulation awareness than previously recognized.

There were some differences between six- and nine-year-olds' perceptions of emotion regulation, however, that were consistent with our hypotheses. Younger children endorsed the effectiveness of seeking adult support more than older children. This reliance on an adult to help manage one's emotion is, of course, a common strategy for young children before they have developed more psychologically-based self-regulatory avenues for managing their emotions. Younger children also endorsed the less constructive strategy of venting to a marginally higher degree than older children did (this was also reported by Waters & Thompson, 2014). Thus, there is evidence for a developmental transition between six and nine years old that involves abandoning less effective strategies from one's regulatory repertoire and coming to rely on more mature, and effective, strategies.

Our hypotheses regarding gender differences in strategy endorsement were partially supported. Girls endorsed venting more while boys endorsed distraction more (see also Waters & Thompson, 2014). Gender differences for peer support seeking were not found. While differential parental emotion socialization based on the gender of the child begins early, and adolescent and adult males demonstrate greater avoidance than females (Zimmermann & Iwanki, 2014), few studies have found evidence in young children for gendered patterns of emotion regulation. Our findings suggest that the tendency for males to orient away from emotions in their management and females to orient toward emotions in their management may emerge as early as six years of age.

Limitations

We note several limitations to the current study that are important to interpreting these findings. Probing children's perceptions of emotion regulation gives us insight into the

course by which emotion regulation skills develop because knowledge of effective strategies may accompany or precede actual use of such strategies. We did not, however, test the link between perception and action by comparing emotion regulation strategy effectiveness ratings to emotion regulation behavior. That task remains for future research.

Measuring attachment security during middle childhood is a complex endeavor (Kerns, 2008). The most empirically validated child self-report measure is Kerns' Security Scale, which was used in this study. In the current study then, the anger regulation strategy effectiveness ratings and the security scores shared a common source because the optimal manner for assessing each was through children's self-report. The Kerns measure indexes security alone and its use made it impossible to examine important theoretical claims regarding variations in emotion regulation strategy preferences for insecure-avoidant children and insecure-ambivalent children (Brumariu, 2015). Even qualified by these limitations, the current study is an important exploration of the associations between school-aged children's mental representations of attachment security and emotion regulation strategy effectiveness.

In sum, the results of this study show that continued progress in understanding the effectiveness of various emotion regulation strategies emerges in middle childhood, during a time when peer relationships become more significant influences on children's well-being, and that children of this age are sensitive to the importance of the social context in how they regulate their feelings and their expression. Our findings attest that attachment security influences children's representations of strategy effectiveness, not only in the family context but with peers as well, and suggest a developmental process by which self-regulatory strategies developed in the mother–child relationship become generalized to interactions with peers which awaits confirmation in longitudinal research. These findings add to the research literature explaining the growing competence of children as managers of their emotional lives, and the importance of the family context for shaping generalized emotion regulation skills.

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