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Emotion Regulation in Early Childhood: Implications for Socioemotional and Academic Components of School Readiness

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In this article, we conduct a selective review of the literature on emotion regulation in early childhood (e.g., preschool, generally defined as ages 3–5) in regard to school readiness. Emotion regulation (ER), the process of modulating emotional arousal and expression, plays a key role in a child's ability to adapt to novel demands of school environments. This, in turn, has significant implications for both the socioemotional and academic components of a child's readiness to enter kindergarten. We begin our article with a brief review of the ER construct at this developmental stage, then review research on the impact of ER on both components of school readiness during the preschool and early elementary school years. We then discuss strategies for teachers and parents to promote ER strategy use in young children, and end with challenges regarding operationalization at this age and directions for future research.

Keywords: emotion regulation, preschool, socioemotional competence, academic preparedness, school readiness

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Broadly defined, emotion regulation (ER) is a process of recognizing emotions and using strategies to alter emotions to the extent needed for achieving a desired outcome. Thus, ER can include internal processes (e.g., altering the subjective feeling of emotion) and external processes (e.g., modifying the type or intensity of emotion that is displayed; Thompson, 1994), and can be applied to maintain, enhance, or inhibit positive and negative emotions (Thompson, 2011). The vast majority of early childhood ER research has addressed the down-regulation of external displays of negative emotion, perhaps because mitigating such displays is salient for many caregivers of preschoolers. As such, we use that narrower conceptualization of ER in this review to focus on preschoolers' abilities to select and employ ER strategies that support psychological functioning (referred to as adaptive ER) and the down-regulation of negative emotions.

The ability to regulate emotions develops rapidly in the early years of life and improves slowly into adulthood (Eisenberg, Spinrad, & Eggum, 2010). The preschool years, defined here as the ages of 3 through 5, are of critical importance to the development of ER. During this time, advances in executive function enable preschoolers to inhibit behaviors, regulate attention, and hold information in working memory (Blankson et al., 2017). These new skills provide children with new means of navigating emo-

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tional situations (Montroy, Bowles, Skibbe, McClelland, & Morrison, 2016; Smith-Donald, Raver, Hayes, & Richardson, 2007), which are then combined with increased understanding of emotions and the social norms for emotional expression (i.e., display rules), recognition that others may have different emotional experiences from their own (i.e., theory of mind), and understanding that their own expressed emotion does not need to match their subjective experience (Sala, Pons, & Molina, 2014; Zeman, Cassano, Perry-Parrish, & Stegall, 2006). Each of these processes is important to the development of ER, which requires them to "identify, understand, and integrate emotional information while simultaneously managing their behavior in accord with their interpersonal (i.e., social) and intrapersonal (i.e., personal) goals" (Zeman et al., 2006; p.155). It is during the preschool years that these foundational processes are developed enough for children to shift from employing reflexive strategies to regulate emotions (e.g., self-soothing), to more volitional ER strategies (e.g., problem solving; Dennis & Kelemen, 2009).

Individual differences in ER strategy selection are a function of both the child and their environment. Crucial advances in cognitive, motor, and language development permit children to apply a broader range of strategies to regulate their emotions (Cole, Martin, & Dennis, 2004). According to developmental systems theory, individual differences in these developmental processes related to ER strategy selection and execution are embedded within the environmental context in which the child develops; therefore, children must also learn how to adjust their own emotional goals in the context of cultural and family norms (Thompson, 2011). A key resource for children in navigating this complex terrain are their caregivers, who provide extrinsic regulatory influences (Thompson, 2011). For example, responsive caregiving promotes the use of adaptive ER strategies in children (e.g., using language to express feelings), which in turn promotes positive outcomes

(Eisenberg et al., 2010). Conversely, caregivers' punitive or aggressive responses to children's negative emotions can lead the child to develop maladaptive ER strategies (e.g., hitting), and more internalizing (e.g., anxiety, depression) and externalizing behaviors (e.g., aggression, hyperactivity; Eisenberg et al., 2010). Early caregiving environments that potentiate individual differences in utilization of adaptive ER strategies can have a meaningful impact on children's socioemotional and academic abilities at school entry.

Impact of ER on School Readiness

School readiness refers to the acquisition of basic socioemotional and academic competencies that enable adjustment to school, both of which are associated with ER (Figure 1; Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006). As young children enter school, they are tasked with successfully navigating new relationships, rules, and academic environments likely to elicit a range of emotions. ER may facilitate the regulation of arousal in response to novel school demands in a way that promotes both socioemotional and academic success (C. Blair, 2002) and establishes a trajectory for positive school outcomes. As such, learning to select and employ adaptive ER strategies is a key predictor of socioemotional outcomes (e.g., positive peer relationships) and academic outcomes (e.g., academic achievement scores, grades; Eisenberg, Sadovsky, & Spinrad, 2005; Hill & Craft, 2003; Kopp, 1989).

ER and Socioemotional Competence

Socioemotional competence is defined as the ability to effectively interact with others and manage emotions (LeBuffe, Ross, Fleming, & Naglieri, 2013). In other words, socioemotional competence can be considered a direct consequence of adaptive ER in early childhood. Children who are better able to select and execute adaptive ER strategies demonstrate less emotional intensity and

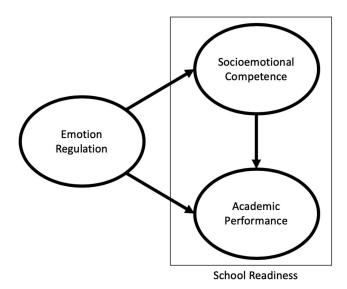


Figure 1. Conceptual model demonstrating the associations between emotion regulation and the academic and socioemotional components of school readiness in early childhood.

externalizing behaviors, have greater control over how they respond to others, are more likely to engage in appropriate interactions with teachers and peers, and are viewed more favorably by peers (C. Blair, 2002; Blankson et al., 2017; Denham et al., 2003; Eisenberg et al., 2005). By kindergarten, socioemotional competence predicts mental health outcomes throughout grade school, positive attitudes toward school, less school avoidance, and adaptive school adjustment (Denham et al., 2003; Eisenberg et al., 2005; O'Neil, Welsh, Parke, Wang, & Strand, 1997).

As shown in Figure 1, ER also has indirect effects on academic performance via socioemotional competence. Indicators of socioemotional competence (e.g., positive interactions with teachers, emotion knowledge, ER ability, social skills, popularity) often uniquely predict academic success even after controlling for other pertinent variables such as previous academic success (Denham et al., 2003; Izard et al., 2001; Jacobsen & Hofmann, 1997; O'Neil et al., 1997). It is of note that this literature often includes ER as a component of socioemotional competence. However, other work demonstrates that the development of ER skills in early childhood forms a foundation for socioemotional competence at school entry, which facilitates school connectedness and positive relationships with teachers and peers, which in turn prevents behavioral problems and promotes academic achievement (Eisenberg et al., 2005).

ER and Academic Performance

In addition to affecting academic performance via socioemotional competence, ER is directly related to academic school readiness. For example, a child who is able to use adaptive ER strategies will experience fewer emotional distractions, which allows both the child and their classmates to maximally benefit from school. Indeed, learning to regulate the outward expression of emotion to be consistent with environmental expectations is an important predictor of concurrent and distal academic outcomes, including grades, achievement scores, and retention, even after controlling for cognitive variables (Eisenberg et al., 2005; Hill & Craft, 2003; Kopp, 1989).

Early ER skills facilitate regulation of emotional responses to classroom stimuli in support of attention for learning, sustained task engagement, and acquisition of academic information (C. Blair, 2002; Eisenberg et al., 2005; Graziano, Reavis, Keane, & Calkins, 2007). In other words, adaptive ER leads to fewer distractions and allows children to remain more emotionally positive in the face of academic challenges, which then sets the stage for better learning, higher grades, and standardized test scores (Gumora & Arsenio, 2002). In kindergarten, assessments of ER ability are linked to teacher reports of academic success and standardized literacy and math achievement scores, even after controlling for IQ (Graziano et al., 2007). Specifically, children with adaptive ER skills are rated as more teachable by their teachers and have higher academic achievement (C. Blair, 2002; J. R. Nelson, Benner, Lane, & Smith, 2004), whereas children with worse ER skills have more difficulty attending to academic instruction and encoding and recalling information (Raver, Garner, & Smith-Donald, 2007). Indeed, deficits in ER and subsequent socioemotional competence may have a more profound impact on students' long-term academic achievement than cognitive and academic skill deficits associated with learning disabilities (e.g., Anderson, Kutash, & Duchnowski, 2001).

Parent and Teacher Strategies to Promote ER in Early Childhood

Given that the trajectory toward peer rejection, school dropout, and negative teacher relationships begins upon school entry for some children, interventions aimed at promoting use of adaptive ER strategies at this time are an important consideration for supporting socioemotional and academic components of school readiness and promoting positive school outcomes (Eisenberg et al., 2005; Hill & Craft, 2003; B. Nelson, Martin, Hodge, Havill, & Kamphaus, 1999). In Figure 2, we provide strategies for parents and teachers to support children's use of adaptive ER strategies at home and school within a Multi-Tiered Systems of Support framework, which assures that the intensity of intervention is matched to the level of student need (Tilly, 2008).

Universal Supports

Universal supports are general strategies that are likely to benefit all children. There are two main ways that adults can support adaptive ER in children: generally creating a supportive environment and specifically providing ER assistance. In general, creating environments in which children feel safe and supported in expressing emotions, talking about emotions, and practicing strategies to regulate their emotions is critical to the development of adaptive ER strategies (K. A. Blair, Denham, Kochanoff, & Whipple, 2004; Boyer, 2009; Denham, Bassett, & Zinsser, 2012). Such environments can be cultivated through efforts to establish positive-adult child relationships where adults demonstrate consistency, responsivity, and warmth in response to children's emotional cues (Ainsworth, Bell, & Stayton, 1974; Eisenberg et al., 2005).

Specific to promoting adaptive ER skills, adults can provide exposure to emotion words by labeling affect throughout the day and modeling appropriate ER strategies using both language and actions (K. A. Blair et al., 2004; Boyer, 2009). Parents and teachers can also support adaptive ER strategies by labeling, acknowledging, and validating children's feelings, and coaching them through opportunities to regulate intense or negative feelings (Ellis, Alisic, Reiss, Dishion, & Fisher, 2014). Through emotion coaching, adults help children (1) realize that they have emotions, (2) identify their different emotions, (3) learn to appropriately express their emotions for certain contexts, and (4) talk about how they feel when they express their emotions (Boyer, 2009). This helps support children in becoming emotionally competent as they

	7 1		Universal Strategies for P	aren	ts and Educational Professionals
			Strategy		Example
		1.	Help children recognize, identify,	1.	"You seem frustrated because you want to keep
			express, and talk about emotions.		playing, but it's time to clean up."
		2.	Provide exposure to emotion words by	2.	When reading a book, ask "how do you think they
			labeling affect throughout the day.		feel?"
		3.	Acknowledge and validate children's	3.	"Dropping your ice cream makes you sad, and
		1100	emotions.		that's OK."
		4.	Verbally coach children through	4.	"This puzzle is tricky! It seems like you're getting
		_	challenging emotions.		frustrated. Let's take a deep breath and try it
		5.	Model emotional responses with	_	again."
			appropriate language and actions.	5.	Adults can label their own emotions: "When you
		6.	Provide opportunities for children to		climb on top of the monkey bars, it makes me feel
			model and practice ER strategies in social interactions with peers.	6.	nervous."
		7.	Expose children to books, TV shows,	7.	Encourage joint make believe play with peers. The Way I Feel by Janan Cain or Daniel Tiger's
=	1	7.	and games that talk about emotions.	/.	Neighborhood
3		8.	Provide opportunities for children to	8.	"Let's try taking a deep breath together. First,
23		0.	practice regulating emotions with	0.	smell the flowers (breathe in through your nose).
\	•		coaching and support.		now blow the bubbles (blow out through your
0.0			codeming and support.		mouth)."
	7 1	Secondary and Tertiary Strateg			
2			Secondary and Tertiary St	rateg	gies for Educational Professionals
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ntensity of S		1.	Strategy Provide adult-directed, structured, scaffolded opportunities for children to talk about emotions and practice	1.	Example Model how to describe emotions and prompt students to identify their emotions and use ER strategies.
ntensity of Sul			Strategy Provide adult-directed, structured, scaffolded opportunities for children to talk about emotions and practice strategies for regulating emotions.		Example Model how to describe emotions and prompt students to identify their emotions and use ER strategies. Work with small groups of 3-5 students and
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ntensity of Support			Strategy Provide adult-directed, structured, scaffolded opportunities for children to talk about emotions and practice strategies for regulating emotions. Provide structured opportunities to practice ER skills when engaging in	1.	Example Model how to describe emotions and prompt students to identify their emotions and use ER strategies. Work with small groups of 3-5 students and provide prompts to help students use ER skills to engage with peers appropriately.
Increasing Intensity of Support		2.	Strategy Provide adult-directed, structured, scaffolded opportunities for children to talk about emotions and practice strategies for regulating emotions. Provide structured opportunities to practice ER skills when engaging in social interactions with peers.	1.	Example Model how to describe emotions and prompt students to identify their emotions and use ER strategies. Work with small groups of 3-5 students and provide prompts to help students use ER skills to engage with peers appropriately. Review a socioemotional skills lesson with 1-3
ntensity of Support			Strategy Provide adult-directed, structured, scaffolded opportunities for children to talk about emotions and practice strategies for regulating emotions. Provide structured opportunities to practice ER skills when engaging in social interactions with peers. Implement socioemotional curricula	1.	Example Model how to describe emotions and prompt students to identify their emotions and use ER strategies. Work with small groups of 3-5 students and provide prompts to help students use ER skills to engage with peers appropriately. Review a socioemotional skills lesson with 1-3 students and then have students practice using the
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Figure 2. Strategies for supporting emotion regulation (ER) presented within a multitiered system of support.

learn to employ adaptive strategies for ER (Boyer, 2009). As children become more independent in their use of adaptive ER strategies, encouraging engagement in social activities with peers, such as joint make-believe play, can provide an opportunity to model and practice ER strategies in social interactions, and establish positive peer relationships (Denham et al., 2012; Elias & Berk, 2002).

Technology also has the potential to support young children's selection and employment of adaptive ER strategies. For example, preschoolers' exposure to the Daniel Tiger cartoon and mobile app was found to increase emotion knowledge and ER strategy use one month later (Rasmussen et al., 2018). While many technology-based interventions lack sufficient empirical support to be considered evidence-based practice, technology is a promising avenue that could provide an alternative means of universal support.

Secondary and Tertiary Supports

For some children, universal strategies may not be sufficient for developing skills to select and employ adaptive ER strategies. These children may require more targeted intervention through secondary and tertiary supports, often provided at school. The secondary and tertiary levels typically involve adapting the implementation of universal strategies so that ER skills are taught more explicitly, in smaller groups, with increased practice opportunities, and while receiving increased feedback and positive reinforcement (Tilly, 2008; see Figure 2). For instance, teachers may make activities more adult-directed to increase the amount of scaffolding students receive while identifying emotions and practicing ER strategies.

There are also a variety of evidenced-based programs aimed at developing adaptive ER skills that can be implemented in schools. These programs can be used as secondary, small group interventions, or individually as tertiary interventions for children who require more intensive supports. Such programs include (1) Promoting Alternative Thinking Strategies (Eisenberg et al., 2010), which involves practice with inhibitory control and emotion identification; (2) the Kindness Curriculum Intervention (Flook, Goldberg, Pinger, & Davidson, 2015), which involves mindfulness practice aimed at cultivating attention and ER, as well as kindness practices such as empathy and gratitude; (3) The Incredible Years (Webster-Stratton & Reid, 2003), which focuses on recognizing and understanding emotions, getting along with friends, anger management, problem solving, and appropriate behavior at school; and (4) Strong Kids (Merrell, Juskelis, Tran, & Buchanan, 2008), which includes activities that teach about emotions and coping strategies.

Limitations and Future Directions

A challenge of researching ER among preschoolers is how to operationalize and measure ER. ER research on older children and adults relies heavily on self-report of internal emotional processes, which is challenging with such young children. Most work prior to the early 1990s involved broad reports of children's ER, often obtained from one reporter at a single assessment (Eisenberg et al., 2010). Current research involves more reporters, time points, and multimodal assessment methods, including multiple informant reports (e.g., parent, teacher; Eisenberg et al., 1993; Graziano et al.,

2007), physiological (e.g., facial microexpressions) and biological indicators (e.g., cortisol levels; Adrian, Zeman, & Veits, 2011), as well as observational methods using tasks that prime the control of emotional expression (e.g., Dennis & Kelemen, 2009). For example, in the Disappointing Gift task, children complete an activity and are told they will receive a cool reward when finished. The reward is intentionally chosen to be disappointing (i.e., a wood chip) so that it elicits negative emotions but presented as "really cool" so that the child is motivated to suppress their reaction. Researchers code reactions for ER strategies in these tasks, as well as in social contexts through interactions with puppets (Dennis & Kelemen, 2009; Sala et al., 2014), parent—child interactions (Cole et al., 2004), in classroom contexts with peers (Garner & Spears, 2000), and when observing how children finish ER story prompts (Sala et al., 2014).

The methods used to measure ER in early childhood remain quite different than those used in older individuals, thus complicating comparing ER strategy use and ability across age. These inconsistencies make it difficult to isolate discrete constructs related to ER and track the developmental progression of ER strategy use. Furthermore, the bulk of the work on early childhood ER focuses on reducing the expression of negative emotion, and as such may be missing important components of healthy emotional functioning (e.g., flexibility). Future research should seek to establish measures that enable comparisons of ER across ages and determine what aspects of ER are most predictive of positive socioemotional and academic outcomes.

Conclusion

During the preschool years, children's individual characteristics and environmental contexts interact to influence developmental changes that support their ability to select and employ adaptive ER strategies. Preschool ER abilities can guide their academic and socioemotional trajectories throughout school. Thus, multitiered interventions that universally promote adaptive ER strategies and provide additional support to students with specific deficits in adaptive ER may be an important consideration for preventing behavioral problems and fostering early academic success and socioemotional competence in school. However, the developmental progression of adaptive ER strategy use is obscured by inconsistencies in how ER is operationalized and measured at different ages. Future research should seek to establish valid measures of ER that enable comparisons of ER across ages to determine which aspects of ER are most salient in predicting socioemotional and academic school success.

Please refer to the online supplemental materials for recommended additional readings on this topic.

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