

CHAPTER 8

Parental Assistance with Children's Extrinsic Emotion Regulation across Development

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Though many questions remain about the specific ways in which emotion regulatory processes function in the context of relationships across the life span (Zaki & Williams, 2013), it is well understood that emotion regulation is prominently socialized with caregivers, in the context of children's first relationships (Diaz & Eisenberg, 2015; Kiel & Kalomiris, 2015; Murray et al., 2019). From birth through adolescence, parents play a critical role in supporting children's development of their intrinsic capacity to regulate their own emotions (Dozier et al., 2018; Gianino & Tronick, 1988; Hofer, 1994; Katz & Hunter, 2007; Pratt et al., 2015), and the impact of this socialization is profound (Tan et al., 2020). The ability to regulate one's emotions effectively has been found to buffer individuals from developing psychopathology later in life (e.g. Kim & Cicchetti, 2010), and, conversely, emotion regulation difficulties in childhood are associated with behavioral problems across the life span (e.g. Halligan et al., 2013).

Children undergo a dramatic shift from full reliance on parents for external regulation in infancy to the intrinsic capacity for self-regulation later in development (Grolnick et al., 2006; Thompson & Goodman, 2010). Paralleling this shift, the nature of parents' specific role in scaffolding children's emotion regulation also shifts as children mature (see Gee & Cohodes, 2021). Despite the dynamic nature of parental assistance with children's emotion regulation, across development and even into adulthood, parents consistently exert a powerful influence on children's socio-emotional development via both implicit and explicit efforts to teach children to identify, express, and regulate emotions (Saarni, 1999).

In this chapter, we employ a neurobehavioral lens to focus on parental assistance with children's emotion regulation as a key construct of parental emotion socialization. We begin by grounding our understanding of the critical role of parents in assisting children in regulating emotions in

the cross-species literature delineating the neurobiological underpinnings of parental involvement in children's emotion regulation. With this framework in place, we next review the current literature on parental assistance with children's emotions – with a focus on Gottman's meta-emotion philosophy – and review associations between parental beliefs about the optimal role of parents in assisting children in regulating their emotions – at the non-strategy-specific level – and children's developmental outcomes. Third, we discuss the importance of a new line of research focused on assessing parental assistance with children's emotion regulation at the strategy-specific level and review recent advances in the measurement of this construct. Finally, we discuss future directions in the study of parental assistance with children's emotion regulation, with an emphasis on the development of additional and more varied measurement tools, establishment of normative trajectories of parental assistance with children's execution of specific strategies, and investigation of neurobiological bases of parental assistance with child emotion regulation – at the strategy-specific level – across development.

8.1 Neurobiological Bases of Parental Assistance with Children's Emotion Regulation

Humans have evolved to expect the presence of a predictable, safe, and supportive caregiver, and decades of research have demonstrated the importance of such relationships early in life in supporting children's healthy socioemotional (for a review, see Gee & Cohodes, 2021), cognitive, and behavioral development (Ellis et al., 2009; Gee, 2020; Glynn & Baram, 2019; Mason et al., 2019; Tottenham, 2012). Burgeoning cross-species evidence suggests that caregivers directly affect children's emotional development by influencing the neurobiological systems that govern emotion regulation (Callaghan et al., 2019; Callaghan & Tottenham, 2016; Gee, 2016; Gee et al., 2014; Gunnar & Donzella, 2002; Hostinar et al., 2015; Tottenham, 2015). Corticolimbic circuitry, specifically the amygdala, involved in detecting emotionally salient stimuli in the environment; the hippocampus, a structure central to learning and memory; and the medial prefrontal cortex (mPFC), which is implicated in regulating amygdala reactivity, may be particularly susceptible to caregiving influences. Specifically, the presence of a caregiver has been shown to both reduce hypothalamic-pituitary-adrenal axis activity by suppressing cortisol activity (Hostinar et al., 2014) and to modulate mPFC-amygdala connectivity such that amygdala reactivity to emotionally-valenced stimuli is suppressed in the presence of a caregiver (Gee et al., 2014). These results echo findings from the animal literature

that caregiver presence suppresses corticosterone and amygdala activity in rodent pups (Moriceau & Sullivan, 2006) and, together, set up the basis of our understanding of the salient biological influence of caregiver presence on the capacity for self-regulation among offspring.

Further, the neurobiological bases of caregiver involvement in extrinsic regulation of children's emotions are dynamic and likely change across development (Callaghan et al., 2019; Callaghan & Tottenham, 2016; Gee, 2016; Gee & Casey, 2015; Gee et al., 2014; Gunnar & Donzella, 2002; Hostinar et al., 2015; Tottenham, 2015). When corticolimbic circuitry is still developing, caregivers exert a critical external regulatory function (Callaghan & Tottenham, 2016; Gee, 2016; Gee et al., 2014). However, across development, the centrality of caregivers' provision of extrinsic regulation may fade as children become more reliant on intrinsic regulatory capacities and as other attachment figures outside of the nuclear family take on increased salience in the coregulatory relationships of an adolescent (Gee, 2016; Hostinar et al., 2014; see Figure 8.1). In other words, there may be a normative decrease in the potency of a caregiver's presence on child emotion regulation across human development, such that parents are able to provide more significant extrinsic regulation of neurobiological correlates of offspring emotion (e.g. amygdala reactivity or cortisol reactivity) in younger versus more mature youth (Gee et al., 2014; Hostinar et al., 2015). This line of research has underscored the key role of parents in modulating child emotion regulatory capacities – merely by their presence in children's lives – and has highlighted potential neurobiological processes underlying parental facilitation of children's emerging emotion regulation; however, key questions remain in this line of work to fully understand how parental support of children's emotion regulation “gets under the skin.” As we review in this chapter, advances in this area will likely be rooted in a bridging of biological and behavioral inquiries related to parental assistance with children's emotion regulation.

8.2 Correlates of Parental Assistance with Children's Emotion Regulation: The Broad Influence of Gottman's Meta-emotion Philosophy

A substantial body of work has elucidated processes by which parents socialize their children's emotional development by assisting children in effectively regulating their emotions. Perhaps most notably, Gottman's extensive work on parental meta-emotion philosophy posits that parents have an organized set of beliefs about children's emotions, including their awareness, acceptance, and assistance with regulation of their children's negative emotions. These beliefs underlie specific parental behaviors in

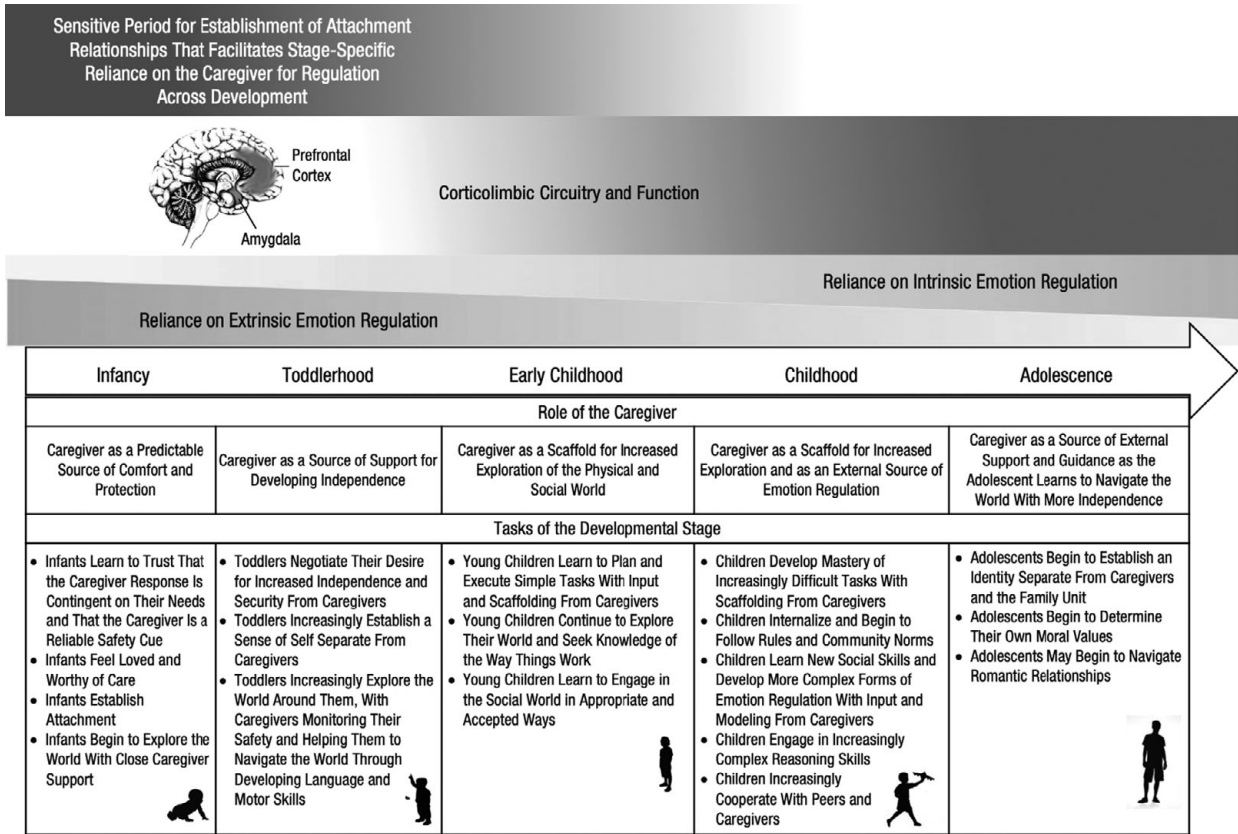


Figure 8.1 *Caregiver influences on corticolimbic circuitry underlying emotion regulation across development.* Evidence from both human and animal studies points to a potential sensitive period, spanning infancy and toddlerhood, during which caregiver inputs to the developing brain may have a particularly salient impact on the development of corticolimbic

response to children's displays of negative affect, and, in turn, Gottman's theory posits, these beliefs exert a powerful influence on child development, shaping myriad developmental outcomes ranging from biological responsivity to stress to cognitive development (Gottman et al., 1997; Katz & Windecker-Nelson, 2004).

The parental awareness tenet of Gottman's tripartite meta-emotion philosophy refers to a parent's receptivity to a child's emotional displays encompassing the degree to which parents recognize, describe, and demonstrate engagement with children's emotions. Parental acceptance describes the degree to which parents are comfortable with a child's emotions, and the parental assistance tenet specifically refers to the degree to which parents engage in assisting their children in identifying the emotions they are experiencing, show respect for their children's expression of emotion, and actively engage in helping children cope with situations that elicit negative emotions for children using developmentally-appropriate regulation strategies (Gottman et al., 1996, 1997). Within the Gottman framework, parents who exhibit high levels of awareness, acceptance, and assistance of their children's negative emotions view their children's displays of negative emotion as opportunities to promote increased and more varied use of adaptive emotion regulation strategies, to build intimacy with their children, and to scaffold their child's development of coping strategies when faced with situations that may trigger negative emotions.

Among typically-developing children, children whose parents exhibit high levels of awareness, acceptance, and assistance with their children's negative emotions have been found to exhibit a relatively increased capacity for self-regulation (e.g. more adaptive physiological reactivity to stress,

Figure 8.1 (*cont.*) circuitry underlying emotion regulation. Specifically, caregiver inputs that are predictable and that are associated with safety may promote healthy neurodevelopment such that caregivers are able to support youth emotion regulation via modulation of this circuitry in later developmental stages. During infancy and toddlerhood, caregivers play a central role in regulating human amygdala function. As corticolimbic circuitry (e.g., functional connectivity between the prefrontal cortex and amygdala) matures, children experience a shift from greater reliance on extrinsic emotion regulation (e.g., caregiving influences) to greater reliance on intrinsic emotion regulation. This transition also corresponds to a shift in the role of the caregiver in supporting the child's development, as the child faces novel tasks and compounding developmental challenges at each stage. Figure reproduced with permission from Gee & Cohodes, *Current Directions in Psychological Science*, 2021.

more facility in employing emotion regulation skills, higher levels of effortful control), as well as lower levels of externalizing and internalizing problems, and better academic performance and cognitive function (Brajša-Žganec, 2014; Chen et al., 2012; Cohodes et al., 2016; Gerhardt et al., 2020; Gottman et al., 1996; Katz & Hunter, 2007). Sampling from this broad literature, in a longitudinal study that followed children from preschool to middle childhood, children whose parents exhibited high levels of awareness, acceptance, and assistance with their children's negative emotions – namely anger and sadness – had higher levels of inhibitory control, higher rates of academic achievement, and better physical health, relative to their counterparts whose parents did not exhibit such a meta-emotion profile (Gottman et al., 1996). Relative to children whose parents engaged in lower levels of awareness, acceptance, and assistance with children's negative emotions, both preschool-age and school-age children of parents who engaged in higher levels of these three meta-emotion strategies were found to have better peer relationships (Denham et al., 1997; Hooven et al., 1995), suggesting that parental assistance with negative emotions – as an aspect of a parent's working meta-emotion philosophy – may promote children's adaptive socioemotional functioning across development. It is important to note that associations between parental meta-emotion philosophy and children's self-regulation and socioemotional functioning may also be driven by shared genetic variance between parents and children (e.g. Wang & Saudino, 2013). Future studies should aim to disentangle these factors via empirical research that examines a range of psychobiological factors in the context of parental influences on children's emotion regulation.

In addition, several studies have examined the function of parental assistance with children's negative emotions in clinical populations, most notably among children exposed to stress. Parents who engage in high levels of awareness, acceptance, and assistance with their children's negative emotions may more effectively buffer children from developing both internalizing and externalizing problems following exposure to trauma (Johnson & Lieberman, 2007; Katz & Windecker-Nelson, 2006). Parental assistance with children's negative emotions, specifically, appears to be an important driver of this effect such that high levels of parental assistance with children's emotion regulation appear to moderate the effect of stress on children's development of symptomatology (Cohodes et al., 2017, 2021; Katz & Windecker-Nelson, 2006). Current theory posits that this buffering effect may be due to the fact that parents' baseline tendency to assist their children with engaging in effective emotion regulation may bolster children's intrinsic capacity for regulation of negative emotion during periods of heightened stress (Ellis et al., 2014; Wu et al., 2020).

Although the parental assistance component of Gottman's meta-emotion philosophy has served as a key foundation for questions about

the effects of parental support of children's emotion regulation on child development, this line of research has been limited by the fact that Gottman's parental assistance construct encompasses both parental beliefs and behaviors related to children's displays of negative emotion. Thus, studies relying solely on Gottman-based coding of parental assistance with children's emotion regulation render it difficult to isolate correlates of direct parental assistance of children's regulation of their own emotions, and, further, parental assistance with specific emotion regulatory strategies, which has motivated recent advances in assessment of parental assistance with children's emotion regulation.

8.3 Parental Assistance with Children's Emotion Regulation at the Strategy-Specific Level: Advances in Measurement of the Construct

In addition to Gottman's meta-emotion philosophy framework, multiple assessment tools have been validated to measure parental beliefs, attitudes, and behaviors in response to children's negative emotions. For example, the Parents' Beliefs about Children's Emotions Questionnaire (Halberstadt et al., 2013) assesses the degree to which parents believe that children's negative emotions are valuable or dangerous. The Coping with Children's Negative Emotions Scale (Fabes et al., 1990) assesses parents' tendency to react to displays of negative emotions with expressive encouragement or punishment by querying parental responses to a series of vignettes. In addition, several measures assess parental awareness of their children's own internal emotion regulatory processes. For example, based on Gottman's meta-emotion philosophy, the Emotion-Related Parenting Styles Self-Test (Hakim-Larson et al., 2006) queries parents' perception of their children's awareness of negative emotion and receptivity to discussing emotional content with others. Despite this growing area of research and the number of assessment tools available to query parental beliefs, awareness, and behaviors related to children's emotions, there is a dearth of research on parental assistance with children's execution of specific emotion regulation strategies.

Further, increasingly, evidence from studies comparing the adaptive function of different emotion regulatory strategies among adults has indicated that certain strategies (e.g. reappraisal, problem-solving, acceptance) are more effective at changing an individual's affective state (Aldao & Christensen, 2015), as compared to other strategies (e.g. suppression, rumination, and avoidance), which have been conceptualized as dysfunctional strategies due to their theorized contribution to the development of psychopathology (e.g. Aldao & Nolen-Hoeksema, 2010). Despite

empirical support for associations between a variety of strategies and the development of psychopathology (e.g. Aldao et al., 2010; Izadpanah et al., 2016; Ruiz, 2010), the majority of current measures of emotion regulation only assess a small subset of strategies (e.g. Emotion Regulation Questionnaire [Gross & John, 2003]; Emotion Regulation Questionnaire for Children and Adolescents [Gullone & Taffe, 2012]; Difficulties in Emotion Regulation Scale [Gratz & Roemer, 2004]; Cognitive Emotion Regulation Questionnaire [Garnefski et al., 2002]).

Representing a major advance in this line of work, the recently-developed Parental Assistance with Children's Emotion Regulation (PACER) Questionnaire (Cohodes et al., 2022) assesses parental assistance of child emotion regulation from birth to age 17 across 10 different strategies spanning each phase of the extended process model (Gross, 1998, 2015) of emotion regulation. The PACER queries 50 caregiver-rated items (e.g. I help my child solve problems that are causing those feelings) that comprise five items querying each of the following strategies: acceptance, avoidance, behavioral disengagement, distraction, expressive suppression, problem-solving, reappraisal, rumination, social support search, and venting. To our knowledge, the PACER is the first instrument that comprehensively measures parental extrinsic emotion regulation via assessing parental assistance with children's deployment of specific emotion regulation strategies.

Development of this tool has afforded a preliminary exploration of associations between parents' tendency to support specific emotion regulation strategies and children's developmental outcomes. Initial results from the first two validation studies of this instrument have begun to further our understanding of the correlates of parental assistance with children's emotion regulation at the strategy-specific level. Specifically, results of the initial validation study of the PACER suggest that parental assistance with their children's execution of a certain emotion regulation strategy (e.g. reappraisal) is significantly associated with parents' intrinsic use of that strategy to regulate their own emotions (Cohodes et al., 2021). In addition, preliminary results suggest that parents who broadly report high levels of scaffolding their children's use of prototypically-maladaptive emotion regulation strategies (e.g. expressive suppression, rumination), coupled with low levels of scaffolding their children's engagement with prototypically-adaptive emotion regulation strategies (e.g. reappraisal), were more likely to report difficulty regulating their own negative emotions, poorer parent-child attachment quality, poorer meta-emotion and broad attunement to their children's emotional experience, more negative reactions to their children's displays of emotions, as well as higher levels of stress and psychopathology (Cohodes et al., 2021). These associations between parent-level factors and parental behavior regarding support of their children's

deployment of specific emotion regulation strategies motivate more thorough examination of the myriad influences on parental assistance with children's emotion regulation, which is likely to have important implications for both prevention and intervention efforts in clinical settings.

Relative to parents who reported high levels of assistance with children's regulation using prototypically adaptive strategies, parents who engaged in higher levels of assistance with children's deployment of maladaptive strategies also reported higher levels of symptomatology among their children (Cohodes et al., 2021). In addition, both validation studies to date provide evidence for age-related effects of caregiver assistance with specific emotion regulation strategies. In a sample of children under 5, child age was significantly positively correlated with parental assistance with problem-solving, reappraisal, and venting (Mancini et al., 2022). Further, the association between parental assistance with execution of specific strategies and children's symptomatology appeared to be age specific such that, among younger children (aged 1.5–5), caregivers' increased assistance with problem-solving, social support search, acceptance, and venting were associated with lower levels of both child internalizing and externalizing problems; conversely, among children aged 6–17, caregivers' increased assistance with a different set of strategies (rumination and expressive suppression) were associated with increased symptomatology (Cohodes et al., 2021). Taken together, these findings suggest that, consistent with the dynamic role of caregivers in modulating neurobiological bases of emotion regulation, parental assistance with children's execution of emotion regulation strategies – at the behavioral and strategy-specific level – may vary as a function of child age.

One primary question surrounding parents' scaffolding of children's emotion regulation – at the strategy-specific level – is whether parents' support of a broad range of specific strategies may cluster together, and, in turn, whether there are meaningful correlates of a parent's tendency to engage in supporting a specific cluster of strategies versus another. In the second validation study of the PACER, Mancini and colleagues (2022) found that caregivers of children under 5 could indeed be effectively clustered into three groups pertaining to the degree to which parents reported supporting their child's use of each of the 10 strategies queried by the PACER. This clustering analysis yielded three significant profiles: parents who assisted their children with "mostly adaptive" strategies (i.e. parents who reported above-average assistance with children's execution of problem-solving, social support search, reappraisal, acceptance, and venting and who reported below-average assistance with children's execution of behavioral disengagement, rumination, distraction, expression suppression, and avoidance); parents who assisted their children with "mostly maladaptive" strategies (i.e. parents who reported above-average

assistance with children's execution of behavioral disengagement, rumination, expressive suppression, and avoidance and who reported below-average support for problem-solving, social support search, reappraisal, acceptance, and venting); and, finally, parents who assisted their children with "mixed strategies" (i.e. parents who reported above-average assistance with children's use of all strategies except for expressive suppression, which was below average; Mancini et al., 2022). Though correlates of assignment to a specific cluster of regulation strategies have yet to be examined empirically, this initial research invites future interrogation of family-level factors that predict and are associated with parents' tendency to assist children in engaging with certain regulatory strategies.

Also of note, findings from the first validation study of the PACER revealed that parents' more generalized beliefs about their children's emotions were related to many PACER scales representing parental assistance with children's adoption of specific, isolated emotion regulation strategies (Cohodes et al., 2022). Parental assistance with children's emotion regulation may be particularly nuanced such that parental assistance with specific strategies may not map onto highly related and aforementioned constructs such as Gottman's meta-emotion philosophy. Therefore, assessment of parents' specific profiles of assistance with a broader range of prototypically adaptive and maladaptive strategies is likely to yield a more detailed understanding of the complex ways in which parental assistance with emotion regulation influences child development.

Though preliminary, development of the PACER establishes a foundation for future studies to examine developmental trajectories of children's reliance on parental support for the execution of specific regulation strategies from infancy through adolescence. Results to date point to complex interactive effects between child age and strategy type and underscore a potential mechanism by which parental socialization of specific emotion regulation strategies may confer risk for children's development of psychopathology (or, alternatively, may suggest that children with relatively higher levels of symptomatology may elicit more parental assistance with emotion regulation). Additional research using novel measures that assess parental assistance at the strategy-specific level is needed to understand these complex patterns.

8.4 Future Directions in the Study of Parental Assistance with Children's Emotion Regulation

Despite recent advances in the study of parental assistance with children's emotion regulation, several key questions remain. First, with regard to measurement, paralleling the development of the PACER, development

of assessment tools that query the degree to which youth engage in a variety of emotion regulation strategies (spanning all phases of the extended process model) will allow researchers to investigate concordance between parental assistance of children's execution of specific strategies and children's actual use of these strategies. Further, a child-report version of an instrument like the PACER that measures the degree to which children perceive their parent to be assisting them in executing specific emotion regulation strategies will also enrich our understanding of the association between parents' self-reported tendencies to support children and children's actual adoption of strategies. Ecological momentary assessment is gaining traction in the broader study of emotion (Colombo et al., 2020; Gee & Caballero, 2019) and will likely be a critical tool in further understanding the real-time, dynamic processes by which parents assist their children in executing specific emotion regulation strategies. In addition, the PACER focuses on assessment of parental assistance with a broad range of children's negative emotions. Future assessment tools should aim to quantify the degree to which parents assist their children in regulating emotions at the level of discrete emotions.

As it is well understood that parental assistance with children's emotion regulation is a dynamic process that varies as a function of child age, future studies should focus on furthering our understanding of the developmental time course of parental assistance with specific emotion regulation strategies. Querying parental assistance with specific emotion regulation strategies in longitudinal samples of children and parents beginning in infancy and spanning adolescence will yield insight into the unique normative developmental time courses for parental assistance with specific strategies. Collecting behavioral data regarding parental tendency to support their children's use of certain strategies in conjunction with neuroimaging data will allow for mapping of the behavioral correlates of parental assistance with emotion regulation onto observed changes in parents' modulation of corticolimbic circuitry across development. Utilizing a multimodal approach to understand how parents, specifically, support their children's adoption of specific emotion regulation strategies will yield important insight into the ways in which the quality or frequency of parental assistance with emotion regulation affects developing neural circuitry.

Establishment of normative developmental curves for parental assistance with specific strategies will also lay the foundation for understanding how these processes may go awry in the context of stress exposure or in clinical populations. With an established understanding of normative parental assistance with specific emotion regulation strategies, researchers and clinicians alike will be better poised to identify parental assistance with emotion regulation as a treatment target in the context of both

prevention and intervention efforts and to track changes in profiles of parental assistance over time and during treatment. Relatedly, future studies that begin to examine both parent- and child-related correlates of parental tendency to support certain clusters of regulation strategies (Mancini et al., 2022) will enable screening for potentially problematic patterns of parental assistance with children's emotion regulation in clinical populations.

In conclusion, the study of parental assistance with children's emotion regulation is at a critical juncture. Our knowledge of both the neurobiological underpinnings of parental modulation of children's emotion regulation, and the correlates of generalized parental assistance with emotion regulation, have laid the foundation for more nuanced measurement of parental assistance with emotion regulation at the strategy-specific level. The next wave of research that bridges the neurobiological and behavioral study of the effects of parental assistance with children's emotion regulation promises to unveil deeper understanding about the myriad ways in which parents shape child development via involvement in the emotional lives of their children.

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