

Child and Adolescent Emotion Regulation: The Role of Parental Emotion Regulation and Expression

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Abstract This paper reviews current literature relating to parent and child emotional functioning, specifically their emotion regulatory skills and emotional expression. Included are considerations regarding theoretical, methodological, and sampling strengths and weaknesses of existing literature. On the basis of the review, several directions for future research are proposed. First, it is argued that consistency in the measurement of emotion regulation is necessary, including assessment of more refined theoretical conceptualizations of regulatory types, skills, or strategies. Second, it is argued that emotion regulation developmental research examining the post-early childhood period is necessary in order to contribute to a more comprehensive understanding of youths' emotion regulation. Finally, it is argued that greater examination of paternal influences on child emotional functioning, in addition to maternal influences, is required. Consideration of these issues in future emotion regulation research will ideally contribute to a greater understanding of the mechanisms involved in child and adolescent development of optimal regulatory capacities.

Keywords Emotion regulation · Emotional expression · Adolescents · Parents

This paper will review theory and empirical research on parent emotion regulation (ER), parent emotional expression and child ER. Deficits in emotion regulatory abilities are known to contribute to the manifestation of externalizing and internalizing psychological disorders (Southam-Gerow and Kendall 2002; Yap et al. 2007). Indeed, poor regulation of emotions is implicated in more than half of the Axis I disorders included in the Diagnostic and Statistical Manual of Mental Disorders and all of the Axis II disorders (Gross and Levenson 1997). Therefore, identifying factors that influence the development of ER may be integral to the prevention and treatment of psychopathology. In this regard, it is noteworthy that parenting and family experiences have been documented to play a fundamental role in children's emotional development (Repetti et al. 2002). As the review will demonstrate, however, very few studies have examined the associations between child ER and key parental factors such as parent emotional functioning, emotional expression, and ER.

The review begins with a discussion of the ER construct, its definition, conceptualization and measurement. There is a particular focus on Gross' (1998b) widely accepted model of ER, its proposed ER strategies and associated etiological and outcome factors. This discussion is followed by reviews of (1) the role of parental socialization factors in relation to child ER developmental outcomes, and (2) associations between parental ER and emotional expression and child ER. The review concludes with consideration of the main limitations of the reviewed research, along with several recommendations for future research and their associated implications for this field of psychological inquiry.

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The Construct of Emotion Regulation

Conceptualization and Measurement

Two major schools of thought have emerged from emotions research: (1) emotions can be interpreted as irrational or unreasonable, reflecting and causing destruction within our thought processes and concurrent behavior (Young 1943), and (2) emotions can be interpreted as mechanisms of adaptation that help us identify what is detrimental or helpful to our well-being and general functioning (Lazarus 1991). Both schools of thought have gained merit (John and Gross 2004). However, more recently the former perspective has largely fallen out of favor, and it is now generally accepted that emotions serve a functional purpose by assisting in the initiation, maintenance, modification, and termination of relationships between an individual and their environment (Campos et al. 1994).

Over the last three decades, awareness of the functional role that emotions play in developmental trajectories has stimulated a burgeoning amount of empirical research in the emotions domain. This research has contributed to the understanding that it is often necessary to exercise a degree of management or control over our emotions (Gross 1998b). Emotion management facilitates healthy and adaptive psychosocial and emotional functioning (Bridges et al. 2004). Recognition of the importance of emotion management processes has given rise to the development of the emotion regulation (ER) construct defined as involving “extrinsic and intrinsic processes responsible for monitoring, evaluating and modifying emotional reactions, especially their intensive and temporal features, to accomplish one’s goals” (Thompson 1994, pp. 27–28). It is generally accepted that regulatory processes can be both automatic and controlled (Gross 1998b; Valiente and Eisenberg 2006), and that ER incorporates management of both positive and negative emotions (Parrot 1993). As an example of regulating a negative emotion, consider the grief experienced over the loss of a family pet. In such circumstances, one could continue to wallow in sadness or one could find contentment in memories of good times spent together. In contrast, inhibiting or controlling the expression of excitement when one is dealt a good hand in a card game is an example of regulating a positive emotion.

Due to the infancy of this field of research, there remains limited consensus regarding the conceptualization and, to a related degree, the operationalization of the ER construct. For example, there is a longstanding debate over whether a one- or two-factor model best represent ER processes. Advocates of the two-factor model argue that emotion is conceptually different to ER because emotions can have a different impact on behavior depending on how they are regulated (Cole et al. 2004). These authors also maintain

that the processes of emotion recognition and regulation are independent. In contrast, Campos et al. (2004) present a one-factor model and argue that emotion and ER occur concurrently, since emotions regulate behavior as they are simultaneously being regulated. Counter to both models, Kagan (1994) has argued that the incompleteness of our knowledge of emotions is such that we cannot separate emotions from regulation.

Further to these conceptualization issues, there have been significant inconsistencies in the measurement of ER across studies. For example, researchers have examined ER as both a state and a trait (Cole et al. 2004), as the venting of frustration (Calkins and Johnson 1998) and as the propensity of toddlers to engage in self-soothing behavior (Garner 1995). Some researchers have conceptualized optimal ER with a sole emphasis on decreasing negative affect (Garner and Power 1996) while others have maintained that they have assessed ER through measures of coping strategies (Contreras et al. 2000). At variance again, the functionalist perspective conceptualizes ER in terms of the utilization of various cognitive and behavioral strategies (Thompson 1994).

Gross’ (1998b) Process-Oriented Model of ER

Inspired by the functionalist perspective, Gross’ (1998b) developed a process-oriented model of ER. According to the model, at the beginning of the emotion production process, an individual evaluates cues from emotion-eliciting situations or stimuli, and these evaluations lead to response tendencies of a behavioral or physiological nature which ultimately contribute to either adaptive or maladaptive responses to the situation or stimulus. Of theoretical emphasis is the proposition that these response tendencies can be manipulated to change the trajectory and final outcome of the emotional response (Gross 1998b, 2001).

In the model’s broadest conception, ER strategies are proposed to fall within two major categories: (1) *antecedent-focused strategies* and (2) *response-focused strategies*. The former change the response tendency by occurring prior to its complete activation, thus influencing the entire emotion-generative process. In contrast, response-focused strategies occur subsequent to the emotion response tendency, thereby limiting their impact. In addition, given their late occurrence in the temporal process, they require some degree of effort in controlling the continual occurrence of response tendencies (John and Gross 2004).

Within these two broad conceptual classes of strategies are two that have been operationalized and have consequently received a substantial amount of research attention (Gross and John 2003). They are (1) the antecedent-focused strategy of cognitive reappraisal and (2) the

response-focused strategy of expressive suppression. Reappraisal involves redefining an emotionally eliciting situation such that its emotional impact is modified, and suppression involves the inhibition of emotion expression (Gross 1998b).

Functionality of Emotion Regulation Strategies

In terms of their functional or adaptive nature, Gross and colleagues have identified divergent physiological, affective, social, and cognitive consequences for these two particular strategies (Gross 1998a; Gross and John 2003; Richards et al. 2003; Richards and Gross 1999; Richards and Gross 2000; Srivastava et al. 2009). Utilizing a self-report measure (i.e., the Emotion Regulation Questionnaire, ERQ; Gross and John 2003), empirical research has supported the general conclusion that reappraisal is an adaptive strategy while suppression is a maladaptive strategy (John and Gross 2004).

Evidence has indicated that suppressors generally express less positive emotion, have low self-esteem, low life satisfaction and greater depressive symptomatology than do reappraisers (Gross and John 2003). Nevertheless, it is important to note that the maladaptive consequences of suppression may be contextually relative. For example, both reappraisal and suppression use are positively associated with perceptions of successful regulation (Gross and John 2003). Additionally, maladaptive consequences of suppression use may be culturally relative. For example, among collectivist cultures, freely expressed emotion (especially negative emotion) is often discouraged as it is thought to disrupt group cohesiveness and social harmony (Stephan et al. 1996). Providing empirical support for this, Butler et al. (2007) found that suppressers who held Western-European values had poorer social outcomes during interpersonal interactions than did suppressers who held Asian values. Thus, despite suppression as a habitual response style typically being found to be maladaptive, the consequences of different ER strategies may be both culturally and contextually relative, and this should be an important consideration during research design.

Although the reappraisal and suppression strategies have predominantly been researched in adult populations, a small number of recent studies have examined their use in children and adolescents. These studies provide further support for the more functional nature of reappraisal compared to suppression demonstrated with adult samples. For example, Hughes et al. (2010) reported that children aged 10–14 years who engaged in school refusal behavior and were diagnosed with at least one anxiety disorder reported more suppression use and less reappraisal use compared to their non-clinical counterparts. Additionally, Betts et al. (2009) found that adolescents aged 12–16 years

who reported high levels of depressive symptomatology also reported more suppression use and less reappraisal use as compared to adolescents who reported low levels of depressive symptomatology.

Beyond suppression and reappraisal use, a great deal of research has examined ER more generally with findings that implicate its role in many facets of normative social, emotional, and psychological functioning and development (Zeman et al. 2006). For example, within a middle childhood sample, McDowell et al. (2002) found that ER strategy use was related to children's social competence. Specifically, girls who were rated by their teachers as socially avoidant exhibited less reasoning and more sad responses (interpreted as maladaptive ER strategy use), while girls rated as positive in social situations exhibited fewer nervous responses to negative emotion-eliciting vignettes (interpreted as adaptive strategy use) (McDowell et al. 2002).

Moreover, dysregulated emotions have been associated with both externalizing and internalizing problems in early childhood through to adolescence (Buckner et al. 2003; Eisenberg et al. 2001a; Sheeber et al. 2000; Silk et al. 2003). This is not surprising given that many psychopathological disorders are characterized by the presence of emotion-related symptoms including inappropriate affect, worry, elation, dejection, predominance, or absence of particular emotions and constant negative affect (Cole et al. 1994).

The Etiology of ER Competencies

The important role played by ER, as documented across the normative to clinical spectrum, provides strong rationale for examining the etiology of individual differences in ER strategy utilization. Indeed, many intrinsic mechanisms have been identified as being influential to the development of skills necessary to effectively regulate one's emotions. These include neurological (Fox 1994; Porges et al. 1994; Quirk 2007; Stansbury and Gunnar 1994), genetic (Goldsmith et al. 1997; Hariri and Forbes 2007), and temperamental influences (Calkins 2004).

A potential exogenous factor contributing to the development of ER during childhood and adolescence that has gained a great deal of empirical support is social context (Campos et al. 1989; Cole et al. 2004; Thompson 1994). A range of social factors have been proposed to be linked to ER development, including interactions with parents, teachers, and peers, as well as more distal societal influences such as culture and the media (Eisenberg and Morris 2002; Klimes-Dougan et al. 2007; Morris et al. 2007; Thompson 1994). Indeed, Thompson (1994) suggested that the adaptability and effectiveness of ER processes depend on both social setting demands and on interactions with

social partners given their importance for goal achievement.

Consequently and not surprisingly, there has been an emphasis placed on the importance of the parental role in children's developing ability to self-regulate their emotions (Denham 1998; Holodyski and Friedlmeier 2006; Kopp 1989; Thompson 1990). A plethora of empirical research implicates the important contribution of many parental emotion socialization factors to children's developing ability to regulate their emotions. Included, but not restricted to, are parental responsiveness to children's displays of emotion (Cassano et al. 2007; Eisenberg et al. 1999; Yap et al. 2008), parenting styles that are controlling or hostile versus warm and caring (Jaffe et al. 2010; McDowell et al. 2002; Morris et al. 2002) and of particular significance to the current review is the increasing empirical interest in the role of parent emotional expression and parent emotion regulation (Morris et al. 2007).

Table 1 summarizes characteristics of 29 key studies that have examined associations between the parental emotion socialization factors and child ER reviewed herein. A comprehensive review examining the plethora of existing research that has examined parental influences on their children's ER development is considered to be beyond the scope of this review (refer to Morris et al. 2007 for a more comprehensive review), thus the studies included in Table 1 were selected on the basis of their focus on the parental socialization factors that relate most closely to the focus of this review. The studies included have examined parental contingent responses to children's displays of emotion, parenting styles, parental emotional expression, and parental emotion regulation. What is most evident from the reviewed studies is that the samples investigated have been mainly non-clinical, within the early childhood period of development and have examined predominantly maternal socialization factors. ER has mostly been assessed by the one index of amount or degree of regulation; however, there is significant variability in the assessment methods across studies.

Of specific relevance to the review is the growing empirical interest in the association between parental emotional expression and child ER.

Parental Emotional Expression and Child Emotion Regulation

Parents' emotional expression has long been considered by developmental psychologists as integral to a child's developing emotional and social competence (Dix 1991). Parental emotional expression within the family context is of particular importance as this is the primary context in which children first learn about emotional display rules and

gain an understanding of others emotional expression (Halberstadt et al. 1995). Halberstadt et al. (1999) differentiated between two conceptualizations or ways of indexing parental emotional expression in the family: (1) the frequency and valence of parental emotional expression directed at a particular family member and (2) parents' propensity to generally express positive and/or negative emotions in the family. The latter conceptualization of emotional expression is referred to as "the predominant style of exhibiting nonverbal and verbal expression within a family" (Halberstadt et al. 1995 p. 93). Darling and Steinberg (1993) argued that this general means of exhibiting emotion in the family context contributes to an overall affective environment that may mediate or facilitate the relations between parent emotionality and their child's emotionality.

The frequency, intensity, and valence of parental emotional expression in the family context have been related to many aspects of child and adolescent emotional and social development (Eisenberg et al. 1998). For example, Fosco and Grych (2007) found that children aged 8–12 years whose parents' expressed more frequent negative emotion and less frequent positive emotion were more likely to attribute self-blame for the conflict present in their parents' relationship. Additionally, parental emotional expression was found to moderate the relationship between the degree of inter-parental conflict and the child's level of maladjustment. That is, inter-parental conflict was associated with greater child externalizing and internalizing problems when combined with less positive or more negative emotional expression.

Despite several studies examining relationships between parental emotional expression and child ER, the vast majority have been restricted to toddlers and young children and have only examined the influence of maternal, and not paternal, expression. For example, in a couple of studies, it was found that mothers who frequently expressed positive emotion had toddlers and preschool-aged children who exhibited more ER (Garner 1995; Garner and Power 1996). In these studies, ER was indexed by engagement in self-soothing behavior, whereby more ER was interpreted as more adaptive (Garner 1995) and degree/type of emotion expressed during a disappointment inducing task (Garner and Power 1996). Consistent with theoretical expectations, in both studies, mothers who frequently expressed negative emotion had children who exhibited poor ER. Congruent support was provided by Eisenberg et al. (2001b) who found that mothers who reported expressing frequent positive emotion and infrequent negative emotion toward their child, rated their 4.5- to 8-year-old children as using more ER. The researchers concluded that mothers who frequently express negative affect may themselves have poor regulatory abilities and

Table 1 Summary of key studies examining parental emotion socialization factors and child ER

| Authors | Age of child sample | Clinical status of sample | Conceptualization of child ER | Assessment method of child ER | Parental socialization factor | Assessment method of parental socialization | Parent (s) sample |
|--------------------------------|---|---|---|---|--|---|---------------------|
| Calkins et al. (1998) | 2 years | Non-clinical | Emotional reactions (aggression, distraction, object focus) to emotionally salient tasks & vagal tone | Behavioral observation and psycho physiological measurement | Maternal inter-active style (negative controlling and positive guidance) | Behavioral observation | Mothers |
| Cassano et al. (2007) | 6–11 years | Non-clinical | ER strategy use (inhibition, dysregulation and coping) | Parent report | Parental contingent responses to their children's displays of emotion | Parent report | Mothers and fathers |
| Cole et al. (2009) | 3–5 years | Non-clinical | ER strategy generation and recognition (self-focused internal & external, problem-focused) | Behavioral observation | Parental contingent responses to their children's displays of emotion | Behavioral observation | Mothers |
| Del Vecchio and Rhoades (2010) | 2–4 years | Non-clinical | Presence/absence of misbehavior and frequency of negative affective displays | Behavioral observation | Parenting styles (mothers' lax or over reactive discipline) | Behavioral observation | Mothers |
| Eisenberg et al. (1999) | <i>M</i> ages: 58, 88, 107 & 132 months | Non-clinical | A composite index of ER capturing amount of ER | Parent report | Parental contingent responses to their children's displays of emotion | Parent report | Mothers and fathers |
| Eisenberg et al. (2003) | 6.5–10 years | Non-clinical | A composite index of ER capturing amount of ER | Mother and teacher report and behavioral observation | Maternal emotional expression | Mother report and behavioral observation | Mothers |
| Eisenberg et al. (2005) | <i>M</i> ages: 9.3, 11.4 & 13.4 years | Non-clinical | Use of effortful control (capturing amount of ER) | Parent and teacher report and behavioral observation | Parental propensity to be warm | Behavioral observation | Mothers and fathers |
| Eisenberg and Fabes (1994) | 4–6 years | Non-clinical | ER strategy use (attentional control, negative affect, escape and vent) | Mother and teacher report and behavioral observation | Parental contingent responses to their children's displays of emotion | Mother report | Mothers |
| Eisenberg et al. (1996) | 8–13 years | Non-clinical | Coping strategy use (constructive coping and avoidance coping) | Mother and teacher report | Parental contingent responses to their children's displays of emotion | Parent report | Mothers and fathers |
| Eisenberg et al. (2001b) | 4.5–8 years | Non-clinical | A composite index of ER capturing amount of ER | Mother and teacher report and behavioral observation | Maternal emotional expression | Mother report and behavioral observation | Mothers |
| Garber et al. (1991) | 8–13 years | Clinical (mothers with major depressive disorder) | Number and quality of ER strategies used | Responses to hypothetical emotion scenarios and then judged by independent raters | Maternal ER: number and quality of ER strategies | Responses to hypothetical emotion scenarios and then judged by independent raters | Mothers |
| Garner (1995) | <i>M</i> age: 17.7 months | Non-clinical | Engagement in self-soothing behavior (capturing amount of ER) | Behavioral observation | Maternal emotional expression | Mother report | Mothers |

Table 1 continued

| Authors | Age of child sample | Clinical status of sample | Conceptualization of child ER | Assessment method of ER | Parental socialization factor | Assessment method of parental socialization | Parent (s) sample |
|----------------------------|---------------------------|--|--|---|---|---|---------------------|
| Garner and Power (1996) | 4–5 years | Non-clinical | Degree/type of emotion expressed during a disappointing inducing task | Behavioral observation | Maternal emotional expression | Behavioral observation and mother report | Mothers |
| Graziano et al. (2010) | 2, 4.5 & 5.5 years | Non-clinical | A global index of ER capturing amount of ER, use of effortful control and reactive control | Mother report | Maternal behavior (sensitivity/responsiveness, overcontrol/intrusiveness, warmth/positive affect) | Behavioral observation | Mothers |
| Greenberg et al. (1999) | 1st grade children | Clinical (child conduct problems) | An index of ER capturing amount of ER | Teacher report | Parental emotional expression | Parent report | Mothers and fathers |
| Jaffe et al. (2010) | 9–12 years | Non-clinical | ER strategy use (reappraisal and suppression) | Child report | Parental propensity to be caring or overprotective | Child report | Mothers and fathers |
| Karreman et al. (2008) | 3 years | Non-clinical | Use of effortful control (capturing amount of ER) | Behavioral observation and parent report | Various parenting styles (e.g. Positive control, negative control and warmth). | Behavioral observation and parent report | Mothers and fathers |
| McDowell et al. (2002) | <i>M</i> age: 10.03 years | Non-clinical | Coping strategy use (anger, sad, nervous, reasoning responses) | Child responses to vignettes, then judged by raters | Parental interactive style | Behavioral observation | Mothers and fathers |
| Morris et al. (2002) | <i>M</i> age: 7.6 years | Non-clinical | Use of effortful control and irritable distress (capturing amount of ER) | Mother report | Maternal negative parenting (hostility and control) | Child report | Mothers |
| Ramsden and Hubbard (2002) | 4th grade children | Non-clinical | A composite index of ER capturing amount of ER | Mother and teacher report | Maternal emotional expression | Mother report | Mothers |
| Robinson et al. (2009) | 1–3 years | Non-clinical | Affect intensity and use of effortful control | Behavioral observation | Parental positive affect intensity and parental anger intensity | Behavioral observation | Mothers and fathers |
| Sheeber et al. (2000) | 12–19 years | Clinical (adolescent unipolar affective disorder) | Duration of negative affective behavior | Behavioral observation | Maternal facilitation of adolescent depressive behavior | Behavioral observation | Mothers |
| Shipman et al. (2007) | 6–12 years | Non-clinical | ER styles (adaptive ER & lability/negativity) | Mother report | Parental contingent responses to their children's displays of emotion | Behavioral observation | Mothers |
| Silk et al. (2006) | 4–7 years | Clinical (mothers with childhood-onset depression) | ER strategy use (waiting passively and engaging in distraction) | Behavioral observation | Maternal depression | Clinical diagnosis | Mothers |

Table 1 continued

| Authors | Age of child sample | Clinical status of sample | Conceptualization of child ER | Assessment method of ER | Parental socialization factor | Assessment method of parental socialization | Parent (s) sample |
|------------------------|-------------------------|---------------------------|---|---------------------------------------|---|---|---------------------|
| Snyder et al. (2003) | 6 years | Non-clinical | Ability to down-regulate anger | Behavioral observation | Parental contingent responses to their children's displays of emotion | Behavioral observation | Mothers and fathers |
| Valiente et al. (2004) | 7–12 years | Non-clinical | Coping strategy use (constructive and non-constructive) | Child report (diary data) | Parental emotional expression | Parent report | Mothers and fathers |
| Yagmur Altan (2010) | <i>M</i> age: 5.2 years | Non-clinical | A composite index of ER capturing amount of ER | Mother and teacher report | Parenting styles (responsiveness and power assertion) | Mother report | Mothers |
| Yap et al. (2008) | 11–13 years | Non-clinical | Maladaptive ER strategy use & frequency and valence of affective displays | Child report & behavioral observation | Parental contingent responses to their children's displays of emotion | Behavioral observation and parent report | Mothers |
| Yap et al. (2010) | 11–13 years | Non-clinical | Maladaptive ER strategy use & frequency and valence of affective displays | Child report & behavioral observation | Maternal negative and positive affect displays | Behavioral observation | Mothers |

that their child's persistent exposure to this may lead to internalization and modeling (Eisenberg et al. 2001b).

In a follow-up study, Eisenberg et al. (2003) investigated whether there was stability in the observed relationships over time. They reported that while the positive relationship between maternal positive emotional expression and maternal-rated child ER remained stable, a contradictory relationship was found, whereby more frequent maternal negative emotional expression was related to children's greater use of ER as reported by the children's teacher. Similarly, Greenberg et al. (1999) found that self-reported frequent parental emotional expression, irrespective of valence, was a significant predictor of children's use of more ER as reported by teachers in a sample of children in 1st grade. On the basis of these findings, Greenberg et al. argued that regardless of valence, greater communication, and emotional expression in the family contributes to a more socially and emotionally adept child, as such an environment provides children with more opportunities to regulate and observe regulation practices.

Several explanations have been ascribed to the inconsistencies found between parental negative expressivity and child ER across studies. For example, Halberstadt et al. (1999) asserted that the discrete subtypes of negative emotion need to be specified as they may have differential effects on childhood developmental outcomes. Indeed, in one study with a sample of children aged between 7 and 12 years, it was shown that maternal expression of negative dominant emotion (such as anger and hostility) had an inverse relationship with their child's ability to cope with stress, whereas maternal expression of negative submissive emotion (such as sadness) was unrelated to the child outcome (Valiente et al. 2004).

An alternative explanation for the inconsistencies found between parental negative expressivity and child ER is that there may be a curvilinear relationship between negative expressivity and child ER, whereby a moderate degree of negative expression may provide an optimal environment for children to learn effective coping and regulatory skills (Halberstadt et al. 1999). It has also been argued that the conceptualization and measurement of ER in a more multifaceted way (e.g., by examining different ER strategies) may provide less equivocal findings regarding the impact negative emotion expression has on the many different components of a child's ER (Halberstadt et al. 1999). However, no research to date has confirmed these hypotheses. Finally, as Table 1 demonstrates, there is significant diversity in the measurement of ER across studies of parental emotion socialization and child ER. Thus, increased consistency in the way ER is conceptualized and measured may provide greater congruence in future research findings.

As is also evident from the studies presented in Table 1, a range of parental emotion socialization factors are

associated with child ER development. Of particular interest is the association between parental ER and child ER.

Parent Emotion Regulation and Child Emotion Regulation

It has been argued that for a parent to be an effective and adequate emotion socialization agent for their child, they must have sufficient emotional understanding as well as the ability to effectively and adaptively manage their own emotions. Indeed, parental dysregulated emotions may contribute to inappropriate emotional expression or experience, which may, in turn, contribute to poor emotion developmental outcomes for children as well as deficits in the parent–child relationship (Dix 1991). Several research studies have provided support for this hypothesis. For example, parents' inappropriate contingent responses to their child's emotional displays and parental difficulty in reverting back to a positive emotional state during family conflict are considered to be indicative of dysregulated emotions. Such interactions have been associated with poor social, behavioral, and emotional competence in children (Carson and Parke 1996; Compton et al. 2003; Denham et al. 1997). However, it is noteworthy that, to the authors' knowledge, there is no extant research examining the direct relationships between parental ER and child emotional or social outcomes. The examination of differential child outcomes as dependent on parental use of suppression as compared to reappraisal, for example, would be an important and germane addition to this field of investigation.

Based on the substantial amount of evidence implicating parental emotion socialization factors as integral to a child's developing ER capacities, it has been posited by a number of prominent ER theorists that children imitate their parents' modes of ER through the pathways of modeling and social referencing (Bridges et al. 2004; Denham 1998; Morris et al. 2007; Thompson 1994). In their seminal review, Morris et al. (2007) proposed an observational learning paradigm, arguing that parents provide models of emotion displays (inclusive of regulatory strategies) that are subsequently imitated by their children. The authors theorized that parental ER facilitates an affective environment through which children learn the appropriateness of emotional expression in terms of its valence, duration, and intensity. Thompson (1994) provided the example of a child's constant exposure to a caregiver's suppression of their emotions to illustrate the modeling hypothesis. He argued that constant exposure to this style of ER may lead the child to imitate their parents' way of managing their emotions, ultimately utilizing

similar strategies when confronted with their own emotionally eliciting situations.

Within the context of pathological development and consistent with a modeling hypothesis, Cole et al. (1994) proposed that children develop similar ER strategies as their parents via means of internalization. They argued that parents experiencing psychopathology may have dysregulated emotions and therefore lack the skills necessary to be adequate models for their children. They also argued that parental affective displays reflect parents' own ER. That is, displays of frequent positive affect may be a reflection of parents' use of adaptive and effective ER strategies, while frequent expression of negative affect may reflect dysregulated emotions resulting from the utilization of ineffective ER.

Only two known studies have been conducted to test this posited model of imitation or internalization of ER capacities. In a study of mothers with childhood-onset depression and mothers with no depression, distress was induced in their 4- to 7-year-old children via experimental manipulation (Silk et al. 2006). Examination of children's regulatory styles in response to distress indicated that children of depressed mothers were more likely to engage in the regulatory strategy of waiting passively (interpreted as a maladaptive style of ER) rather than actively engaging in distraction (an adaptive style of ER) than children of non-depressed mothers. Silk et al. (2006) proposed that maladaptive ER strategies utilized by depressed mothers create a negative or punitive emotional climate within which the child develops maladaptive ER strategies. It is noteworthy, however, that maternal regulatory styles were not actually assessed. Rather, it was simply assumed that the depressed cohort utilized maladaptive ER strategies.

In a second study involving older children (aged 8–13 years), there were congruent findings with the additional methodological advantage of assessing maternal strategy use (Garber et al. 1991). Specifically, depressed and non-depressed mothers and their children were administered sadness-eliciting vignettes and asked to report the ER strategies they would use in the provided hypothetical emotional situations. The number and quality of ER strategies reported by the participants to regulate their negative emotion were assessed by independent raters. It was found that depressed mothers and their children reported significantly fewer and poorer quality ER strategies, as compared to non-depressed mothers and their children.

Given that only two known studies have examined the associations between parent ER and child ER, it is clear that many important gaps of knowledge exist in this literature. For example, the mechanisms through which the relationship between parent and child ER manifests have not been directly investigated. Modeling hypotheses have

been posited (Bridges et al. 2004; Denham 1998; Morris et al. 2007; Thompson 1994), proposing that parents' frequency, intensity, and valence of their emotional expression may be the mechanisms through which children learn to model their parents ER (Morris et al. 2007). It has also been proposed that exposure to a varying range of emotions elicited in a socially appropriate manner enables a child to utilize adaptive and effective ways of regulating their own emotions (Morris et al. 2007). It is argued herein that examination of the above proposed inter-related associations between parental ER, parental emotional expression and child ER would be an important addition to this body of research in order to provide a more complete understanding of childhood ER development.

There are clearly many avenues for future research into ER and its development. In undertaking this research, it will be necessary that salient limitations and gaps noted in previous research are addressed as recommended below.

Recommendations

Multi-Faceted Measurement of Emotion Regulation

As noted previously, underlying the inconsistent findings in this area may be the variance in conceptualization and assessment of ER in the studies reviewed herein. In general, the findings of several of the reviewed studies were based on the premise that more regulation is adaptive and healthy, and less regulation is maladaptive (Eisenberg et al. 2001b; Eisenberg et al. 2003; Garner 1995; Greenberg et al. 1999). Hence, these investigations are limited to this rather gross index of ER. This was highlighted by Bridges et al. (2004), as a major limitation of ER research. Importantly, Gross (1998b) has asserted that more regulation is not necessarily better. For example, if unsuccessful strategies are adopted, this may lead to emotional and behavioral inhibition as opposed to adaptive outcomes. Instead of a focus on amount of ER, it has been posited that certain types, styles, strategies, or modes of ER may be more adaptive or effective and, furthermore, that the functionality of ER may differ depending on the context. Clearly, the one index of amount of regulation is limited in examining consequences and individual differences in ER research (Bridges et al. 2004; Gross 1998b).

Another limitation of the studies that have examined associations between parental emotional expression and child ER is their sole focus on early childhood (Eisenberg et al. 2001b; Eisenberg et al. 2003; Garner 1995; Greenberg et al. 1999), while later childhood and adolescent samples have been notably neglected in this field of psychological inquiry.

Emotion Regulation During Later Childhood and Adolescence

The majority of studies that have examined child ER and overall parental influences have been based on samples within the infancy through early childhood developmental periods (John and Gross 2004). These are important periods of emotional development to empirically examine as these are times when self-regulatory abilities first develop in accordance with cognitive, linguistic, and social maturation (Gullone et al. 2009; Kopp 1989; Thompson 1991). Additionally, the dominant parental role as primary socialization agent for emotional development during these periods is well established (Eisenberg et al. 1998).

However, with few exceptions (Gullone et al. 2009), there is a dearth of research on ER development and parental influences in the post-early childhood period; that is from 8 years of age until the end of adolescence (John and Gross 2004). This is a large limitation of current research given that the development of regulatory capacities is believed to continue throughout middle childhood to late adolescence as ER strategies gain sophistication in concordance with neurological and cognitive growth and psychosocial changes (Eisenberg and Morris 2002). Due to vast changes and growth that occur during these periods of development, they are considered to be incredibly susceptible to both risks and opportunities in terms of ER development (Steinberg 2005).

The neurological maturation that occurs in the prefrontal cortex and the limbic system throughout middle childhood to adolescence (Spear 2000) is significant as these neurological substrates are known to be involved in ER processes (Steinberg 2005). For example, Lamm and Lewis (2010) examined 7- to 14-year-old children's ability to self-regulate their negative emotion and found that, when regulating their emotion, older children had decreased movement in the ventral portion of their pre-frontal cortex compared to younger children. These findings suggest that as children mature, they have more efficient frontal cortical functioning resulting in more efficient ways of regulating their emotions.

Additionally, maturation of the prefrontal cortex contributes to more sophisticated abilities in abstract thinking, problem solving, and deductive reasoning. These are cognitive abilities that are considered to be important in the successful and effective regulation of emotions (Steinberg 2005). As a consequence of the rapid cognitive and neurological growth that is characteristic of this stage of development, ER abilities are proposed to rapidly increase in number and in degree of sophistication during this time (Yap et al. 2007).

In addition to increasing ER abilities directly, the neurological and hormonal development that occurs

throughout adolescence may contribute to more frequent and intense experience of a range of emotions across the positive to negative valence spectrum providing greater opportunity to utilize and hone ER skills (Silk et al. 2003). Indeed, research by Larson and colleagues' indicated that the developmental period of adolescence, more than adulthood or childhood, is characterized by the experience of more frequent and intense emotions (Larson et al. 1980; Larson and Lampmanpetraitis 1989).

This period of development is also characterized by significant psychosocial changes that call for an increase in sophistication of ER strategies (Steinberg 2005). Adolescents are faced with novel stressors associated with social relationships, including pressures to conform to adult expectations relating to maturity, educational achievement, gender appropriate conduct, and other socially competent behaviors (Yap et al. 2007). Additionally, adolescents have an increased orientation toward autonomy (Spear 2000), providing further impetus for the development of adaptive self-regulatory skills.

This increased orientation toward autonomy has led many theorists to propose that peers, media, and other extra-familial influences may be more influential as socialization agents of ER during adolescence than are parents (Eisenberg and Morris 2002; Klimes-Dougan et al. 2007; Morris et al. 2007). However, other theorists have argued that the salience of the parent-child relationship does not decline during adolescence, rather it undergoes adaptation (Collins 1990). Thus, parents remain an important agent of emotional socialization during adolescence, but due to the transformational nature of this period of development, modes of interaction and parental influence may be different (Collins 1990). Indeed, it has been established that for the majority of adolescents, an affectively positive relationship is maintained with their parents (see Flannery et al. 1994; Steinberg 2001 for reviews).

The few studies that have examined the influence of parental emotion socialization processes on adolescent ER have reported some important findings. For example, Sheeber et al. (2000) found that maternal facilitation of adolescent depressive behavior (i.e., making statements of approval or affirmation that contribute to maintenance of their child's depressive behavior) was predictive of their offspring's poor ability to regulate their negative affect (as indexed by the duration of their negative affective behavior). Eisenberg et al. (2005) found that adolescents' ER (assessed as greater use of *effortful control*) acted as a mediator between parental propensity to be warm and adolescents' low externalizing problem behavior. Finally, Yap et al. (2008, 2010) have found that adolescents reported more frequent use of maladaptive ER strategies if their mothers reported to use invalidating socialization processes (i.e., discomfort or reprimand) in response to their

adolescents' expression of positive affect and if they displayed aversive behavior during mother-child interaction.

These findings provide support for the important role of parental emotion socialization in child ER development and strategy use in the period post-early childhood. However, the breadth of these findings is largely limited to maternal parenting given that the role of fathers remains largely uninvestigated.

The Role of Parent Gender

The few studies that have separately examined maternal and paternal roles in child regulatory outcomes have found that mothers and fathers each contribute uniquely to child ER development. For example, in a study of children aged 6–11 years, Cassano et al. (2007) found that parental self-reported contingent responses to their children's displays of sadness were related to children's parent-reported sadness regulation (indexed as use of ER strategies: inhibition, dysregulation and coping with sadness). Differences between mothers and fathers were such that fathers were more likely to respond to their child's displays of sadness by minimizing the problem or encouraging inhibition of expression, whereas mothers were more likely to respond with problem-solving strategies and were more likely to encourage the expression of sadness. Parental perceptions of their child's dysregulated sadness displays were predictive of their greater use of minimization responses. In contrast, parents' perceptions of their child's greater coping abilities were predictive of their greater use of problem-solving strategies. The use of contingent responses also varied depending on child gender with parents being more likely to encourage expression in their daughters than their sons (Cassano et al. 2007).

Of significance, Fivush et al. (2000) reported that during emotionally laden conversations with their children, mothers were more likely to discuss the possible origins or causes of emotions than fathers. The researchers inferred from this finding that mothers are more likely to be involved in the development of children's ability to cope or manage their emotional expression and experience (Fivush et al. 2000). Providing further support for this, within a sample of children in 3rd and 4th grade, McDowell et al. (2002) found that maternal variables had stronger relationships with child ER than did paternal variables. Specifically, parents who reported themselves to be less warm, less positively responsive, and more controlling had children who exhibited maladaptive ER strategies (indexed as negative responses to emotionally eliciting vignettes). Additionally, these relationships were stronger between same-sex parent-child dyads than opposite-sex dyads.

These findings (Fivush et al. 2000; McDowell et al. 2002) suggest that mothers may play a more integral role in their

children's ER development than do fathers. Indeed, Pleck (1997) reviewed research findings spanning 1980–1990 that examined maternal versus paternal involvement in child development. On the basis of the review, it was concluded that fathers were much less accessible and engaged less with their children when compared to mothers. Of significance, this difference was greater during adolescence than early childhood. It has been argued that a father's unique contribution to his child's emotional socialization may be more salient during infancy through early childhood when more frequent father–child interaction occurs during physical play (Lamb 2004; Parke 1994).

Despite the diverse roles played by mothers and fathers in their child's emotional and social development, there is a dearth of studies examining paternal influences in child and adolescent developmental psychopathology research (Phares and Compas 1992; Zimmerman et al. 2000). A lack of attention to the role played by fathers is also notable in child ER development research. Given the few research studies that have provided evidence indicating that mothers and fathers play differential roles in contributing to the socialization of their child's ER development (Cassano et al. 2007; McDowell et al. 2002), inclusion of fathers in future research would greatly benefit this domain of psychological inquiry.

A more practical implication of the inclusion of fathers in ER research relates to the gender stereotypical belief that males have a tendency to be emotionally suppressive (Fabes and Martin 1991). Although this belief is largely related to gender stereotypes, there is some supportive empirical evidence for such a belief. An example relates to the different ways that men and women express their negative affect (Brizendine 2006). While more mothers have entered the work force and more fathers are choosing to be primary caregivers, the discrepancy between the maternal and paternal roles, although decreasing (Hosley and Montemayor 1997) is unlikely to disappear. Consequently, although gender roles are undergoing changes within the context of rearing and socializing children (Hosley and Montemayor 1997), it is likely that fathers and mothers will continue to differentially influence their children's socialization into the future. Understanding these differences is essential for a comprehensive understanding of the ways in which parents socialize their children's ER.

The ER development research domain would benefit greatly from addressing these salient limitations, as just discussed, in future research.

Summary and Directions for Future Research

In summary, developmental research in the emotion regulation domain is still in its infancy. A consequence is the lack

of a definitive conceptualization and assessment methods of ER, with significant inconsistencies across studies (Bridges et al. 2004; Cole et al. 2004). While some studies conceptualize optimal ER with a sole emphasis on decreasing negative affect (Garner and Power 1996), others have operationalized ER as coping strategies (Contreras et al. 2000). Of significance is the predominance of studies that have conceptualized individual differences in ER in terms of *amount* of regulation (Eisenberg et al. 1999; Eisenberg et al. 2001b; Eisenberg et al. 2003; Garner 1995; Greenberg et al. 1999). It is argued that this one index of amount of regulation does not comprehensively capture individual differences in ER, given that different styles of ER may be more or less effective depending on the context (Bridges et al. 2004; Gross 1998b). Thus, while there is a plethora of research implicating the parental role as being significant to the development of children's ER, in order to contribute to greater scientific and methodological rigor, there is a need to empirically examine these relationships within a valid theoretical framework that conceptualizes ER in a multi-faceted way (Halberstadt et al. 1999). For example, utilization of a model, such as Gross' (1998b), would do good service to this weakness in the existing literature.

Another limitation of ER research is the relative neglect of examining parental contributions to child ER in the post-early childhood developmental period (John and Gross 2004). Middle childhood to adolescence is characteristically a period of great transitional development in the cognitive, emotional, psychosocial, and neurological domains; all contributing to a more sophisticated ability and a greater need to utilize effective ER strategies (Eisenberg and Morris 2002; Steinberg 2005). Moreover, the links between the ability to regulate one's emotions and psychopathology during this period of development have been consistently demonstrated (Betts et al. 2009; Garber et al. 1995; Silk et al. 2003; Yap et al. 2008). Indeed, this period is considered to be "a critical or sensitive period for a reorganization of regulatory systems, a reorganization that is fraught with both risks and opportunities" (Steinberg 2005, p. 73), thus providing a strong rationale for the examination of the development of regulatory processes during this neglected developmental period.

Additionally, previous research examining parental influences on children's ER development has focused primarily on maternal influences. The few studies that have examined both maternal and paternal influences have reported divergent ways in which mothers and fathers influence child ER development (Cassano et al. 2007; McDowell et al. 2002). Thus, future research is needed to further investigate the potential differential relationships between maternal and paternal emotionality and child ER.

In conclusion, future ER developmental research examining the post-early childhood period is needed to

contribute to a more comprehensive and complete analysis of youths' ER strategy use and ER competency development. Further research should aim to apply refined theoretical conceptualizations and consistency in assessment methods of ER. Lastly, examination of both maternal and paternal influences will contribute to a greater understanding of the mechanisms involved in child and adolescent development of optimal regulatory capacities.

The extensive clinical implications of dysregulated emotions (Cole et al. 1994; Gross and Munoz 1995) provide strong impetus for examination of causal factors associated with the development of adaptive ER. As illustrated by this review, there exists an extensive literature that has shown strong links between parental socialization factors and child ER. Several theorists have proposed that children may imitate or internalize their parents' styles of ER via modeling or social learning mechanisms (Bridges et al. 2004; Denham 1998; Morris et al. 2007; Thompson 1994). Furthermore, it has been proposed that the frequency, intensity, and valence of emotion that is expressed by parents create a familial emotional climate where children may adaptively learn to model their parents' styles of ER (Morris et al. 2007). These hypotheses are yet to be tested, and it is argued herein that research designs focusing on parents' own styles of ER and their emotional expression will complement and substantially add to the existing child ER developmental literature.

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