

Maternal Emotion Regulation and Children's Behavior Problems: The Mediating Role of Child Emotion Regulation

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Abstract Children's difficulties managing emotions are contributors to their behavior problems, and parents' emotion regulation difficulties are also likely contributors to their children's regulatory challenges and behavioral difficulties. This study examined the associations among mothers' emotion regulation, children's emotion regulation, and children's behavior problems. Children's emotion regulation difficulties were hypothesized to mediate the association between maternal difficulties with emotion regulation and children's internalizing and externalizing problems. A sample of 454 mothers completed the Difficulties in Emotion Regulation Scale, the Emotion Regulation Checklist, and the Child Behavior Checklist for their children aged 3–7. Children's emotion regulation difficulties accounted for the indirect association between mothers' lower emotion awareness and both internalizing and externalizing problems. On the other hand, children's emotional negativity accounted for the indirect association between mothers' difficulties with emotion regulation and behavior problems. Future directions for research and clinical intervention focused on promoting parental and child emotion regulation are discussed.

Keywords Emotion regulation · Child behavior problems · Parenting · Emotion awareness

Introduction

Childhood behavior problems are crucial to understand and prevent because they predict numerous difficulties in adolescence and adulthood, including increased risk for psychiatric diagnosis, involvement in crime, as well as job- and relationship-related stressors (Hofstra et al. 2002; Moffitt et al. 2002). Externalizing problems (e.g., aggression, defiance) and internalizing problems (e.g., anxiety, social withdrawal) are two primary domains of childhood behavior problems. Risk for elevated externalizing and internalizing problems is related to contextual (e.g., socioeconomic deprivation; neighborhood factors), interpersonal (e.g., parent–child interaction processes; coercive peer processes) and child characteristics (e.g., temperament; self and emotion regulation difficulties; Bayer et al. 2011; Loeber et al. 2009). Difficulties managing emotions are particularly significant contributors not only to serious behavior problems during childhood (Cole et al. 1994; Zeman et al. 2002), but also to continued psychopathology in adulthood (Aldao et al. 2010). Parents are important models, socializers, and cultivators of emotion regulation during the early childhood years (Eisenberg et al. 1998), but little research to date has investigated whether parents' own emotion regulation difficulties contribute to their children's regulatory challenges.

Emotion regulation is a multi-faceted construct involving internal and external processes by which one manages the occurrence, intensity, and expression of emotion in order to achieve one's goals (Eisenberg and Morris 2002; Thompson 1994). Rudimentary emotion regulation skills are apparent very early in life, beginning with reflexive strategies like head turning followed by more organized strategies later in infancy and during toddlerhood (Kopp 1989). By the preschool period, planful strategies become more common, including active distraction from distressing situations by

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playing with toys or ignoring stressors (Denham 1998). Although emotion regulation skills continue to develop during the preschool period and into the school-age years and beyond, individual differences in emotion regulation skills are readily apparent across early and middle childhood. Moreover, young children with more advanced emotion regulation skills are more socially competent and have fewer behavior problems (Eisenberg et al. 2004).

The breadth of the conceptualization and measurement of emotion regulation are key challenges in research on this construct throughout childhood. Conceptually, one challenge is how to incorporate other emotion-related constructs such as emotional intensity and reactivity into the notion of emotion regulation (Bridges et al. 2004; Campos et al. 2004). More specifically, children who tend to be more reactive or experience emotions more intensely might be more prone to difficulty regulating their emotions (Rothbart 2011). Measuring emotion regulation is also complex, with numerous studies of children relying on reports of broad emotion regulation skill and other studies focusing on observational or physiological assessment of regulation of a discrete emotion during a specific scenario (Adrian et al. 2011).

Like research on emotion regulation during childhood, the conceptualization of adults' emotion regulation is also complex and multi-faceted. Several models posit that emotion regulation during adulthood includes individual differences in the ability to maintain affective processing, with successful regulation associated with improved well-being, including satisfaction at work and home (Côté and Morgan 2002; Gross and John 2003). Conversely, difficulties with emotion regulation are associated with markers of maladjustment, including psychopathology (Aldao et al. 2010). A theoretical model articulated by Gratz and Roemer (2004) suggests that emotional dysregulation may reflect poor awareness of emotions and/or difficulty engaging in regulatory strategies for managing these emotions within the current context. Other models consider awareness/understanding of emotion and managing/regulating emotion to be separate components of broader constructs such as emotional intelligence and emotional competence (Izard et al. 2011; Mayer et al. 2004).

Although the above frameworks differ in their exact definition of emotion regulation, empirical evidence suggests that difficulty managing emotions and poor awareness of emotion are each associated with psychopathology among adults. Poor regulation of emotions as reflected in increased behavioral impulsiveness while experiencing negative emotions, limited access to behavioral strategies to manage emotions effectively once an individual is upset, and difficulties concentrating and accomplishing goals when experiencing negative emotions is associated with a wide range of psychological problems including borderline

personality disorder, major depressive disorder, bipolar disorder, generalized anxiety disorder, social anxiety, eating disorders, and substance abuse disorders (Aldao et al. 2010; Gratz and Roemer 2004). Lack of emotional awareness is also associated with a range of problems, but awareness difficulties may be more strongly linked to externalizing problems than internalizing problems (Neumann et al. 2010). More specifically, emotion awareness difficulties are purported to be associated with reactive aggression because people with these difficulties have trouble identifying and coping with relatively mild negative affect. As a result, they may be more likely to engage in "acting out" coping behaviors (e.g., yelling; Factor et al. 2016).

While intrinsic factors such as neurobiology, genetics, and temperament appear to contribute to emotion regulation (Hariri and Forbes 2007), scholars have long agreed that emotion and its regulation are also impacted by external contexts. During early childhood, the family serves as an important context for emotion regulation development (Thompson and Meyer 2007). For instance, a tripartite model of family influences on children's development of emotion regulation includes parents' modeling of regulation, parents' behaviors related to emotion and emotion regulation, and the broader emotional context of the family (e.g., parenting style, attachment, marital relationships, family expressiveness; Morris et al. 2007). Within this model, specific emphasis has been placed on parents' expression, modulation, modeling, and socialization of emotion in contributing to children's developing emotion regulation. Likewise, Parke (1994) speculated that parents' emotional displays implicitly teach youth which emotions are expected and acceptable within the family. Children who observe a broad range of emotional expression in their family learn about an array of emotions while children who primarily observe heightened expressions of negativity (i.e., anger) appear to develop constrained emotional understanding and heightened emotion dysregulation. Speculation has been that parents' frequent expression of negative affect might reflect their own inability to regulate emotions. As such, parents' modeling of poor emotion regulation approaches and children's social references of these regulation strategies may contribute to their poor regulation (Emde et al. 1991). In sum, family experiences are the cornerstones for the development of children's emotion regulation, but it is important to keep in mind that family processes are transactional and bidirectional, meaning that children's emotion regulation may also impact parents' subsequent emotion regulation (Lengua and Kovacs 2005).

Despite significant theorizing, to date, few studies have directly assessed the role of parents' emotion regulation in the emergence of children's emotion regulation. In one of the few empirical studies on this topic, parent and child emotion regulation were examined in terms of emotion

suppression and cognitive reappraisal (Bariola et al. 2012). Children across a wide age range (i.e., 9–19 years old) were likely to use similar levels of emotional suppression as their parents to regulate emotion, while no association was found for cognitive reappraisal. Consistent with a modeling hypothesis, the authors speculated that the internal nature of cognitive reappraisal as opposed to emotional suppression may not provide a context in which this regulatory approach could be learned. In a separate study, parental emotion dysregulation when their sons were 9–13 years of age predicted boys' emotion dysregulation at 17–19 years of age (Kim et al. 2009). In addition, trend level associations between maternal emotion regulation and children's emotion regulation and dysregulation emerged in a study examining the mediating role of parent emotional behaviors (Morelen et al. 2016).

Studies comparing the emotion regulation strategies of depressed vs. non-depressed mothers have also been used as indirect evidence of modeling of emotion regulation within families. Parental depression may convey risk for emotion regulation difficulties among offspring via the parent's limited range of emotional expression as well as the parent's difficulty managing sadness and irritability (Eisenberg et al. 1998). Empirical evidence supports this perspective; for instance, young children with depressed mothers were more likely to use passive waiting than distraction as a means for regulating emotion (Silk et al. 2006). However, the study did not directly assess maternal emotion regulation strategies. In another study, 8–13 year-old children and their depressed or non-depressed mothers were exposed to vignettes designed to elicit sadness (Garber et al. 1991). Depressed mothers and their children were found to have both fewer and lower quality strategies for emotion regulation.

Family-level predictors of children's emotion regulation merit more attention in empirical research because adaptive emotion regulation during childhood is associated with greater social competence and lower internalizing and externalizing symptoms (Eisenberg et al. 2003). On the other hand, emotion dysregulation is characterized by an inflexible or inconsistent management of emotion that fails to meet the demands of the environment (Cole et al. 2004), contributing to both externalizing and internalizing problems. For example, interviews conducted with children ages 5–12 over the course of a longitudinal study indicated that anger and sadness dysregulation predicted internalizing and externalizing problems (Bowie 2010). Similarly, school-age children with anxiety disorders reported more emotion dysregulation than comparison peers (Suveg and Zeman 2004).

Given that parents' and children's emotion regulation may be linked and that emotion regulation difficulties are associated with behavior problems across the life span, it

stands to reason that children's difficulties with emotion regulation may be a conduit from parental regulatory difficulties to child behavior problems. We are not aware of research specifically addressing indirect pathways from parental difficulties with emotion regulation to child behavior problems; however, a recent study on the role of maternal expressed emotion (i.e., criticism and over-involvement) in children's emotional development examined a similar indirect pathway (Han and Shaffer 2014). Findings indicated that maternal expressed criticism towards the child was positively associated with child externalizing problems, and this association was mediated by child dysregulation. Related research examined children's emotion regulation in middle childhood as a moderator of the association between parent emotion regulation and child psychopathology symptoms (Han and Shaffer 2013). Using a model-based cluster analysis, self-report, parent-report, and observational measures of child emotion regulation were combined to establish two regulatory profiles—one that was more inhibiting and one that was more expressive. Parent emotion dysregulation was significantly associated with child internalizing symptoms, but only for children with more inhibited coping styles. Children who were more expressive (i.e., externalizing) in their coping did not show this effect. These findings suggest that children whose problems regulating their emotions are less observable may be at higher risk for developing psychopathology in the context of parents who are also dysregulated, because parents may be unable to identify their needs and appropriately socialize their emotional experiences (Han and Shaffer 2013). Although these findings have elucidated links between parents' and children's emotion-related functioning, the potential role of children's emotion regulation difficulties as a mediating mechanism in the relation between parental emotion regulation difficulties and children's behavioral maladjustment continues to be an important direction for research.

The present study examined associations among maternal difficulties with emotion regulation, child emotion regulation difficulties, and behavior problems in a rather heterogeneous sample of preschoolers and young school-aged children. This represents a critical time in socio-emotional development when children are starting to become more independent in managing their emotions (Denham 1998). In the current report, as in many other studies of children's emotion regulation and behavior problems (Batum and Yagmurlu 2007), our conceptualization focuses on regulation of a range of emotions and broad negative emotional reactivity rather than focusing solely on regulating individual discrete emotions. Also, we examined mothers' lack of emotion awareness and difficulties with emotion regulation as separate domains of their emotional functioning, an approach that is consistent with theoretical perspectives and recent factor analytic work (Bardeen et al.

2012; Stegge and Terwogt 2007). The first aim was to examine the direct association between maternal and child emotion regulation. It was expected that mothers' difficulties with emotion regulation would be associated with children's emotion regulation difficulties. The next aim involved examining the association between maternal emotion regulation difficulties and children's internalizing and externalizing symptoms. We expected that dysregulation reported by mothers would be associated with greater behavior problems in children, but this association was predicted to be primarily indirect. More specifically, children's emotion regulation difficulties were expected to mediate the association between maternal emotion regulation difficulties and child behavior problems. By examining internalizing and externalizing problems separately, we were able to ascertain whether the mediation model was applicable across both behavior problem domains. Moreover, we examined these indirect pathways while accounting for several covariates that may play a role in parents' and children's emotion processes and behavioral difficulties, including maternal depressive symptoms, the age and gender of the child, the family's income, and single parenting (Goodman et al. 2011; Repetti et al. 2002; Zeman et al. 2002). In addition, because the magnitude and statistical significance of the indirect pathways may differ for younger vs. older children or for males relative to females, our final aim was to explore age and gender as moderators of the hypothesized indirect pathways. Given that this was an exploratory aim, we did not have specific hypotheses for the moderation analyses.

Method

Participants

The sample consisted of 454 adult women with at least one child between the ages of 3 and 7 years old who were participating in a larger study of parenting stress. Two hundred thirty-seven of the women were single parents, recruited online from social media parenting forums. Two hundred seventeen women of dual parent families were recruited from a Midwestern school district, selected by socioeconomic and racial/ethnic characteristics. Recruitment was stratified by child age and gender, such that both boys and girls were equally divided over the preschool (ages 3 and 4) and early grade school years (ages 5, 6, and 7). Child age ranged from 3 years, 0 months to 7 years, 11 months ($M = 5$ years, 6 months; $SD = 4.7$ months). Two hundred thirty-six boys were relatively equally divided between the preschool ($n = 113$; M age = 4 years, 2 months; $SD = 8.5$ months) and early grade school ($n = 123$; M age = 6 years, 6 months; $SD = 8.2$ months) groups. Two

hundred eighteen girls were also relatively equivalently divided between the preschool ($n = 99$; M age = 4 years, 4 months; $SD = 8.8$ months) and grade school ($n = 119$; M age = 6 years, 7 months; $SD = 8.7$ months) groups. Participating mothers ranged from 18 to 54 years ($M = 33.38$; $SD = 6.27$) of age, and most self-identified as Caucasian (75%; African-American, 11%; Asian 1%; Hispanic 9%; American Indian/Alaskan Native; 2%; other 2%). Family income, as measured by self-report household yearly income, ranged from 0 to \$4999 a year at the bottom of the range to above \$80,000 at the other end of the range. Approximately 7.3% of the sample reported earning less than \$10,000, 36.6% between \$10,000 and \$29,999, 29.3% between \$30,000 and \$59,999, 11.1% between \$60,000 and \$79,999, and 10.5% of the sample reported earning \$80,000 or more.

Procedure

The research protocol was approved by Wayne State University's Institutional Review Board, and participating mothers provided informed consent. Participating mothers completed the measures described below via an online website. They also used the online portal to complete demographic questions pertaining to their child's age, race and ethnicity, family socioeconomic status, their education level, and other items not included in the present study. Participants were reimbursed \$50 for their time.

Measures

Maternal emotion regulation

Adult emotional dysregulation was assessed in the mothers using the Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer 2004), a 36-item self-report measure of multiple aspects of dysfunction in emotion regulation, rated on a 1–5 scale (1 = "Almost Never" and 5 = "Almost Always"). Whereas the scale was originally constructed with six factors, difficulties with nonacceptance, goals, impulsiveness, awareness, strategies, and clarity, a recent confirmatory factor analysis indicated a two factor solution as best fitting (Bardeen et al. 2012): the lack of awareness scale ($\alpha = .84$ for the current sample) and a total score of the five other scales ($\alpha = .93$ for the current sample). Other research, including a recent study of emotion regulation among mothers, have replicated this factor structure (Jones et al. 2014; Kokonyei et al. 2014). Moreover, this factor analytic work fits with theoretical conceptualizations that view emotion awareness and emotion regulation as separable, albeit intertwined, aspects of emotional competence (Stegge and Terwogt 2007). The DERS lack of awareness scale includes items such as "I pay attention to how I feel" (reversed). The difficulties in emotion regulation

scale includes items such as, “When I’m upset, my emotions feel overwhelming.”

Maternal depression

Adult depression symptoms were rated using the 20-item Center for Epidemiologic Studies Depression scale (CES-D; Radloff 1977), rated on a 1–4 scale (1 = “Rarely or none of the time” and 4 = “Most or all of the time”). Higher scores reflect higher levels of depressive affect. Cronbach’s alpha for this sample was .88.

Child emotion regulation

Children’s ability to regulate their emotions was measured using the 24-item Emotion Regulation Checklist (ERC; Shields and Cicchetti 1997), which assesses parents’ perceptions of the child’s emotionality and regulation, rated on a 1–4 scale (1 = “Rarely/Never” and 4 = “Almost Always”). The ERC is comprised of two scales. Emotion lability/negativity, consisting of 15 items, measures mood swings, anger outbursts, and intensity of both positive and negative emotions. The lability/negativity scale includes items such as “Is easily frustrated.” Cronbach’s alpha for the overall sample was .87. The lability/negativity scale demonstrated similar reliability for the preschool aged children and for the school aged children, with Cronbach’s alpha equal to .85 and .88, respectively. The Emotion Regulation subscale, consisting of eight items, assesses the social appropriateness of child’s emotions, including emotion understanding and empathy, and includes items such as “Can modulate excitement (doesn’t get carried away in high energy activity or overly excited in inappropriate contexts).” The Emotion Regulation subscale was reversed scored for the purposes of this study, and termed “Difficulties in Emotion Regulation.” Higher scores represent greater child emotion dysregulation. Cronbach’s alpha for the overall sample was .76. The Difficulties in Emotion Regulation scale demonstrated similar reliability for the preschool aged children and for the school aged children, with Cronbach’s alpha equal to .71 and .79, respectively.

Child behavior problems

Mothers also reported on their child’s psychological symptoms using the 113-item caregiver rated Child Behavioral Checklist (CBCL; Achenbach and Rescorla 2001) for school aged children and the 100-item caregiver rated Child Behavioral Checklist –1.5–5 years (CBCL; Achenbach and Rescorla 2000) for the preschool aged children. Ratings on this measure assess both clinical and sub-clinical levels of psychopathology across internalizing and externalizing disorders. *T*-scores were calculated for both Internalizing

(example item, “Withdrawn, doesn’t get involved with others”) and Externalizing (“Impulsive or acts without thinking”) problem scales, with values above 65 representative of clinically-significant problems. Reflective of a community sample, only 8.1% of the children fell in the borderline or clinical range for internalizing problems, and 6.7% of the children fell in the borderline or clinical range for externalizing problems. Furthermore, the *T*-scores were relatively normally distributed in this sample, supporting their use as continuous measures of internalizing and externalizing problems for the current study.

Results

Missing data was handled using listwise deletion, due to the low rate of missing data in the sample. Following listwise deletion, 97% of the sample ($N = 439$) had data available for all variables used in the analyses. The missing items were due to participant nonresponse (i.e., deliberately or inadvertently choosing not to answer an item). Means, standard deviations, and intercorrelations for the overall sample are provided on Table 1. Descriptive statistics and correlations by age group are provided in Table 2. Descriptive statistics for the CBCL indicate that the majority of the sample did not meet the clinically significant cutoff for internalizing and externalizing scales, as would be expected in a community sample (Achenbach and Rescorla 2001). Mothers’ CESD scores indicate that, on average, the mothers in our sample did not report clinical levels of depressive symptoms, as compared to normative data (Radloff 1977).

Correlations were examined to determine the associations between demographic variables (age, gender, income, family structure, maternal depressive symptoms) and variables of interest (maternal emotion regulation, children’s emotion regulation, and behavior problems). As shown in Table 1, maternal depressive symptoms were significantly associated with maternal difficulties with emotion regulation, child difficulties with emotion regulation, and child behavior problems. Therefore, maternal depressive symptoms were entered as a covariate in further analyses. Child age, gender, income, and family structure did not show the same consistency of association with other measures as maternal depressive symptoms, but each was correlated with a few variables of interest and included as covariates. Maternal difficulties in emotion regulation were significantly positively associated with children’s difficulties in emotion regulation and emotion negativity. Maternal difficulties in awareness also demonstrated significant positive associations with child difficulties in emotion regulation and negativity. Furthermore, maternal difficulties with emotion regulation and difficulties with awareness were significantly

Table 1 Descriptive statistics and correlations

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Family structure	–										
2. Income	.31**	–									
3. Child age	.00	.04	–								
4. Child gender	.03	–.03	.04	–							
5. Maternal depression	–.38**	–.19**	.02	.02	–						
6. DERS lack of awareness	–.05	–.14**	.10*	–.01	.28**	–					
7. DERS difficulties in regulation	–.19**	–.08	.05	.04	.66**	.38**	–				
8. ERC difficulties in regulation	–.05	–.13**	.04	–.10*	.19**	.29**	.22**	–			
9. ERC negativity	–.09	–.10*	–.03	–.15**	.34**	.16**	.37**	.45**	–		
10. CBCL internalizing	–.16**	–.05	.08	–.04	.28**	.18**	.25**	.39**	.51**	–	
11. CBCL externalizing	–.07	–.03	.13**	–.07	.25**	.19**	.27**	.48**	.66**	.63**	–
Mean			5.04		12.41	2.35	1.77	1.85	1.52	48.86	48.98
Standard deviation			1.39		8.20	0.85	0.59	0.59	0.41	10.44	10.30

DERS Difficulties in Emotion Regulation Scale, *ERC* Emotion Regulation Checklist, *CBCL* Child Behavior Checklist

* $p < .05$, ** $p < .01$

Table 2 Descriptive statistics and correlations of measures by age

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Family structure	–	.28**	.01	–.35**	0.1	–.19**	–.08	–.08	–.18**	–.04
2. Income	.35**	–	.05	–.07	–.15*	–.01	–.05	–.05	–.15*	–.09
3. Child gender	.05	–.06	–	.04	–.01	–.01	–.17**	–.19**	–.04	–.08
4. Maternal depression	–.42**	–.09	–.02	–	.26**	.67**	.18**	.34**	.27**	.22**
5. DERS lack of awareness	–.08	–.03	.03	.32**	–	.30**	.31**	.12	.17**	.22**
6. DERS difficulties in regulation	–.20**	–.05	.12	.66**	.49**	–	.26**	.41**	.24**	.24**
7. ERC difficulties in regulation	–.01	–.02	.01	.20**	.26**	.22**	–	.40**	.31**	.43**
8. ERC negativity	–.11	–.03	–.08	.33**	.22**	.31**	.57**	–	.46**	.60**
9. CBCL internalizing	–.12	.04	–.04	.28**	.19**	.27**	.51**	.62**	–	.61**
10. CBCL externalizing	–.12	–.06	–.06	.31**	.16*	.32**	.55**	.78**	.66**	–
Mean (Age 3–4)				12.39	2.25	1.78	1.89	1.55	48.72	48.14
Standard deviation (Age 3–4)				7.65	0.81	0.61	0.45	0.36	10.10	10.30
Mean (Age 5–7)				12.43	2.41	1.78	1.82	1.51	48.96	49.53
Standard deviation (Age 5–7)				8.55	0.87	0.57	0.67	0.44	10.67	10.28

Coefficients for the 3–4 age group are provided below the diagonal

Coefficients for the 5–7 age group are provided above the diagonal

DERS Difficulties in Emotion Regulation Scale, *ERC* Emotion Regulation Checklist, *CBCL* Child Behavior Checklist

* $p < .05$; ** $p < .01$

positively associated with child behavior problems. Finally, both child difficulties in emotion regulation and emotion negativity were positively associated with internalizing and externalizing problems. Table 2 provides bivariate correlations separately for each age group (preschool and school-age) and shows similar patterns of correlations within each age group.

Indirect Pathways via Children's Negativity and Emotion Regulation

The PROCESS Macro Model 4 (Hayes 2013) was used to test whether maternal difficulties in emotion regulation were indirectly related to child behavior problem outcomes via associations with children's difficulties in emotion

regulation. Recent guidelines have indicated that, unlike prior mediation recommendations, a direct effect between an independent and dependent variable is not needed to examine an indirect effect (Preacher et al. 2007). Therefore, the indirect effect (labeled *ab* below) of each DERS scale was examined on the child behavior problem outcomes, regardless of whether there was a direct effect. For the results of these analyses to be considered significant, the 95% CIs must not encapsulate 0. All mediation analyses included the following covariates: maternal depressive symptoms, family structure, child age, child gender, family income, and the other DERS scale (for example, in analyses in which maternal difficulties in emotion regulation was the independent variable, maternal lack of awareness was entered as a covariate).

The first pathway model tested the direct and indirect effects of mothers' difficulties in emotion regulation on child internalizing problems via children's difficulties in emotion regulation and emotion negativity (see Fig. 1). Maternal difficulties in emotion regulation was significantly associated with children's negativity, and also, children's negativity was significantly associated with children's internalizing problems. There was also a significant indirect effect of maternal difficulties in emotion regulation on children's internalizing problems via children's negativity (DERS difficulties in emotion regulation → ERC negativity → CBCL internalizing $ab = 1.78, SE = 0.55, 95\% CI = [.89, 3.14]$). Maternal difficulties in emotion regulation was not associated with children's difficulties in emotion regulation, and the corresponding indirect pathway was not significant.

Pathway models were also conducted for child externalizing problems using maternal difficulties in emotion regulation (see Fig. 2). Both children's difficulties with emotion regulation and negativity/lability were significantly associated with their externalizing problems. There was a

significant indirect effect from maternal difficulties in emotion regulation via children's emotion negativity (DERS difficulties in emotion regulation → ERC negativity → CBCL externalizing $ab = 2.48, SE = 0.68, 95\% CI = [1.13, 3.86]$). There was no significant indirect pathway from maternal difficulties in emotion regulation to externalizing problems via children's difficulties in emotion regulation.

Pathway models were also conducted to test the direct and indirect effects of maternal lack of awareness on child behavior problems (see Figs. 3 and 4). Maternal lack of awareness was significantly associated with children's difficulties in emotion regulation, and in turn, children's difficulties in emotion regulation were significantly associated with their behavior problems. The direct path between maternal lack of awareness and children's internalizing problems was not significant. The indirect pathway from maternal lack of awareness to child internalizing problems via child difficulties in emotion regulation was significant (DERS lack of awareness → ERC difficulties in emotion regulation → CBCL internalizing $ab = .53, SE = 0.24, 95\% CI = [.19, 1.16]$). On the other hand, the indirect pathway from maternal lack of awareness to children's internalizing problems via children's emotion negativity was not significant.

The direct path from maternal lack of awareness to children's externalizing problems was not significant. However, children's difficulties in emotion regulation were significantly associated with externalizing problems, and pathway analyses supported a significant indirect pathway from maternal lack of awareness to children's externalizing problems via children's difficulties in emotion regulation (DERS lack of awareness → ERC difficulties in emotion regulation → CBCL externalizing $ab = .61, SE = 0.27, 95\% CI = [.23, 1.37]$). Children's emotional negativity was significantly associated with externalizing problems. However, the indirect path from maternal difficulties in awareness to

Fig. 1 Indirect effect model of maternal difficulties in ER predicting child internalizing problems via children's difficulties in ER and children's emotion negativity/lability. Unstandardized coefficients shown. All analyses controlled for child age, child gender, family income, family structure, maternal depressive symptoms and maternal difficulties in awareness. * $p < .05$, ** $p < .01$

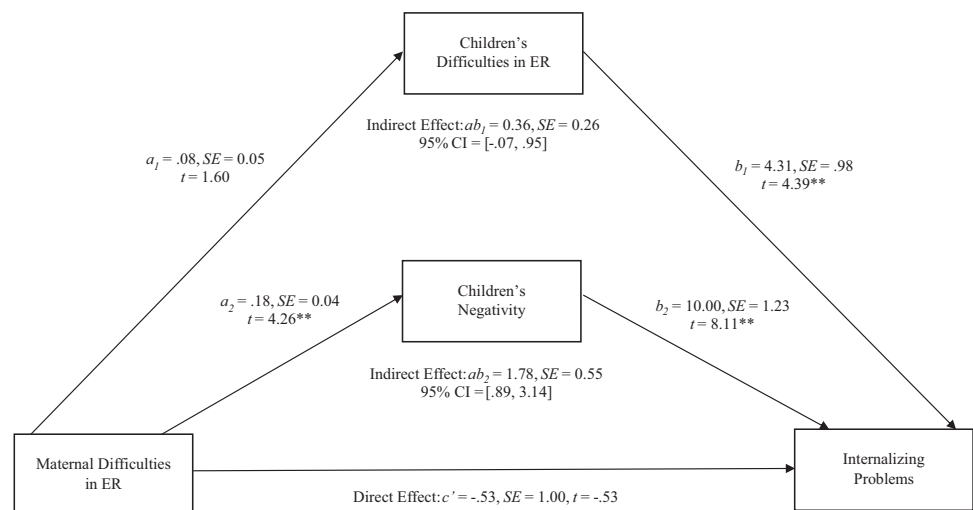


Fig. 2 Indirect effect model of maternal difficulties in ER predicting child externalizing problems via children’s difficulties in ER and children’s emotion negativity/lability. Unstandardized coefficients shown. All analyses controlled for child age, child gender, family income, family structure, maternal depressive symptoms and maternal difficulties in awareness. * $p < .05$, ** $p < .01$

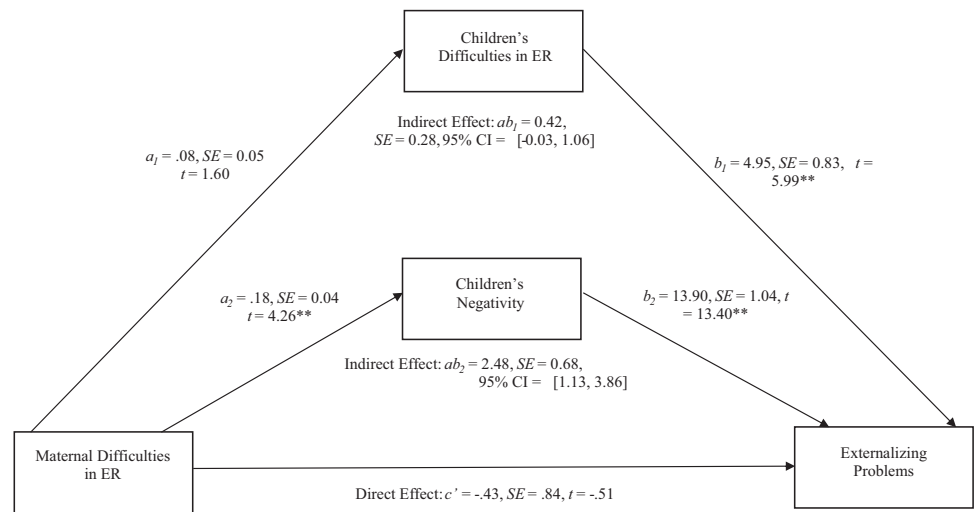


Fig. 3 Indirect effect model of maternal lack of emotional awareness predicting child internalizing problems via children’s difficulties in ER and children’s emotion negativity/lability. Unstandardized coefficients shown. All analyses controlled for child age, child gender, family income, family structure, maternal depressive symptoms and maternal difficulties in ER. * $p < .05$, ** $p < .01$

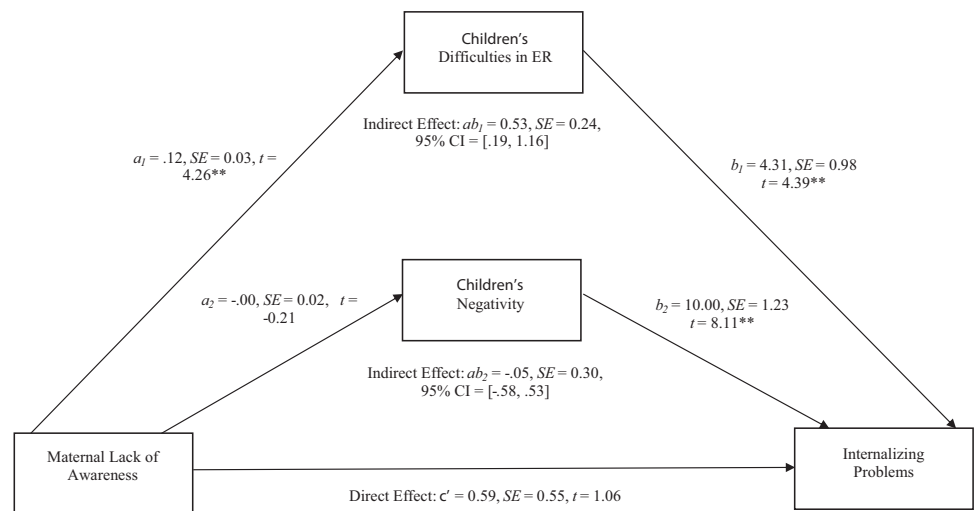
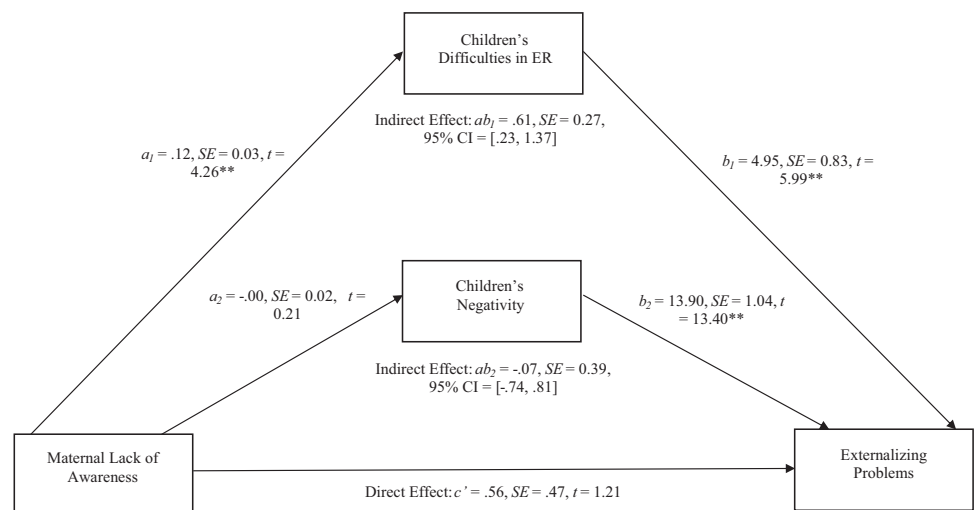


Fig. 4 Indirect effect model of maternal lack of emotional awareness predicting child externalizing problems via children’s difficulties in ER and children’s emotion negativity/lability. Unstandardized coefficients shown. All analyses controlled for child age, child gender, family income, family structure, maternal depressive symptoms and maternal difficulties in ER. * $p < .05$, ** $p < .01$



children's externalizing problems via children's negativity was not significant.

Exploring the Roles of Child Age and Gender

Following the mediation analyses, we used the PROCESS Macro Model 58 to test whether the magnitude and statistical significance of pathways in the models differed across child gender and child age. This exploratory model enabled us to test child gender and child age as a moderator of the links between the mothers' emotion regulation and children's emotion regulation and of the link between children's emotion regulation and children's behavior problems. For both child gender and child age, the only pathway that demonstrated group differences occurred in the model assessing DERS lack of awareness → ERC difficulties in emotion regulation → CBCL internalizing. This indirect pathway was significant for boys, but not for girls, and significant for older children in the sample, but not for the younger children. However, the index of moderated mediation indicated that there were no statistically significant differences in the strength of the associations when comparing the gender subgroups and the age subgroups. Therefore, overall the analysis did not support moderated mediation for either gender or age.

Discussion

The present study extends current knowledge about the role of maternal emotion regulation in the development of child behavior problems by investigating children's emotion regulation as a potential mediating factor. The first aim of the study was to examine the association between parent and child emotion regulation. Correlation analyses supported the hypotheses associated with this aim in that maternal emotion regulation difficulties were significantly associated with children's emotion regulation difficulties. The second aim of the study was to predict child behavior problems with maternal emotion regulation. The hypothesis was also supported by analyses indicating that maternal difficulties with emotion regulation and lack of emotional awareness were significantly associated with child internalizing and externalizing problems. Pathway analyses also indicated that children's difficulties with emotion regulation or negativity accounted for indirect associations between maternal emotion regulation difficulties and child behavior problems.

Maternal difficulties with emotion regulation and difficulties with awareness were mediated by different child emotion-related constructs when predicting behavior problems, indicating unique paths of association. Maternal difficulties with emotion regulation were mediated by

children's emotion negativity when predicting child internalizing and externalizing problems, whereas associations between maternal difficulties with awareness and child behavior problems were mediated through children's difficulties with emotion regulation.

Mothers' ability to attend to their own emotions, to easily identify these emotions, and to understand them likely form the basis for the development of more positive emotion regulation in children. Greater emotional awareness in adults has been associated with more adaptive emotional expression and problem solving (Gohm and Clore 2002), more robust physiological responses in the context of stress (Salovey et al. 2000), and lower rates of psychopathology (Boden and Thompson 2015). In this manner, parents who are not aware of their emotions may have difficulty scaffolding the development of emotional understanding in their children, may serve as poor external regulators of emotionally laden situations, or may fail to directly teach skills for coping. In turn, their children may be ill-prepared in terms of their emotional regulatory capacities, putting them at heightened risk for the development of psychopathology (Zeman et al. 2013).

It is also possible that the distinct pathways from maternal emotion regulation and awareness may in part result from methodological or measurement distinctions. Although Gratz and Roemer (2004) initially found support for a single factor DERS total score reflecting overall adult emotion dysregulation, recent research found that the Lack of Awareness subscale does not intercorrelate as well as the other five DERS subscales (Bardeen et al. 2012). Furthermore, though the five DERS subscales are associated with variables relevant to emotion regulation, such as symptoms of anxiety and posttraumatic stress, child maltreatment, and emotional inhibition, the lack of awareness subscale has not been shown to be significantly associated with these same indicators of psychopathology and negative socio-emotional outcomes (Bardeen et al. 2012). The findings of the current study provide further evidence that awareness of emotions is distinct from other emotion regulation strategies, and as such may be associated with a unique pattern of emotional and behavioral outcomes within the family context.

Notably, measures of mothers' emotional awareness on the DERS and children's difficulties with emotion regulation on the ERC appeared to tap some of the same underlying difficulties. Both subscales appear to assess mothers' and children's emotional knowledge and coping ability, more so than their experience of emotions or ability to manage these emotions. For instance, one item on the ERC refers to children being able to say when they are feeling sad, angry, or mad. Other items relate to children's abilities to navigate social rules in regards to emotions—displaying empathy when others are upset, responding positively to friendly overtures by adults, and responding positively to

friendly overtures by peers. The current findings may suggest that similarities in measurement facilitate associations between maternal ratings of their own emotional awareness and children's emotional regulation.

The findings of this study provide preliminary empirical support for the notion that maternal emotion dysregulation undermines children's ability to develop positive emotional responses. Specifically, maternal emotion dysregulation may undercut youth's ability to understand, express, and regulate negative emotional experiences, in turn exacerbating the risk for psychopathology. During early childhood, parents continue to have a central role in children's regulation of emotion (Han and Shaffer 2013). Mothers who are unable to modulate their own emotions both model poor regulation and expose their children to poorly managed means for coping with distress. As such, mother's own emotion regulation difficulties likely limit the opportunities that young children have for learning effective ways for dealing with their own negative emotions and experiences.

This study begins to address an important question, examining how mothers' self-reported difficulties with emotion regulation were associated with their children's difficulties with emotion regulation and behavior problems, and the next step will be to examine the influence of parent's emotion regulation within the parenting context (Teti and Cole 2011). Using both observational designs and parent's reports of their own emotions may be key for understanding the emotional context in which children are parented and wherein emotional expression, modulation, modeling, and socialization are enacted. While parents' overall style of emotion regulation undoubtedly impacts their regulation within the parenting realm, it is the child's exposure to emotion regulation in the parenting context and the subsequent influence of in-the-moment parental regulation on parenting behaviors that directly impact the child's emotional reactions and regulation.

When faced with parenting challenges, parents often draw on psychological resources to cope with negative feelings and limit their expression of negative emotional response tendencies, thereby promoting healthy relations with their child (Belsky et al. 1995; Bornstein et al. 2007). However, that is only one side of the process. Parent-child relationships are, by nature, bidirectional, and transactional. The other side to the interaction comes from the child's negativity—a trait considered a component of temperament (Kochanska et al. 2004; Rothbart 2011). Children with difficult temperaments place increased stress on mothers' emotion regulation capacities, more so than children with easy-going temperaments. Mothers who have difficulties with regulating their emotions might struggle more to effectively cope when their child is expressing negative emotions. This in turn may contribute to parenting practices that exacerbate children's behavior problems.

Limitations

One limitation of this study was the cross-sectional nature of the data collection and the inclusion of only young children ages 3–7. Furthermore, the information was collected from maternal report only, which facilitated data collection, but incorporating additional data collection methods would provide stronger support for the conclusions gathered from the results. Whereas an association was found between mother's emotional awareness and regulation, it is plausible that children's regulation of emotion also influences parent's regulation, which would support bidirectional rather than unidirectional associations. Further longitudinal studies may address this question by investigating changes in parents and children's emotion regulation over time. In addition, longitudinal studies would allow for developmental consideration of the potentially changing centrality of parents to children's emotion regulation. Though this study focused on emotion regulation during early and middle childhood when parents may serve as both potent socializers as well as external regulators, emotion regulation continues to develop later in childhood and into adolescence. Ongoing neurological and cognitive development, the diversity and vastness of youth experiences, and the exposure to a variety of social partners as socializers may all contribute to youth's strategies becoming more numerous and sophisticated over the course of development (Yap et al. 2007).

An additional limitation of the current study was the sole focus on maternal emotion regulation. To date, more limited consideration has been given to fathers' socialization of children's emotional regulation. Findings suggest that fathers may respond to children's emotional displays differently than mothers (e.g., minimizing problems or encouraging inhibitory responses to their children's displays of sadness; Cassano et al. 2007). While some researchers hypothesize that mothers' socialization of emotion and regulation may be more central than fathers' (Fivush et al. 2000; McDowell et al. 2002), recent evidence suggests that fathers may socialize regulation of emotions in different emotionally evocative contexts. Future research should include both mothers and fathers so that youth's actual experience of emotion regulation socialization can be more broadly assessed, and similarities and differences in the nature of influence can be examined. Despite these limitations, the current findings highlight the importance of considering both parents' and children's emotion regulation when investigating the intergenerational transmission of psychopathology. Given the dearth of research to date that has simultaneously assessed parental and child emotion regulation, these findings provide novel future directions for research and clinical intervention to improve the well-being of young children.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no competing interests.

Ethical Approval The study included human participants, and as such, was approved by the Institutional Review Board.

Informed Consent All participants provided informed consent before engaging in study procedures.

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