

Family Expressivity: Caregiver Differences and Child Emotional Reactivity

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The process by which children develop emotionally occurs within the context of the child's environment. In particular, the family and especially caregivers play an important role in socializing emotional understanding and expression (Eisenberg, Cumberland, & Spinard, 1998). This process of emotional development within the family is significant because children's abilities to adaptively react emotionally have been linked to many positive outcomes including social competence (Calkins, Gill, Johnson, & Smith, 1999) and problem behaviors (Denham et al, 2000; Rydell, Berlin, Bohlin, 2003). Thus, it is important to understand the differing influences that caregivers can have on a child's level of emotional reactivity.

Morris and colleagues (2007) have outlined a theoretical model of the familial influence on children's emotional development. This model suggests that families influence the manner in which children develop emotion regulation through parental characteristics that impact the emotional climate of the family. Consequently, the emotional climate of the family, including emotional expressivity, influences the child's ability to adaptively emotionally react. In their discussion of the model, Morris and colleagues (2007) also highlighted the general focus on mother-child relationships when studying child emotional development. Consequently, they emphasized the importance of considering a larger familial social context by investigating other significant family relationships, such as fathers.

While Morris and colleagues' (2007) theoretical model stressed the importance of the emotional climate of the family and parents' contribution to this through their emotional expressiveness, research also underlines this significant impact on child development. Emotional expressivity is defined as, "a persistent pattern or style in exhibiting nonverbal and

verbal expressions that often but not always appear to be emotion related; this pattern or style is usually measured in terms of frequency of occurrence" (Halberstadt, Cassidy, Stifter, Parke, & Fox, 1995, p. 93). Therefore, parents' general and consistent style for expressing positive and negative emotions contributes to the overall emotional atmosphere to which children are exposed. Furthermore, "when a child's emotional climate is negative, coercive or unpredictable, children are at risk of becoming highly emotionally reactive, due to frequent, unexpected emotional displays or because of emotional manipulations (Morris et al., 2007).

When considering the emotional climate of the family, Morris and colleagues (2007) also considered the parental characteristics that directly influence how parents express emotions within the family. More particularly, current research has revealed several associations between certain maternal characteristics and child emotional development. For example, children of depressed mothers tend to employ less adaptive and effective emotion regulation abilities compared to peers of nondepressed mothers (Silk, Shaw, Skuban, Oland, & Kovacs, 2006). Depressed mothers tend to express more negative emotions when interacting with their children and fewer positive emotions (Cohn, Campbell, Matias, & Hopkins, 1990), which is suggested as one explanation for this association. Additionally, individuals with a high degree of anxiety also tend to express more negative emotions and have more difficulty regulating their own emotions (Mennin, Heimberg, Turk, & Fresco, 2005). Conversely, maternal sensitivity, or the mother's ability to effectively recognize and respond to her child's behaviors and cues in an appropriate and supportive manner, is related to more adaptive child emotion expression and regulation (Feldman & Klein, 2003). In general, positive expressivity tends to be associated with positive child outcomes (Eisenberg et al., 2001), while negative expressivity has been found to show less consistent associations (Halberstadt, Crisp, & Eaton, 1999).

The Current Study

This study investigates how maternal characteristics, including depression, anxiety, and sensitivity, influence child emotional reactivity over time, while also considering how overall family expressivity mediates this association. Thus, three primary research questions are considered:

How do maternal characteristics, including depression, anxiety, and sensitivity, influence child emotional reactivity across time?

How does family emotional expressivity mediate the relationship between maternal characteristics and child emotional reactivity across time?

How do mothers and fathers/mother's partner's emotional expressivity differ in their influence on child emotional reactivity in relation to maternal characteristics?

Methods

Participants

Data were drawn from the NICHD Study of Early Childcare and Youth Development. This is a national, longitudinal study investigating the influence of early childcare on later development. The current sample concerns data from phase III of this study; grades three, four, five and six; and includes 710 children with mothers and fathers or mother's partners that both participated in the study at grade three. This sample also includes certain demographic data from the first time point of the study when the children were one month old. Descriptive information for this sample is shown in Table 1.

Table 1. Descriptive information

	N	Percent
Child's gender		
Female	362	51.0
Male	348	49.0
Child's race		
American Indian or Eskimo	2	0.3
Asian or Pacific Islander	11	1.5
African American	42	5.9
Caucasian	628	88.5
Other	27	3.8
Father/Mother's partner in household		
Yes	623	87.7
No/Don't know	81	11.4
Mother's marital status		
Married	668	94.9
Not currently married	36	5.1
	Mean	SD
Family Income	89,700.30	70,802.17

The original dataset included 1364 cases that had data at grade three and demographic data at one month. Because this study is interested in investigating the influence of both mother and father/mother's partner on child emotional reactivity, cases were excluded if the mother was not the primary respondent or there was not a father or mother's partner respondent at grade three ($n = 654$). Those cases that were excluded differed from the included sample based on mother's marital status ($F = 567.92, p < .001$), family income ($F = 79.10, p < .001$), and child's race ($F = 24.67, p < .001$). This demonstrates that those families with a father or mother's

partner present and participating in the study significantly differed from families without a father/mother's partner, indicating that this represents a specific subsample of families.

Measures

Maternal depression. Mother's depression is measured at grade three using maternal report on the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). This is a questionnaire consisting of 20 questions that assess the frequency of various symptoms of depression, both behaviors and feelings, over the last week.

Maternal anxiety. Mother's anxiety is measured by the mother's report on the State-Trait Anger and Anxiety Scale (Spielberger, 1983). This questionnaire consists of 40 questions, 20 of which are used to generate an overall subscale of anxiety expression based on reported symptoms at grade three.

Maternal sensitivity. Mothers' sensitivity towards their children is assessed using two coded, observed interactions between mother and child completed at grade three. In the first task, mothers were asked to discuss a topic of disagreement between themselves and their child, and in the second task, they were asked to plan the completion of a task together. These interactions were coded for maternal expressions and acts of sensitivity towards their child, and a total score for both tasks is utilized.

Family emotional expressivity. Mothers and fathers/mother's partners completed the self-report Family Emotional Expressiveness Questionnaire (Halberstadt, Parke, Cassidy, Stifter, & Fox, 1995) at grades three, four, and five. This measure contains two subscales, positive and negative expressivity, consisting of 10 questions each. They assess the individual's general style of expressing emotion within the family.

Child emotional reactivity. Both mother and father/mother's partner assessed child emotional reactivity using the Parent Report of Child Reactions Questionnaire (Sheilds & Cicchetti, 1997). The questionnaire consists of 10 questions assessing how the child reacts emotionally. It was completed at grades four, five, and six.

Data Analytic Plan

Latent growth modeling was used to analyze the relationships between the variables, including mediation, using the Mplus version 5.1 program. As this is a longitudinal study, the sample included missing data; however, Little's test revealed that the data was missing completely at random ($\chi^2(924) = 923.30, p = .500$). Thus, full information maximum likelihood estimation was used in order to address the missing data. In the analysis, initially, six unconditional growth models were fitted using the two time-varying variables, emotional expressivity and child emotional reactivity. These models assessed family emotional expressivity, both positive and negative rated by both mother and father/mother's partner at grades three, four, and five, as well as child emotional reactivity, rated by both mother and father/mother's partner at grades four, five, and six. The models were then assessed, though they could not be modified as three time points only allowed for one degree of freedom. These analyses were conducted in order to assess the linear growth of each of these factors across time.

The next step in the analysis involved testing the relationship between child emotional reactivity and the maternal time-invariant covariates, depression, anxiety, and sensitivity at grade three, as they are mediated by positive family emotional expressivity. In this analysis, two different mediation latent growth models were created using mother's and father/mother's partner's reports separately. The time points for the measurement of emotional expressivity and child emotional reactivity are staggered by one year in order to more accurately assess influence

across time. These mediation analyses were conducted in order to evaluate the direct effects of the maternal covariates on the child outcome across time, as well as the indirect effects as these relationships are mediated by mothers' and father/mother's partners' positive emotional expressivity.

Upon analysis, it was found that negative expressivity, both mother's and father/mother's partner's report, was not able to be considered in this analysis; this is discussed further in the results section. Maternal anxiety is also not included in the final mediation model as it was shown to have no effects once maternal depression and sensitivity were added to the model. Mother' and father/mother's partners' positive expressivity was considered separately as their scores did not show high correlation with each other (Table 2), and this separation allows for an evaluation of how mothers and fathers/mothers partners differentially influence child emotional reactivity through their emotional expressiveness.

Table 2. Mother's and father/mother's partner's ratings of positive expressivity correlation.

	Maternal positive expressivity Grade 3	Maternal positive expressivity Grade 4	Maternal positive expressivity Grade 5	Paternal positive expressivity Grade 3	Paternal positive expressivity Grade 4
Maternal positive expressivity Grade 3					
Maternal positive expressivity Grade 4	.71**				
Maternal positive expressivity Grade 5	.65**	.69**			
Paternal positive expressivity Grade 3	.18**	.18**	.18**		
Paternal positive expressivity Grade 4	.18**	.20**	.18**	.62**	
Paternal positive expressivity Grade 5	.17**	.15**	.20**	.64**	.65**

The ratings of child emotional reactivity were also considered separately as these scores also did not show high correlation (Table 3), indicating that mothers and fathers/mother's partners may experience the child's emotional reactions differently.

Table 3. Mother's and father/mother's partner's ratings of child emotional reactivity correlation.

	Emotional reactivity Grade 4: maternal	Emotional reactivity Grade 5: maternal	Emotional reactivity Grade 6: maternal	Emotional reactivity Grade 4: paternal	Emotional reactivity Grade 6: paternal
Emotional reactivity Grade 4: maternal					
Emotional reactivity Grade 5: maternal	.73**				
Emotional reactivity Grade 6: maternal	.70**	.77**			
Emotional reactivity Grade 4: paternal	.40**	.41**	.37**		
Emotional reactivity Grade 5: paternal	.38**	.40**	.36**	.65**	
Emotional reactivity Grade 6: paternal	.37**	.42**	.44**	.59**	.66**

Note. ** $p < .01$

Results

The initial analyses fit unconditional growth models for the six time-varying variables, including positive and negative emotional expressivity rated by both mother and father/mother's partner and measured at grades three, four, and five, as well as child emotional reactivity, rated by both mother and father/mother's partner and measured at grades four, five, and six. The unconditional growth model for maternal positive emotional expressivity showed a somewhat poor fit ($\chi^2(1) = 25.54, p < .001; CFI = .975, TLI = .924; RMSEA = .186$). It revealed that average the maternal score at grade three was 51.83, while the average maternal rating of

positive emotional expressivity decreased at a rate of $-.59$ across the three grades. This analysis also showed that there was significant difference between individual's intercepts and rates of change as the variances of the intercept ($29.71, p < .001$) and slope ($2.54, p = .007$) were both significant. Similarly, father/mother's partner's positive emotional expressivity was fit in an unconditional growth model. This model showed good fit ($\chi^2(1) = .002, p = .967$; CFI = 1.00, TLI = 1.00; RMSEA = .000). Father/mother's partners reported a slightly lower average score for positive emotional expressivity at grade three, and their rating similarly decreased over time, though it decreased more rapidly, at a rate of -1.05 . Again, significant variances were found for the intercept ($33.21, p < .001$) and slope ($3.18, p = .027$).

An unconditional growth model was also used to assess mother's negative emotional expressivity across time, and this model revealed good fit ($\chi^2(1) = .330, p = .565$; CFI = 1.00, TLI = 1.00; RMSEA = .000). However, the slope of maternal negative expressivity did not show significant variance ($1.70, p = .124$). Relatedly, father/mother's partner's reports of negative emotional expressivity revealed a good model fit ($\chi^2(1) = .305, p = .581$; CFI = 1.00, TLI = 1.00; RMSEA = .000); however, the model was not positive definite as the variance around the slope was both negative and nonsignificant ($-.076, p = .956$). Both of these findings indicate that individuals do not tend to differ in their rate of change for negative expressivity. Thus, the influence of negative emotional expressivity across time could not be assessed as individuals did not tend to differ over time.

Mothers' and father/mother's partners' ratings of child emotional reactivity were also assessed using unconditional growth modeling. The maternal report of child emotional reactivity showed good fit ($\chi^2(1) = .205, p = .651$; CFI = 1.00, TLI = 1.00; RMSEA = .000). It was also revealed that the average maternal rating at grade four was 33.64, and the average rating

decreased over time at a rate of $-.21$. Additionally, the variances of both the intercept (24.62 , $p < .001$) and the slope were significant (2.41 , $p = .001$). Likewise, the model for father/mother's partners' reports of child emotional reactivity showed good fit ($\chi^2(1) = 1.245$, $p = .265$; CFI = 1.00 , TLI = $.999$; RMSEA = $.019$). Father/mother's partners' ratings at grade three were slightly lower than mothers' (32.48), though the ratings similarly tended to decrease over time ($-.08$). However, while the variance around the intercept was significant (17.05 , $p < .001$), the variance around the slope was only marginally significant (1.48 , $p = .060$). This indicates that fathers/mother's partners do not differ in their rates of change as much as mothers do.

The next step in the analysis was to evaluate the relationships between the child emotional reactivity growth models and maternal characteristics, depression, anxiety, and sensitivity, as they are mediated by the emotional expressivity growth models. In this analysis it was found that maternal anxiety did not show significant effects on either the mediator, emotional expressivity, or the outcome, emotional reactivity, variables when maternal depression and sensitivity were also added so it was removed from the analysis. When mother's reports of positive emotional expressivity and child emotional reactivity were included in the analysis the model revealed a good fit ($\chi^2(13) = 50.660$, $p < .001$; CFI = $.982$, TLI = $.963$; RMSEA = $.064$). The results of this mediation growth model using maternal ratings are shown in Figure 1. In addition, a mediation growth model for father/mother's partners' reports of positive emotional expressivity and child emotional reactivity was also assessed. Again, mother's anxiety was removed from the model. This model also revealed good fit ($\chi^2(13) = 10.803$, $p = .627$; CFI = 1.00 , TLI = 1.00 ; RMSEA = $.000$), and the results are shown in Figure 2.

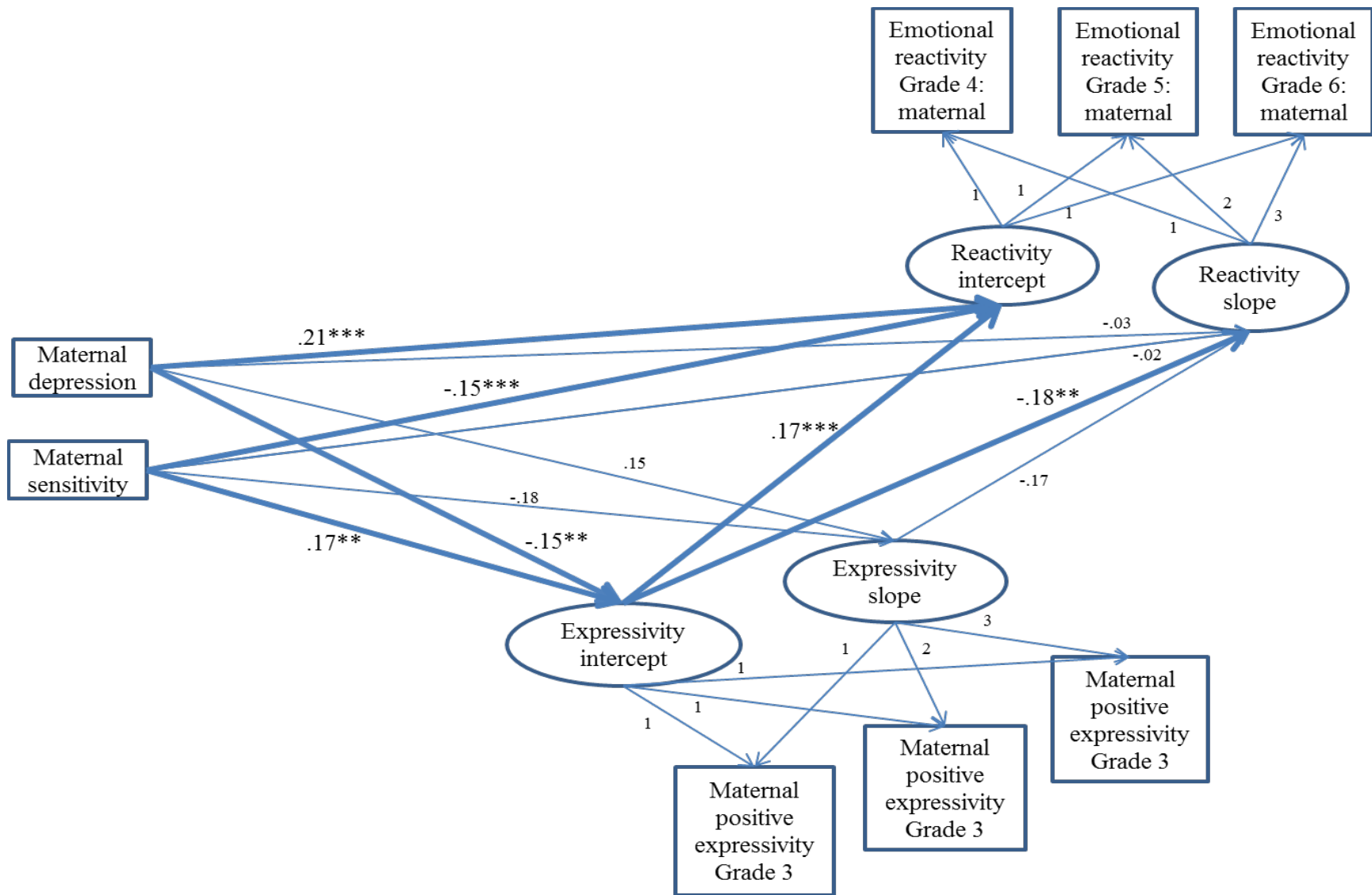


Figure 1. Maternal report mediation model.

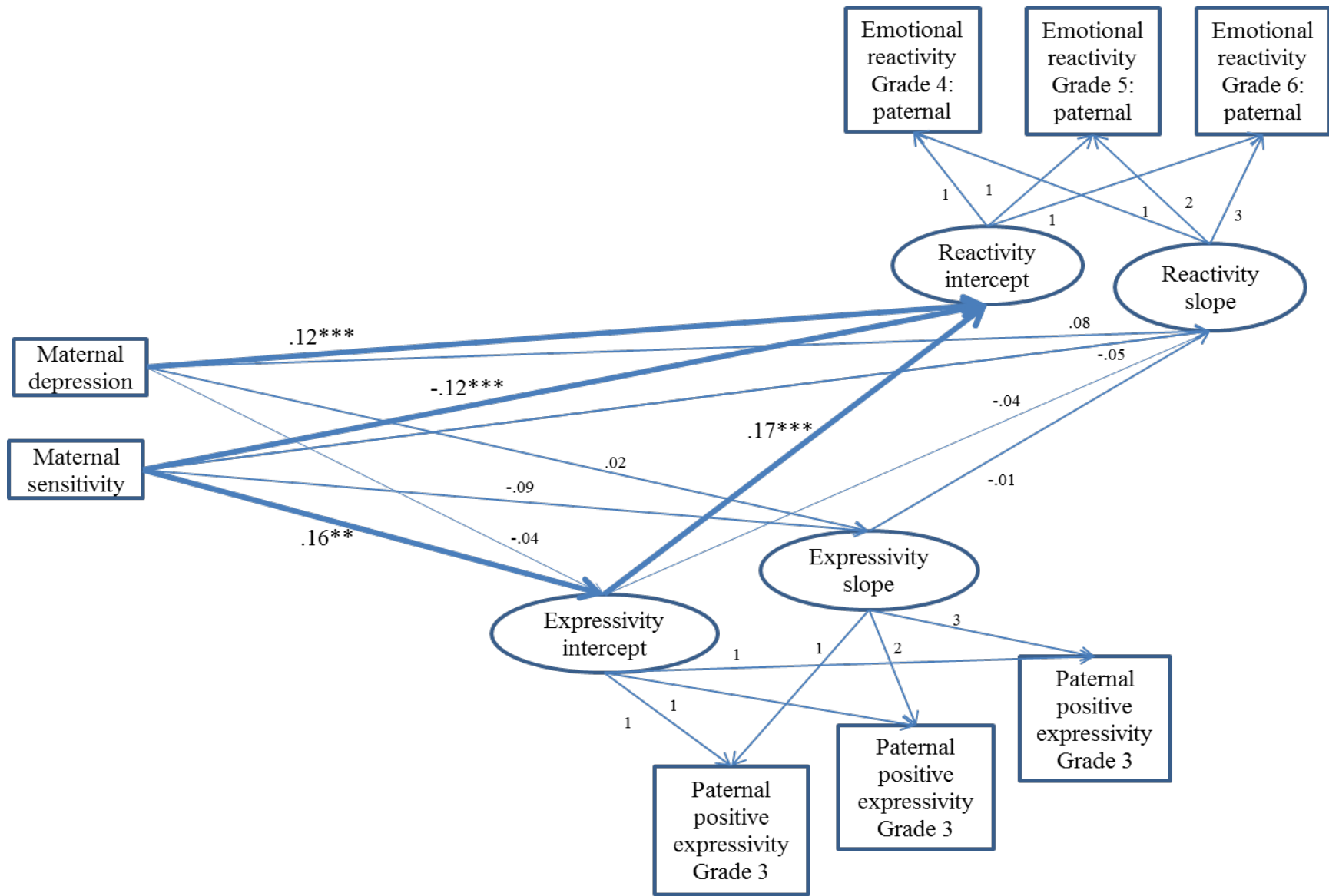


Figure 2. Father or mother's partner mediation model.

Concerning the mother's report model, maternal depression was found to be negatively related to positive emotion expression at grade three, and it was found to be positively related to child emotional reactivity at grade four. Maternal sensitivity was revealed to be positively associated with positive emotional expressivity at grade three and negatively related to child emotional reactivity at four. However, there were no significant associations found between the maternal covariates and the slopes of either emotional expressivity or child reactivity. Additionally, the intercept for maternal positive expressivity at grade three was positively related to child emotional reactivity at grade four, and this was also found to be negatively related to the slope for child emotional reactivity. There was an indirect effect between maternal depression and the intercept of child reactivity, mediated by the expressivity intercept ($-.027$, $p = .020$). Moreover, a second indirect effect between maternal sensitivity and the intercept of expressivity was found ($.030$, $p = .014$).

The father/mother's partner model revealed somewhat different findings. Here again, maternal depression was found to be positively associated with the intercept of child emotional reactivity, though there was no association found between maternal depression and the intercept of father/mother's partner's positive emotional expressivity. However, similar relationships were found with regard to maternal sensitivity, as it was found to be positively related to father/mother's partner's expressivity at grade three and negatively related to child reactivity at grade four. Additionally, the intercept for father/mother's partner's expressivity was positively related to the child reactivity intercept. Here, an indirect effect was found between maternal sensitivity and the intercept of child reactivity, mediated by the expressivity intercept ($.026$, $p = .036$).

Discussion

The results of this study revealed that child emotional reactivity is related to maternal depression and sensitivity. Furthermore, this relationship was mediated by positive emotional expressivity within the family; however, these relationships differ depending on mother or father/mother's partner report. The identified significant relationships regarding the maternal characteristics were found to be in the expected directions. Greater maternal depression at grade three was related to greater child emotional reactivity at grade four and less maternal positive expressivity at grade three. Additionally, greater maternal sensitivity at grade three was found to be related to less child emotional reactivity at grade four and more positive mother and father/mother's partner positive emotional expressivity at grade three. Interestingly, greater mother and father/mother's partner positive expressivity at grade three was related to greater child emotional reactivity at grade four. Additionally, greater maternal expressivity at grade three was related to a decrease in the child reactivity rate of change. This indicates that as mothers show more positive emotions, children tend to show more gradual decreases in emotional reactivity.

When considering positive emotional expressivity as a mediator between the maternal characteristics and child emotional reactivity, mother's and father/mother's partner's reports revealed varying findings. Both mother's and father/mother's partner's positive emotional expressivity at grade three positively mediated the relationship between maternal sensitivity and child emotional reactivity at grade four. However, only mother's report showed a mediational relationship with maternal depression. For mothers, the relationship between maternal depression and child emotional reactivity at grade four was negatively mediated by mother's positive emotional expressivity at grade three. This indicates that, for mothers only, their

positive emotion expressions negatively impact the positive relationship between maternal depression and child emotional reactivity.

When evaluating these findings, certain strengths and limitations of the study need to be considered. One limitation of the study concerns the variables used. Both negative emotional expressivity and maternal anxiety could not be used in the final analysis. Additionally, the sample included only those families with a father or mother's partner participating in the study at grade three. This limits the generalizability of the findings as the sample considered was found to differ significantly from the cases that were excluded. Only three time points were available so a more elaborate understanding of change in emotional expressiveness and child emotional reactivity over time could not be investigated. Moreover, only one significant relationship was found in association with rate of change of either time-varying variable. However, in light of these limitations, this study also demonstrates several strengths. It includes a large sample size so that results are more generalizable to those families that have a father or mother's partner present. Additionally, this study utilized both report and observational data. Finally, while the majority of research on child development tends to focus primarily on the mother, this study included father data as well.

Overall, it was found that maternal characteristics influence child emotional reactivity, and that mother's and father/mother's partner's positive emotional expressivity mediates these relationships. By considering these variables across time, how emotion within the family changes as children age and mature could be seen. Furthermore, by consider both mother's and father/mother's partner's emotional expressivity and ratings of child emotional reactivity, the varying manner in which these caregivers differentially influence and perceive the children in their families was highlighted.

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