

## The Relation of Maternal Behavior and Attachment Security to Toddlers' Emotions and Emotion Regulation

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Smith, C.L., [Calkins, S.D.](#) & [Keane, S. P.](#) (2006). The relation of maternal behavior and attachment security to toddler's emotions and emotion regulation. *Research in Human Development* 3(1):21-31.

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### **Abstract:**

In this study, we examined characteristics of the mother–child context that may support young children's emotion expressions and emotion regulation. We observed children (N= 154) in four emotion-eliciting episodes to measure their emotion expressions and mother-focused regulation strategies. Mothers reported on the toddlers' attachment security. Lower levels of maternal controlling behaviors and higher levels of attachment security were associated with more adaptive emotion expressions by toddlers, and more maternal positive behavior was associated with more mother-focused regulation. Toddlers' use of mother-focused regulation was also associated with decreased levels of negative affect in positive and fear emotion- eliciting tasks but not in frustration tasks. The associations differed for boys and girls and differed depending on the context of the specific emotion elicited.

### **Article:**

Recently, the definition of emotion regulation and its relation to emotion expressions has been a topic of debate (Cole, Martin, & Dennis, 2004). Given that children learn styles of dealing with emotions from early parent–child interactions (Calkins, 1994; Eisenberg, Cumberland, & Spinrad, 1998), it seems clear that relationships play a strong role in children's emotional development. Emotional self-regulation is one component of children's self-regulation (Grolnick & Farkas, 2002) and is a major developmental task during toddlerhood (Kopp, 1982, 1989). Children's emotional self-regulation has been identified as important to later optimal development because problems with emotionality and emotion regulation play a significant role in young children's behavior problems (Calkins & Dedmon, 2000; Cole, Michel, & O'Donnell, 1994). As Panneton, Kitamura, Mattock, and Burnham (this issue) discuss, emotion communication in the parent–child context begins early in child development. During toddlerhood, children are further expected to learn to control their emotions in a socially acceptable manner, and toddlers rely on parents to help them master emotional self-regulation (Kopp, 1982, 1989). Examining the links among children's emotion expressions, emotion regulation, and the characteristics within the parent–child dyad is important to identifying potential antecedents to more serious problems later in development.

We define *emotion regulation* as intrinsic and extrinsic processes involved in initiating, maintaining, evaluating, and modifying emotional responsiveness, positive and negative, to accomplish specific goals (Bridges & Grolnick, 1995; Thompson, 1994). Emotion regulation reflects children's ability to control extreme states of both positive and negative reactivity so that mutual and reciprocal interactions are possible (Calkins, 1994). With development, a shift takes place in the parent-child system in which children no longer rely entirely on external sources of regulation and move toward emotion self-regulation (Kopp, 1989).

Caregiving factors that support the development of socially accepted emotion expressions and the shift from external to internal emotion regulation need to be identified. Whereas responsive sensitive caregiving may support the development of acceptable emotion expressions and optimal regulation, harsh, controlling caregiving behaviors may undermine children's emotional development. Calkins, Smith, Gill, and Johnson (1998) found that maternal negative behaviors (e.g., anger expressions, physical and verbal control) were associated with less adaptive regulation skills in toddlers, but positive behaviors (e.g., praise, affection, encouragement) were not associated with emotion regulation; furthermore, maternal behavior, both positive and negative, was not associated with either positive or negative child reactivity. Spinrad and Stifter (2002), however, found that intense negative reactions in 5-month-olds were associated with less maternal sensitivity. Calkins and Johnson (1998) also found that maternal positive behavior was associated with adaptive regulation strategies displayed by 18-month-olds. Furthermore, mother-child attachment security can be considered an index of relationship quality (Bridges & Grolnick, 1995) and therefore may also be related to children's emotional development. Securely attached children, as compared to insecurely attached children, may display more appropriate emotions and emotion regulation skills because their needs have been consistently met, allowing for adaptive emotional development (Cassidy, 1994).

Our goal in this study was to examine the mother-child system as a context for toddlers' emotional development, in particular, the development of adaptive emotion expressions and regulation strategies. Because of our interest in the mother-child system, we focused on toddlers' use of mother-focused regulation (looking toward, talking to, and reaching for the mother during emotion-eliciting tasks). The relation between emotion socialization and children's emotional development may be context specific and thus vary across different emotions (Eisenberg et al., 1998); therefore, we included situations designed to elicit positive emotion, fear (or wariness), and frustration.

Because children with supportive mothers (i.e., less control and more positive maternal behavior) and with higher attachment security are likely to be in relationships that support optimal emotional development, we expected that these children would display more socially accepted expressions of emotions (i.e., less negative emotion, particularly during frustration and fear episodes, and more positive emotions, particularly during positive episodes) and would be more likely to use their mothers as a source of regulation during emotion-eliciting tasks. We also hypothesized that children who use mother-focused regulation strategies would display more appropriate emotion expressions.

The sample in this study included toddlers at risk for behavior problems, which allowed us to address the associations of maternal behavior and attachment security to children's emotional

development in a sample that may be more likely to display problems with emotional development. Furthermore, although boys and girls have been found to display different types of aggressive behaviors (Crick & Rose, 2000), our sample is one of relatively few to include girls in addition to boys at risk for behavior problems. Differences in the socialization of emotions and emotion regulation may be related to the different trajectories for behavior problems in boys and girls (Conway, 2005). Therefore, we expected that the associations among emotion expressions, mother-focused regulation, and maternal behavior/attachment security may differ for boys and girls, and we examined these associations separately by child sex.

## METHOD

### *Participants*

Participants for this study were recruited as part of an ongoing longitudinal study (Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004). A total of 154 children, 2 years old, and their mothers were recruited through child daycare centers, local pediatric offices, and programs at the county health department. At the time of recruitment, parents completed the Child Behavior Checklist (Achenbach, 1992). More children with clinical or borderline clinical externalizing problems ( $n = 71$ ) than is usually found in the general population (Achenbach, 1992) were selected to participate; however, the socioeconomic status (SES) and ethnicity between the groups of children with and without externalizing problems reflected the demographics of the recruitment area (see Smith et al., 2004, for more details on participant recruitment). The selected sample was racially and economically diverse (65% Euro-American and 35% African American; mean Hollingshead [1975] score = 39.86) from primarily intact families (77%) and consisted of 78 male and 76 female children.

### *Procedures*

Four laboratory tasks measured mother–child interaction and included a teaching task (mothers taught their child how to complete a shape puzzle; 4 min); a free play session (mother–child dyads played with a Sesame Street toy farm set as they normally would at home; 4 min); a compliance task (mothers had their child clean up the toys from the free play session; 2 min); and a puzzle task (mothers let their child work on a series of three puzzles of increasing difficulty and helped if they thought their child needed help; 9 min).

We also observed toddlers in four tasks to measure their emotion expressions and regulation, which included positive puppet (the experimenter attempted to elicit positive affect by playing a game of peekaboo with a puppet; 2 min), novel toy fear (a second experimenter presented the child with a large, realistic, jumping spider and encouraged the child to touch it; 2 min), barrier frustration (the experimenter gave the child a clear container that the child could not open and asked the child to wait to eat the cookies inside until she came back into the room; 2 min), and high chair confinement (children were placed in a high chair with nothing to entertain themselves; 5 min). Mothers were seated near the children. We asked them not to initiate interactions but to respond to their children as they normally would.

Mothers completed the Attachment Behavior Q-Set (AQS; Version 3; Waters, 1987). The 90-item AQS assesses secure base and exploratory behavior in 1- to 5- year-old children. Mothers sorted the cards into nine equal piles on a continuum from “most like my child” to “least like my child.” AQS secure base behavior has been found to be significantly related to strange situation classifications (Seifer, Schiller, Sameroff, Resnick, & Riordan, 1996).

## *Measures*

***Emotion and regulation.*** Positive affect included the duration of time the child spent smiling and laughing. Negative affect included the duration of time during which the child displayed sadness, anger, tension, worry, and negative vocalizations of fussing and crying. Mother-focused regulation included the duration of time the child looked at the mother, talked to the mother, reached for her, and touched her. For more details on the emotion and regulation coding, please see Calkins and Dedmon (2000).

***Maternal statements.*** We coded frequencies of the content and goals of maternal statements from the mother–child interaction tasks. Maternal positive behavior included praising and guiding behavior such as requests and suggestions. Maternal controlling behavior included directives and bribes, negative statements, threats, and criticisms. We also coded child-oriented goal statements (mothers maintained or encouraged the children’s ongoing activity) and adult-oriented goal statements (mothers stopped or changed the direction and/or content of an ongoing activity). We combined the maternal measures across the four episodes. We then standardized and summed the measures to create two summary scores: maternal positive behavior (positive and child-centered behavior) and maternal controlling behavior (controlling and adult-centered behavior).

For both the emotion-eliciting and mother–child interaction tasks, two research assistants together coded 10% of the total sample on all tasks. Another 10% were coded separately and used to assess reliability. Interrater reliability correlations were .70 or higher on all categories. We used separate teams of coders for the mother–child interaction and emotion-eliciting episodes. Because the duration of the tasks could vary for individual children, the frequencies or duration of time for each behavior were divided by the length of the task for each individual child or mother–child dyad.

***Attachment security.*** We scored the AQS based on correlations between the mothers’ sorts and criterion sorts of security provided by Waters (1990; QSTAT II AQS computer scoring). Higher correlations indicated higher attachment security.

## RESULTS

Results are presented separately for boys and girls, and SES and race were controlled for in all analyses.

### *Relations of Maternal Behavior/Attachment Security to Child Emotion*

Maternal positive behavior was not associated with child negative emotion but was negatively associated with boys’ positive emotion during the high chair task (see Table 1). Maternal controlling behavior was not associated with child positive emotion but was positively associated with girls’ negative emotion during the high chair task. Attachment security was negatively associated with negative emotion for girls during the barrier and fear episodes and for boys during the high chair episode.

TABLE 1  
Correlations Examining Relations of Maternal Behavior in the Interaction  
Tasks and Attachment Security to Child Emotion and Emotion  
Regulation Controlling for Socioeconomic Status and Race

Task	Maternal Behavior				Attachment Security	
	Positive		Controlling		Girls	Boys
	Girls	Boys	Girls	Boys		
Child positive emotion						
Puppet	-.06	-.00	-.08	-.04	.08	.04
Fear	-.09	.07	-.05	-.06	.22*	-.04
Barrier	.06	-.06	-.07	.06	.01	.04
High chair	-.07	-.39***	-.11	-.09	-.12	-.03
Child negative emotion						
Puppet	-.12	.05	-.08	.09	.05	-.09
Fear	.18	.01	.10	.19	-.37***	-.13
Barrier	-.08	-.03	.18	-.06	-.25**	-.02
High chair	-.04	.12	.27**	.13	.04	-.24**
Mother-focused regulation						
Puppet	-.17	.13	-.04	-.03	-.12	-.01
Fear	.00	.09	-.01	-.01	-.12	.07
Barrier	.23**	.04	.12	-.19	-.19	.20
High chair	.23**	.26**	-.02	.14	.09	.11

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

#### *Relations of Maternal Behavior/Attachment Security to Child Mother-Focused Regulation*

Neither attachment security nor maternal controlling behavior was associated with mother-focused regulation. Maternal positive behavior was positively associated with mother-focused regulation during the high chair task for both boys and girls and during the barrier episode for girls.

#### *Relations Between Child Emotion and Child Mother-Focused Regulation*

We examined the relations between child emotions and mother-focused regulation separately within each of the four emotion-eliciting tasks (see Table 2). Positive emotion during both the positive and fear episodes was negatively associated with mother-focused regulation during those episodes. Negative emotion was positively related to mother-focused regulation for boys during the positive episode and for girls during the novel toy episode. Neither positive nor negative emotion was associated with mother-focused regulation in the frustration episodes.

TABLE 2  
Correlations Examining Relations of Child Emotion to Mother-Focused  
Emotion Regulation Controlling for Socioeconomic Status and Race

<i>Task</i>	<i>Child Emotion</i>			
	<i>Positive</i>		<i>Negative</i>	
	<i>Girls</i>	<i>Boys</i>	<i>Girls</i>	<i>Boys</i>
Mother-focused regulation				
Puppet	-.23***	-.23***	.18	.59***
Fear	-.20*	-.26**	.33***	.18
Barrier	.07	.13	-.09	-.20*
High chair	.09	-.12	-.01	.03

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

## DISCUSSION

In this study, we examined the mother–child system as a context for toddlers’ emotional development. The participants in the study were an at-risk community sample of toddlers because the sample was overselected for toddlers displaying problematic behavior, and the sample also included at-risk boys and girls. Therefore, we were able to explore the toddlers’ emotional development in a sample of both boys and girls who may be more likely to experience problems with emotion expressions and emotion regulation. Our findings provide evidence for supportive maternal behavior and attachment security enhancing toddlers’ emotional development, although the associations varied depending on the context of the emotion-eliciting episode and the sex of the child.

We expected that children with supportive mothers would display more adaptive emotion expressions, and we found that higher levels of attachment security were associated with less negative emotion for girls during both the barrier and fear episodes and for boys during the high chair episode. Toddlers with higher levels of attachment security may not need to express negative emotions to engage caregivers and are therefore less likely to rely on negative emotions and less likely to display them, even in emotionally challenging situations. Whereas attachment security may support the development of adaptive emotion expressions, maternal controlling behavior may undermine it. More maternal control was associated with more negative emotion for girls during the high chair episode. Children, in this case girls, with more controlling mothers may be reacting to the control with negative emotions and may be more likely, therefore, to show negative emotion during challenging, frustrating events. On the other hand, mothers may be using higher levels of control to effectively socialize girls who may be at risk for displaying high levels of negative emotions. Given that our sample included girls at risk for behavior problems, these girls may have been more likely to display negative emotions in response to frustration. Girls, however, are often socialized not to display negative affect, especially during frustrating situations (Conway, 2005), and the mothers may have been using more controlling behaviors to instill sex-typed emotional expressions in their daughters.

For boys, however, higher levels of maternal positive behavior were associated with lower levels of positive emotion during the high chair frustration episode. In this case, maternal positive

behavior did not seem to be supporting the boys' adaptive display of emotion because positive emotion expressions are typically viewed as adaptive. The context of the specific episode, however, must be considered when determining the adaptive nature of emotion expressions. Displaying low levels of positive affect during a frustrating situation may be highly adaptive; therefore, maternal positive behavior may have been associated with boys' adaptive emotion expressions in this episode. Boys, in particular, may be socialized by mothers not to display positive emotion during a challenging, frustrating event. The mothers may be encouraging boys' sex-typed emotional expressions, which may include decreased positive emotion when frustrated. An alternative explanation may be that boys, especially those at risk for behavior problems, may be less likely overall to show positive emotion. Mothers may have used more praise and guidance in the interactions tasks to engage and encourage positive affect from their sons during activities that the at-risk boys may have found challenging (e.g., cleaning up a set of toys or working puzzles for a relatively long period of time for toddlers), and this increased maternal positive behavior was associated with the boys' low positive affect during the frustration episode.

In general, the results on the relations of maternal behavior and attachment security to child emotion expressions support the idea that children learn different patterns of emotion expressions within the mother-child system (Eisenberg et al., 1998). These patterns of emotion expressions developed during toddlerhood will most likely influence emotion expressions at later developmental stages (see Benson, McWey, & Ross, this issue, for a discussion of how the emotional bonds developed in the parent-child attachment system support peer relations in adolescence). Supportive maternal parenting behaviors also appear to enhance toddlers' regulation skills; more maternal positive behavior was associated with more mother-focused regulation during the high chair episode for both boys and girls and during the barrier episode for girls. Relying on mother-focused regulation strategies when frustrated is likely to be an adaptive regulation strategy, especially at this age and in an unfamiliar laboratory situation. Positive maternal behaviors may allow children to feel more comfortable relying on their mothers during emotionally charged situations. When mothers model positive behavior, children are most likely exposed to adaptive regulation strategies, and positive maternal guidance may further encourage internalization of adaptive emotion regulation strategies at later developmental stages (Grolnick & Farkas, 2002).

Supportive maternal behaviors were associated with the toddlers' adaptive expressions of emotions and with their use of mother-focused regulation; however, another important question involves the effectiveness of mother-focused regulation. An effective regulation strategy typically is seen as a strategy that is associated with socially accepted expressions of emotion (i.e., if mother-focused regulation is effective, then toddlers who use this strategy should display adaptive emotion expressions). Our findings indicate that the toddlers' use of mother-focused regulation was related to their emotion expressions during the positive and fear episodes. Higher levels of negative affect displayed by boys during the puppet episode and by girls during the fear episode were associated with more mother-focused regulation during those tasks. Grolnick, Bridges, and Connell (1996) found that 2-year-olds were capable of using regulation strategies to control their levels of distress; however, the toddlers displayed the most adaptive regulation strategies when caregivers were present and perhaps encouraging active regulation of distress. The toddlers in this study may have turned to their mothers when displaying negative affect

because they may be used to their mothers playing an active role in helping them to deal with negative emotions. This may be particularly true in unfamiliar settings such as playing with a relatively unfamiliar person (with a puppet in the positive episode and with a toy spider in the fear episode). Additionally, less positive emotion during the positive and fear episodes was associated with more mother-focused regulation during these episodes. Toddlers who were wary of these unfamiliar situations may not have displayed positive emotions because they were feeling scared and may have turned to their mothers as a source of support. These findings highlight a need to consider both the context of the emotion and distinctions between indexes of negative emotion. Distinctions between sadness, anger, and fear may provide greater clarity in the relations between emotions and regulation (Cole et al., 2004).

Children's emotions, both positive and negative, during the frustration tasks were not associated with mother-focused regulation. The toddlers may not need to reduce negative affect during frustrating episodes because it may be adaptive in this context. Also, the toddlers may have been more familiar with the frustrating episodes because they may be more likely to encounter these episodes in their daily lives (e.g., having to sit in their car seats or wait to eat dinner). The toddlers may know what to expect in these situations and may not need to use their mothers as a source of regulation. Because frustrating episodes may be more common, toddlers may have more experience regulating emotions when frustrated, or they may rely on other regulation strategies because mothers may not always be present. Therefore, in our frustration tasks, toddlers may have relied on other regulation strategies that did not involve the mother. Buss and Goldsmith (1998) also found that regulation strategies were not correlated with anger intensities during frustration tasks but were correlated with fear intensities. Again, the context of the emotion-eliciting episode needs to be considered because particular regulation strategies may not be effective for all emotions. Mother-focused regulation may be more effective during novel situations (i.e., puppet and spider episodes) than during frustration episodes.

In summary, our findings lend modest support for maternal behaviors and attachment security supporting young children's emotion expressions and regulation; however, the correlational nature of the results does not allow for the direction of effect to be addressed. Maternal behaviors and attachment security may be supporting the children's emotional development, or children who are able to control their emotions may form relationships more easily and may be easier to socialize. Our measures of maternal behavior did not include maternal behaviors or reactions during the emotion-eliciting episodes; however, we were able to examine general styles of maternal interaction and the history of the relationship, as reflected in attachment security, to demonstrate how these factors support children's emotional development.

#### ACKNOWLEDGMENTS

This research was supported by a National Institute of Mental Health (NIMH) Behavioral Science Track Award for Rapid Transition MH 55625 awarded to Susan D. Calkins and by NIMH Grant MH 58144 awarded to Susan D. Calkins and Susan P. Keane.

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