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Maternal Socialization of Emotion Regulation: Promoting Social Engagement Among Inhibited Toddlers

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UNIVERSITY OF MIAMI

MATERNAL SOCIALIZATION OF EMOTION REGULATION:
PROMOTING SOCIAL ENGAGEMENT AMONG INHIBITED TODDLERS

By

Elizabeth Carmen Penela

A THESIS

Submitted to the Faculty
of the University of Miami
in partial fulfillment of the requirements for
the degree of Master of Science

Coral Gables, Florida

August 2009

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PROMOTING SOCIAL ENGAGEMENT AMONG INHIBITED TODDLERS

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Maternal Socialization of Emotion Regulation:
Promoting Social Engagement Among Inhibited Toddlers

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The ability to regulate emotions is thought to influence the development of positive peer relations in early childhood. By effectively regulating fear and anger in peer settings, social interactions tend to unfold in a smooth and successful manner, leading children to become socially competent over time. Fear regulation, however, is especially difficult for children who were highly reactive and frequently expressed negative affect as infants. These children, often referred to as having an inhibited temperament, are likely to become distressed by novel stimuli and show a high degree of vigilance and anxious behaviors as toddlers. After toddlerhood, research has shown that some of these children handle novel, social situations in a competent manner, whereas others continue along the pathway of inhibition and become socially reticent. Socially reticent children often engage in hovering behavior and stay on the outskirts of the peer group, which can have negative consequences for the development of positive peer relations.

One factor that influences inhibited toddlers to follow one pathway versus another seems to be whether they have learned to effectively regulate emotions. The acquisition of emotion regulation strategies is a complex process, but parents usually have the most proximal influence during early childhood. Therefore, in order to learn more about

promoting socially competent behavior, it is important to understand how parents are socializing emotion regulation in toddlerhood. Using data from a larger longitudinal study, the current study examined how the socialization of emotion regulation at age three influenced social engagement at age four among behaviorally inhibited toddlers. It was hypothesized that sensitive maternal socialization of emotion regulation strategies would predict higher levels of engagement in future peer social interactions.

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CHAPTER 1: INTRODUCTION

Maternal Socialization of Emotion Regulation:

Promoting Social Engagement Among Inhibited Toddlers

The ability to interact with peers in a socially competent manner is essential for the healthy social and emotional development of young children. Researchers have found that as early as preschool, children display a wide variety of stable peer interactions ranging from prosocial to agonistic encounters (Asher & Coie, 1990). Social competence with peers in early childhood is predictive of numerous positive outcomes including gains in school performance and more prosocial behavior and complex play in middle childhood (Ladd, 1990; Howes & Phillipsen, 1998). Friendships during early childhood provide an environment where children can learn and practice important social skills such as perspective-taking and sympathy (Hodges, Boivin, Vitaro, & Bukowski, 1999). Within the context of friendships, children can also exchange the emotional and cognitive resources needed to engage in effective coping and support processes.

The body of literature demonstrating links between successful emotion regulation and social competence is extensive. For example, one study found that distress in response to a frustrating situation was inversely related to cooperative social play and predictive of problematic types of social behavior among 24-month-old children (Calkins, Gill, Johnson, & Smith, 1999). Findings of another study with school-age children showed that maternal and teacher reported emotion regulation in stressful situations predicted observed social skills (Eisenberg, Fabes, Bernzweig, Karbon, Poulin, & Hanish, 1993). Specifically, the use of avoidant coping, as opposed to constructive coping, was related to lower levels of social functioning. Interestingly, however, children

with maladaptive coping styles also had a tendency toward experiencing high emotional intensity, suggesting that one reason why some children might have trouble regulating negative emotions is because they experience them more intensely. This finding is characteristic of other study outcomes in that it illustrates the complex association between emotion regulation and social competence—a multitude of other factors such as temperament, family context, and attention and cognitive abilities must also be considered when examining this relationship.

Temperamental differences have been widely studied, and although the literature lacks a consensus on a precise definition of temperament, a common thread is the link between temperament and the manner in which one expresses and regulates emotion. Rothbart (1989) defines temperament as constitutionally based individual differences in reactivity and the ability to regulate emotional responses. Many researchers have proposed that the beginnings of socially withdrawn behavior can be traced to temperamental differences, but empirical evidence supports this assertion to varying degrees (for a review, see Rothbart & Bates, 2006). The focus of this study is on how family context, specifically maternal socialization of emotion regulation, affects the well-documented association between an inhibited temperamental style and future social engagement, via the effects on children's emotion regulation skills.

Emotion Regulation and the Development of Social Competence

In recent years, the topic of emotion regulation has captured the attention of many researchers in the field of psychology. Particularly in the area of child development, emotion regulation has become a widely studied construct because of its influence on important psychological processes such as the ability to problem solve, focus attention,

and perhaps most importantly, the ability to interact with others in a socially competent manner (Cole, Martin & Dennis, 2004). Among the most highly cited and comprehensive definitions of emotion regulation is one proposed by Thompson (1994, p. 27), in which he defined it as, “the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one’s goals.”

Overview

One group of children especially prone to experiencing difficulties with emotion regulation and therefore also at risk in terms of healthy social development, are those who as infants were highly reactive and frequently expressed negative affect in response to unfamiliarity. A developmental pathway model based on empirical work by Fox, Schmidt, Calkins, Rubin, and Coplan (1996) shows that these infants are likely to display behavioral inhibition in the toddler years. Toddlers with an inhibited temperament are distressed by novel stimuli and tend to show a high degree of vigilance and fear reactivity, withdrawal and anxious behaviors, as well as proximity-seeking toward known caregivers in novel situations. Several studies examining the physiology underlying inhibition reveal associations with low heart period, high baseline cortisol levels, and right frontal EEG asymmetry (for a review, see Fox, Henderson, Marshall, Nichols, & Ghera, 2005). Based on these behavioral and physiological observations, it seems that a hypersensitive fear system is at the core of inhibition.

Interestingly, this pathway model shows that at preschool age, only a subgroup of these behaviorally inhibited toddlers appear socially reticent, whereas the remainder seem to handle novel, social situations well. This model proposes that the main distinction

between these two groups lies in their ability to regulate emotion. Children with poor emotion regulation skills exhibit socially wary behavior and expressions of anxiety when presented with novel social situations, whereas those who can effectively regulate their emotions do not appear reticent or withdrawn in these same situations (Fox et al., 1996). Therefore, for inhibited toddlers, the period of time from toddlerhood through preschool age seems to be an important one in which learning to effectively regulate emotions can make the difference between success and failure in future social interactions. Although the presence of the aforementioned physiological factors can make it especially difficult for children with an inhibited temperament to cope with novel situations, powerful environmental factors can also influence the development of emotion regulation. The primary aim of this study was to explore how maternal socialization of emotion regulation during the toddler years can promote social engagement among behaviorally inhibited toddlers.

Inhibition and Related Constructs

Fox and colleagues (1996) referred to the subgroup of toddlers who are distressed by novel situations as behaviorally inhibited, but several other related terms have often been used interchangeably in the literature when speaking of shy children. To avoid confusion, it is important to discuss this issue of semantics and to disentangle the meanings of these related constructs. First, inhibition refers to the disposition to be wary and fearful in the presence of novel situations, whereas the term shyness is reserved specifically for an inhibited response pattern to novel, *social* situations. Inhibition can behaviorally manifest itself through signs of distress, anxiety, or disorganization (Burgess, Rubin, Cheah, & Nelson, 2005). Social reticence reflects an approach-

avoidance conflict where there is desire to join the peer group, but anxiety about doing so. Socially reticent children often engage in hovering and on-looking behaviors and remain on the outskirts of the peer group (Coplan, Rubin, Fox, Calkins, & Stewart, 1994).

Social withdrawal is another behavioral term often misconstrued, but refers to the act of being alone and not interacting with others. When isolating oneself from the group, the term social withdrawal is used, whereas the term social isolation denotes solitude due to rejection by the peer group (Burgess et al., 2005). Lastly, the temperamental quality of fearfulness is the tendency to express fear in response to novel situations. In a classic study conducted by Kagan and Moss (1962), temperamental fearfulness maintained the highest degree of stability into adolescence compared to other behavioral tendencies. In this study, the term “behaviorally inhibited” will be used to refer to children who at 24 months demonstrated a high degree of inhibition in response to novel stimuli during a lab based inhibition assessment.

Effective Emotion Regulation

According to the aforementioned developmental model, emotion regulation abilities are critical to the development of social competence, especially among behaviorally inhibited children. To better understand how emotion regulation fosters the development of social skills, it is necessary to understand the meaning of effective emotion regulation. Cole, Michel, and Teti (1994) emphasized that effective emotion regulation involves the ability to respond in flexible and socially appropriate ways to ongoing experiences in the environment. Buss and Goldsmith (1998) examined how infants responded to fear and anger-eliciting situations and also concluded that a key feature of adaptive emotion regulation was the flexibility in children’s responses

depending on changes in situational demands. In summary, the ability to be attuned to situational demands and respond accordingly is essential to successfully regulating emotion.

Consistent with a functionalist framework of emotion, Thompson and Meyer (2007) proposed that strategy effectiveness should be evaluated based on the goals of the individual experiencing an emotion in a given situation. Therefore, the effectiveness of an emotion regulation strategy is highly dependent on the context in which it takes place. Temperamentally fearful toddlers, for instance, may withdraw from a social situation with peers and cling to their mother in order to accomplish the goal of avoiding the experience of negative affect that might occur if they tried to interact with peers. While this strategy seems adaptive in the short-term, repeated use of the strategy could lead to negative effects on long-term social development. In the current study, we were interested in understanding how mothers effectively socialize emotion regulation strategies that will serve the long-term goal of promoting social engagement.

Development of Emotion Regulation Strategies

Kopp (1989) suggests that emotion regulation involves an action or behavior used to change arousal levels. As individuals experience cognitive, motor and socio-emotional development throughout the lifespan, they add different strategies to their repertoire of ways of dealing with emotions. Highly distressed newborns, for instance, exhibit regulatory behaviors such as non-nutritive sucking, gaze aversion, and eye closing (Kopp, 1989). In distressing situations, young infants may also engage in self-soothing behaviors, such as thumb-sucking or repetitive manipulation of their clothing or body. At four months of age, the ability to shift attention emerges—a critical component in the

development of emotion regulation that allows infants to begin using reorienting of attention as a way of regulating emotion (Johnson, Posner, & Rothbart, 1991).

During the first six months of life, an infant's experience with emotion regulation relies heavily on the support of the primary caregiver. Crockenberg and Leerkes (2004) identified maternal responsiveness during distressing events as an important feature of emotion regulation in infancy; they found that among infants who looked away from a novel stimuli, those whose mothers contingently looked away experienced less distress than infants whose mothers did not respond contingently. Between 12 and 18 months of age, infants make significant gains in motor development, allowing them to more actively explore objects in the environment and use self-initiated distraction in emotionally arousing situations. Children also start to use social referencing more frequently as a guide for the appropriateness of emotional expressions, especially in ambiguous social situations (Kopp, 1989).

At 18- and 24-months of age, help-seeking and problem solving become common strategies used in frustrating and fear-eliciting situations (Diener & Mangelsdorf, 1999). It is around this time that children develop a sense of agency and become increasingly aware of the causes of distress; this awareness, coupled with their ability to behave in ways that can alter the situation, may facilitate more mature forms of regulation. Children gradually begin to use more planful strategies as they enter toddlerhood, which require cognitive abilities such as mental representation, outcome expectancy and evaluation, and the ability to attend to important cues in the environment (Kopp, 1989). In early toddlerhood, children also engage in more active forms of attentional control in which they initiate self-distraction. For example, in distressing situations, they can

redirect their attention to other objects or activities (Grolnick, Bridges, & Connell, 1996). Studies have shown that as in infancy, maternal involvement in emotion-eliciting situations continues to play an important role in toddler's ability to use emotion regulation strategies (Calkins & Johnson, 1998; Diener & Mangelsdorf, 1999; Grolnick et al., 1996).

Among three and four-year-old children, self-soothing behaviors are rarely used, whereas the use of distraction and cognitive reappraisal becomes much more common (Stansbury & Sigman, 2000). Interestingly, this study found that three-year olds use instrumental strategies more often than their four-year-old counterparts (e.g., attempting to retrieve an object that is temporarily unavailable). This difference seems to be due to 4 year-olds being more effective in their use of instrumental strategies. Three- and four-year-old children also begin to use cognitive reappraisals; the function of reappraisals is to rethink or reinterpret the situation that elicited their negative affect in the first place (e.g., thinking of a scary dinosaur as just a toy). Stansbury and Sigman (2000) found that four-year-olds did not use significantly more cognitive strategies than three-year-olds; they noted that the parent often initiated the reappraisal and then the child continued.

One study found that six-year-olds most often reported strategies that entailed behavioral or situational changes when asked how they would regulate negative feelings, but a gradual shift toward the use of cognitive strategies occurred among older children (Harris, Olthof, & Meerum Terwogt, 1981). Although five- and six-year-old children can generate cognitive regulation strategies, the strategies usually follow from a basic understanding of the connection between cognition and emotion (e.g., thinking of something pleasant will help me feel pleasant). Later in middle childhood, however,

children gain the ability to engage in self-initiated cognitive reappraisals, which entails taking a new perspective on the same scenario (Stegge & Meerum Terwogt, 2007).

Gaining this cognitive ability is a milestone in the development of emotion regulation because research with adult populations shows that using cognitive appraisals in anger and anxiety-eliciting situations leads to reduced negative emotion (Gross, 1998).

In the current study, maternal socialization of emotion regulation was observed during a fear-eliciting situation task at the age of three. This age is particularly important in terms of the development of emotion regulation because it is at this time that children gain the ability to reference an absent parent, allowing them to access representations of past parent interactions and use them to engage in regulatory behaviors when alone (Emde, Biringen, Clyman, & Oppenheim, 1991). Thus, the influence of the internalization of past emotional experiences with a parent (at age 3) on social engagement with an unfamiliar peer (at age 4) was examined.

Socialization of Emotion Regulation

The process by which children learn to effectively use the aforementioned emotion regulation strategies in everyday life is gradual and complex; it is influenced by social factors such as the family emotional climate, parental rearing practices, and cultural values that define socially appropriate ways to regulate emotion (Thompson & Goodvin, 2007). Through their social environment, children become aware of cultural and gender expectations for emotion regulation, learn to interpret their feelings, and develop self-confidence about their ability to manage emotions (Thompson & Meyer, 2007). Because parents seem to have the most proximal influence on how children learn to regulate emotions during early childhood, it is imperative to understand the processes

involved in the parental socialization of emotion regulation. Furthermore, it is especially important to understand how parents of behaviorally inhibited toddlers are socializing ways of regulating emotion because these children are at heightened risk for experiencing difficulties with emotion regulation.

Negative Parenting Behaviors

Past research has focused mostly on parenting behaviors in frustration-eliciting situations that lead to maladaptive outcomes in children's emotion regulation skills. For example, among a sample of four- to six-year-old children, Eisenberg and Fabes (1994) found that children whose mothers responded in a punitive way to expressed emotion were more likely to make attempts to escape when presented with an anger-eliciting situation rather than vent their negative emotion. Another study with six-year-old children also found that parental dismissing responses during structured and unstructured family interactions were associated with increased displays of child anger in parent-child interactions (Snyder, Stoolmiller & Wilson, 2003). Findings also showed that children's tendency to express anger was related to parent's use of an angry and contemptuous tone.

Among behaviorally inhibited children, a pattern of parenting often elicited is oversolicitousness, in which parents attempt to shield their child in an overly affectionate manner from situations they think might elicit anxiety (Rubin, Stewart, & Chen, 1995). Oversolicitous parenting is characterized by intrusions on children's ongoing activities in order to avoid potentially upsetting experiences. Parents tend to take control in these potentially fearful situations at times when it is not appropriate or sensitive to do so (Rubin, Hastings, Stewart, Henderson, & Chen, 1997). Rubin, Burgess, and Hastings (2002) demonstrated that this type of parenting can harm social development among

socially withdrawn children. They identified maternal oversolicitousness as a moderator in the relationship between peer inhibition and social reticence. Their findings showed that children who were inhibited at age two were likely to show social reticence at age four only if their mothers showed oversolicitous or derisive behaviors during free play and clean-up tasks at age two. These findings suggest that in trying to protect their child from experiencing distress, warm and highly involved mothers may prevent children from practicing important emotion regulation skills, thereby limiting healthy social development.

Although parents engage in oversolicitous behaviors to prevent their child from experiencing distress, these findings show that parents may inadvertently undermine the development of emotion regulation by preventing the development of necessary coping techniques gained through practicing behavioral self-regulation. Maternal oversolicitousness can be especially debilitating for behaviorally inhibited children who need to practice regulating fearfulness more than the average child in order to gain a sense of social competence. With these children, it is particularly important to *sensitively* provide opportunities to practice emotion regulation rather than to use derision. The findings of Rubin and colleagues (2002) suggest that the key to optimal parenting for behaviorally inhibited toddlers is in the provision of gentle and sensitive encouragement to aid in the development of effective emotion regulation strategies and thereby decrease their tendency to withdraw from social situations. A thorough description of this kind of positive parenting and how children respond to it, however, is notably missing in the emotion regulation literature.

Positive Parenting Behaviors

The aim of the current study was to specify parenting behaviors that *positively* influence the development of children's emotion regulation abilities and thereby their future social engagement. The existing literature seems to focus more on what parents should not do than what they ought to do to promote the development of healthy emotion regulation strategies; this study intended to expand this body of literature by examining particular parenting behaviors that help children effectively cope with fear experienced in a novel situation. Alluding to the developmental model presented earlier, this study explored the role that maternal socialization of emotion regulation plays in the pathway leading behaviorally inhibited toddlers toward social engagement.

Parental reactions to negative emotion. Calkins and Johnson (1998) found that 18-month-old toddlers whose mothers used positive guidance techniques in frustration-eliciting situations were more likely to use distraction and constructive coping to cope with their frustration. Maternal positive guidance was composed of frequency of positive verbal expressions (e.g., praise, affection), frequency of physical affection, and frequency of verbal expressions of support and guidance. This construct seems somewhat broad in that it encompasses a variety of maternal behaviors, and therefore it is unclear which of these behaviors is responsible for driving the effect of children's later use of effective emotion regulation strategies. Furthermore, these toddlers were responding to frustration tasks, but similar empirical work exploring the effects of maternal behaviors on children's emotion regulation strategies in fear-eliciting situations is much more limited.

One study that used both fear and frustration-inducing situations found that when mothers were involved in the interaction, 18- and 24-month-old toddlers expressed more

positive than negative affect compared to when mothers were not involved in the interaction (Diener & Mangelsdorf, 1999). The kinds of maternal behaviors seen during the maternal involvement episodes, however, were not specified; the study consisted of two conditions: (1) Mother Constrained periods, during which mothers were asked not to initiate interaction with their child, and (2) Mother Involved periods, during which mothers were instructed to help their child cope with the situation in any way they felt was appropriate. Although this study shows that maternal involvement helps children engage in regulatory behaviors, it falls short of describing the kinds of parenting behaviors that are helpful.

Another study that reported on positive parenting behaviors in emotion-eliciting events used a sample of third- to sixth-grade children and found that parental problem-focused reactions to children's expressed emotion was related to children's constructive coping (Eisenberg, Fabes, & Murphy, 1996). Parents' reactions were assessed using a validated parent-report measure (Coping with Children's Negative Emotions Scale; Fabes, Eisenberg & Bernzweig, 1990), in which a problem-focused reaction was defined as the degree to which parents helped their child solve or cope with the problem that caused them to feel distressed (e.g., "Help my child figure out how to get the bike fixed" when the child breaks his her or her bike). Children's coping styles were measured using the Children's Coping Strategies Checklist (Ayers, Sandler, West, & Roosa, 1990). Mothers and teachers rated how often children generally engaged in 12 kinds of coping behaviors when presented with a problem. Because these measures were questionnaires administered at one timepoint, these findings are correlational in nature and do not provide a clear picture of how problem-focused reactions are executed or how they

influence the development of social competence. The current study addressed these limitations through the use of observational measures at multiple time points.

Maternal discourse. Mother-child discourse is another aspect of parenting behavior that becomes increasingly important in early childhood as children make huge leaps in language development and become interested in understanding their own feelings (Thompson & Goodvin, 2007). A recent study using a sample of 30-month-old children investigated the contribution of mother-child dyad conversations to the growth of emotion understanding (Laible, 2004). Mothers were instructed to talk to their child about a recent time in which their child had misbehaved and another time when they were well-behaved. Findings showed that both the content (e.g., discussion of emotion) and style (e.g., clarity and elaboration) of maternal discourse predicted higher levels of children's emotion understanding six months later. These conversations may also play a role in how children learn about different emotion regulation strategies. The present study examined maternal discourse, but in the context of a fear-eliciting situation. It will be interesting to explore how maternal discourse differs in a context where the child is experiencing distress, as opposed to talking about a past distressing event. Although it may be more difficult to engage children in conversations in the former context because of the heightened level of emotional arousal, these conversations may also be more powerful in predicting social-emotional outcomes.

Summary and Hypotheses

The aim of the current study was to better understand positive and negative parenting behaviors that contribute to the healthy development of emotion regulation that will lead to social engagement. Social engagement is an important precursor to social

competence, as one learns to become socially competent through positive experiences in social interactions. It is especially important to understand effective ways of socializing fear regulation in behaviorally inhibited toddlers because they tend to be very sensitive and physiologically reactive when confronted with novel situations. By providing the tools needed to effectively regulate fear, they will likely learn to minimize distress and their self-perceptions of social competence may gradually increase. Through gains in this kind of self-confidence, behaviorally inhibited toddlers may learn to interact in socially competent ways with peers and thereby develop positive peer relations.

It was hypothesized that maternal socialization of emotion regulation strategies during a fear-eliciting situation at age three would significantly impact social engagement at age four. Specifically, sensitive maternal socialization of emotion regulation strategies in the fear-eliciting situation was expected to predict higher levels of social engagement. Furthermore, an interaction between behavioral inhibition and sensitive maternal socialization of emotion regulation strategies was predicted, such that this effect would be stronger among behaviorally inhibited toddlers.

Based on the scarce literature in this area, the specific positive parenting behaviors hypothesized to predict children's social engagement included (1) acknowledgement of their child's feelings during the fear-eliciting situation, (2) demonstration, explanation, and labeling of the novel stimulus, (3) asking affective questions such as, "How does the robot make you feel?" and (4) attempts to redirect attention when the child seems distressed. It was hypothesized that children whose mothers engaged in these positive parenting behaviors would display more social engagement at age four as evidenced by (1) higher levels of social interest, (2) lower

levels of unfocused behavior, (3) higher levels of positive affect, (4) lower levels of wariness, and (5) lower levels of negative affect. These gains in social engagement reaped from positive parenting were expected to be particularly pronounced among children who were relatively high in behavioral inhibition as toddlers.

CHAPTER 2: METHOD

Participants

The current study was conducted within a larger longitudinal study of temperament and social development. Of the 238 children followed longitudinally, 181 children and their mothers had complete data on the measures of interest in this study. Three participants were dropped from analyses because their mothers spoke in a foreign language during the home visit and therefore maternal behaviors could not be coded. Two additional participants were dropped from analyses due to poor audio recording quality during the home visit. Thus, the final sample included 176 children (84 boys, 92 girls; M age at onset of study = 26.18 months, $SD = 2.54$ months). Children were primarily Caucasian (68% Caucasian, 13% African American, 3% Hispanic, <1% Asian American, and 15% of mixed race). Most mothers (97%) who participated in the study had attained at least a high school degree (17% high school graduates, 45% college graduates, 35% graduate school graduates). Attrition analyses showed that when comparing children with complete data on all variables of interest to those with incomplete data, the groups did not differ significantly on 24-month behavioral inhibition, $t(236) = .459, p = .71$.

Families were recruited for participation in the study through the use of commercially available mailing lists, which targeted households with very young infants. A letter about the project was sent to families and if interested in participating, they were asked to complete a form and return it to the laboratory. Mothers who returned the form were contacted by telephone and their child was screened for pediatric and neurological problems. Interested mothers of developmentally healthy infants were scheduled for a 4-month laboratory visit at the University of Maryland.

A 4-month screening procedure, identical to those used in previous studies, was performed to ensure a wide range of variability in reactions to novelty in the sample (for further details, see Calkins, Fox, & Marshall, 1996; Fox, Henderson, Rubin, Calkins, & Schmidt, 2001). The variability in reactions allows the temperament data in this study to be used as a continuous variable at later ages, rather than discrete group variables, thereby increasing statistical power in data analyses.

Measures

Observed behavioral inhibition. The measure of behavioral inhibition at 24 months for this study was based on laboratory observations identical to those used in a previous study (see Calkins et al., 1996). The unfamiliar stimuli presented to the children included an adult stranger, a robot, and an inflatable tunnel. The adult stranger sat quietly for one minute, played with a truck for one minute, and then (if the child had not yet approached) invited the child to join her for play for one minute. The 18-inch tall battery-operated robot made loud noises, emitted smoke, had flashing lights, and moved around the room. Finally, an inflatable tunnel was presented to the child and a Research Assistant encouraged the child to crawl through it. For each task, children received a score for: (1) latency to vocalize, (2) latency to approach/touch the stimuli, and (3) proportion of time spent in proximity to mother. A composite measure of inhibition was then computed by summing standardized scores for each task. A research team at the University of Maryland previously completed this observational behavioral coding and these codes will be used in the current study. Cronbach's alpha for the overall composite was .65. Observers overlapped on 20% of cases and the average Intraclass Correlation

(ICC) across the measures used in the composite was .87 (ranging from .72 to .98).

Behavior inhibition was unrelated to age at the onset of the study, $r(176) = -.05, p = .50$.

Child affect. At the 36-month home visit, children's expressed affect during the Unpredictable Toy task was coded using an observational coding scheme. The home visit began with a 7-minute free play segment, followed by a series of tasks that the child and mother completed together. The Unpredictable Toy task was toward the middle of the visit and was intended to elicit fear. During this three-minute task, the experimenter brought into the room a mechanical toy dinosaur that made unpredictable noises and movements, turned it on, and placed it on the floor in front of the mother and child. The Research Assistant told the mother and child that the toy was touch and sound-activated and instructed them to play with it for a few minutes.

Child affect was coded during each 30-second epoch, for a total of six epochs per child. During each epoch, coders rated the intensity of children's positive, frustrated, and sad/fearful affect using a 6-point Likert scale. It is important to note that a set of forbidden toys were in close proximity throughout the Unpredictable Toy task; thus, many children expressed frustration when their mothers denied access to these toys, but this was not in relation to the Unpredictable Toy. For a complete description of this coding scheme, please refer to Appendix A. Thirty percent of cases (N=52) were coded by all three raters to establish reliability. ICCs for positive affect, frustration, and sad/fearful affect were .79, .72, and .72, respectively. The variables used in analyses were the proportion scores for each affect type. These scores indicated how often (e.g., 2 out of 6 epochs) the child expressed at least a low level (i.e., 1 on the 0 through 5 Likert scale) of positive, frustration, or sad/fearful affect.

Maternal affect. A separate coding team at the University of Miami coded maternal affect during each 30-second epoch of the Unpredictable Toy task. Only positive affect and frustration were coded because the expression of fear did not occur. Thus, for each of the six 30-second epochs, coders rated the intensity of the mother's positive affect and frustration using a 4-point Likert scale. Having separate coders for mother and child affect ensured that a coder's decision to assign a particular code to either the mother or child was only minimally influenced by the behavior of the other person in the dyad, thereby minimizing coder bias. Inter-rater reliability (ICCs) for positive affect and frustration were .82 and .90, respectively. The variables used in analyses were the proportion scores for each affect type. These scores indicated how often (e.g., 4 out of 6 epochs) mothers expressed at least a low level (i.e., 1 on the 0 through 3 Likert scale) of positive affect or frustration.

Maternal socialization of emotion regulation. Coders who coded maternal affect also recorded the presence or absence of nine maternal behaviors, such that multiple maternal behaviors could be recorded in any one of the six epochs. These codes were created based on literature regarding common maternal responses to toddlers' expressions of negative emotion (Wiggins, 2005; A. Garcia, personal communication, October 9th, 2007). By coding child affect and maternal behaviors in each 30-second epoch, it is possible to determine whether a maternal behavior occurred in the same epoch as the child's expression of positive or negative affect.

The following nine maternal behaviors were scored as either present or absent during each of the six 30-second epochs: (1) *comfort-verbal*: making a statement or complimenting the child to help him/her feel better (e.g., "You're being a good girl."); (2)

comfort-physical: offering physical affection; (3) *verbal instruction*: suggesting a cognitive or behavioral strategy for alleviating negative affect; (4) *narrating*: talking to child about what is going on throughout the task; (5) *task directing- verbal*: providing directions and/or suggestions for what to do in the task (e.g., I think you should tickle the dinosaur; (6) *task-directing- physical*: providing directions in a physical manner (e.g., moving the dinosaur closer to the child); (7) *quiz-task*: asking questions about the task at hand; (8) *quiz/label-feeling*: asking questions or making statements about how the child feels during the task; and (9) *dismissive*: ignoring the child's negative affect, making a statement indicating that the child isn't justified in the expression of their negative affect, or making derisive/teasing comments. A code of *incoherent* was given if the verbalization was not heard clearly. For a more detailed description of the coding of maternal affect and maternal behaviors, please refer to the coding scheme in Appendix B.

For each child, coders summed the frequency count for each maternal behavior, such that there was a total of how often each child experienced each behavior. Proportion scores, indicating how often (e.g., 3 out of 6 epochs) the mother performed each behavior, were calculated and these scores were used as variables in analyses. Additionally, the proportion scores were entered into a Principal Components Analysis (PCA) to examine the different maternal styles that emerged from the data. Factor scores were calculated based on the results of the PCA and these scores were also used as dependent variables. Observers overlapped on 25% of cases (N = 45) and the average inter-rater reliability (ICCs) across all maternal behaviors was .78 (range: .64 - .90). The lowest intraclass correlation was for dismissive (.64), which occurred in low frequency; otherwise, all ICCs were above .70.

Social Engagement. At 48-months of age, social engagement was measured using an observational task. Using a 7-point Lickert scale, children were coded on seven variables during a 10-minute free play session with an unfamiliar, same-sex peer. These behaviors included (1) social interest, (2) wariness, (3) unfocused, (4) activity level, (5) positive affect, (6) negative affect, and (7) aggression. Lower scores on each variable indicated lower frequencies and intensity of the behavior, while higher scores indicated more frequent and intense displays of the behavior. This dyad task was the preferred segment in which to code for children's play behaviors because it was the first time the children met. Therefore, the task represented a novel, social situation, which may be especially difficult for children with an inhibited temperament as it could likely elicit emotions of fear and/or anxiety. These emotions may interfere with a child's ability to engage in play with his or her peer. For a detailed description of the coding of the free play variables, please refer to the coding scheme in Appendix C.

Each child received one score for each of the seven variables during each 2-minute time segment. Coders also assigned a global score for each variable based on the best representation of the scores given across the five two-minute segments. For the current study, global scores on the five dimensions related to social engagement were used as the dependent variables. Inter-rater reliability (ICCs) between the coders was .87 for social interest, .83 for wariness, .76 for unfocused, .83 for positive affect, and .81 for negative affect.

Procedure

The larger longitudinal study was designed to study temperament and social development. Several home and university laboratory visits were conducted beginning at

the age of 4-months up through 7-years of age. The current study used behavioral observational data from three assessments: the 24-month lab visit, the 36-month home visit with mother present, and the 48-month lab visit with a same-sex peer present.

The project coordinator scheduled the 24-, 36-, and 48- month visits within eight weeks of the target ages. The average length of time between the 24- and 36-month visits was 10.07 months, and the average length of time between the 36- and 48-month visits was 13.15 months. The 24- and 48- month lab visits took place in an observation room equipped with a one-way mirror on the full length of one wall (for videotaping). The measures of interest conducted in this room for the current study were the behavioral inhibition observational assessment at 24-months and the free play segment at 48-months. The 36-month home visit took place in an open area in the family's home. The experimenter set out a blanket on the floor, brought out the free play toys, and invited the child to come play. At the beginning of each task, the experimenter provided the mother with instructions who then provided directives to her child. The task from the home visit used in the current study was the previously described "Unpredictable Toy" segment. All visits were video-taped and administered by trained research assistants who followed a standardized protocol.

The University of Maryland research team previously coded the 24-month behavioral inhibition data and these codes were used in the current study. The 36-month home visit and 48-month lab visit videotapes were mailed to the University of Miami, where separate coding teams used the previously described coding schemes to code the mother-child and peer interactions. Observational coders were trained and inter-rater reliability was established before coders were permitted to code independently. Two sets

of coders viewed the 36-month home visit video tapes; the first set coded child affect, and the second coded maternal affect and maternal behaviors related to the socialization of emotion regulation. Different coding teams were used in order to prevent the introduction of bias. Another set of coders coded the 48-month lab visits to assess social engagement with an unfamiliar peer. Using separate sets of coders at each time point ensured that a coder's memory of a child's behavior at a previous timepoint did not influence their code at another timepoint. In other words, it ensured that only the child's behavior at that specific timepoint influenced the coder's decision as to which code to assign.

CHAPTER 3: RESULTS

Data Reduction and Descriptive Statistics

Behavioral inhibition

Scores on the observational measure of behavior inhibition ranged from -1.04 to 1.89 ($M = .00$, $SD = .51$), with higher scores indicating more behavioral inhibition. The distribution of behavior inhibition was slightly positively skewed (Skewness = .74, $SE = .18$). Because the skewness was under the maximum acceptable value of three, no transformations were conducted. Gender differences on behavior inhibition were not significant, $t(174) = -1.53$, $p = .13$.

Expressed affect during 36-month fear-eliciting task.

Child affect. Results of a repeated measures ANOVA showed that children expressed significantly different amounts of each affect during the fear-eliciting task, $F(2, 350) = 190.71$, $p < .01$. Follow up paired-samples t-tests indicated that children expressed positive affect in a significantly greater proportion of epochs than frustration, $t(175) = 19.45$, $p < .01$, and in a significantly greater proportion of epochs than fear, $t(175) = 15.47$, $p < .01$. No significant difference between the frequency of children's expressed fear and frustration was identified, $t(175) = .63$, $p = .53$. Table 1 provides descriptive statistics about proportion scores for each of the three affect types. Overall, these statistics show that about half of the children (53%) showed at least low levels of positive affect in all six epochs. Additionally, over half of the children (58%) showed fearfulness in at least one epoch. There were no significant gender differences in the mean levels of any type of expressed affect (positive, frustration, sad/fearful).

Maternal affect. Results of a repeated measures ANOVA showed that mothers expressed positive affect significantly more often than frustration, $F(1, 175) = 4507.06$, $p < .01$. Table 2 provides descriptive statistics for the proportion scores of how often mothers expressed different levels of positive and negative affect. Together, these descriptive statistics illustrate that most mothers showed at least a low level of positive affect (at least a 1 on 0 to 3 Likert scale) throughout all six epochs; however, the few times mothers did express negative affect, it was usually of low-intensity and for a short period of time.

Socialization of emotion regulation

Maternal behaviors. Proportion scores for each of the maternal behaviors were checked for normality and no transformations were deemed necessary. Overall, the most frequent maternal behaviors during the fear-eliciting task were narration (.84), quiz-task (.51), and task-directing verbal (.42). The least frequent behaviors were comfort-verbal (.08), quiz-feeling (.10), and dismissive (.12). The proportion scores of maternal behaviors in the presence of specific child affect types (positive, frustration, sad/fearful) were also examined. In other words, comparisons were made to determine how often mothers performed different behaviors (e.g., narrating) in the same epoch as the child's expression of sad, frustrated, and positive affect.

Descriptive statistics show that several behaviors were seen most often in the context of children's sad/fearful affect. For example, verbal instruction and dismissive behaviors occurred more often in the context of children's expressed fear/sadness compared to positive affect. Furthermore, task-directing physical and verbal instruction occurred more often in the context of children's expressed frustration than positive affect.

Overall, mothers performed maternal behaviors in a greater proportion of epochs when children expressed negative affect as opposed to positive affect. Details of the results of these paired samples t-tests are shown in Table 3.

Data reduction. In order to reduce the number of maternal behavior variables, the proportion scores for the nine coded behaviors were entered into a Principal Components Analysis. Standard factor-analytic procedures were followed, first entering the variables into a PCA using a varimax rotation, then specifying eigenvalues ≥ 1 (Kaiser's criteria), and using the scree plot and percent variance accounted for to determine the number of factors. The results justified a three-factor solution, which accounted for 54.36% of the variance (eigenvalue = 1.12). Scores on the three parenting factors were calculated by summing and averaging the maternal behaviors with the highest loadings for each factor.

Each mother received a separate score on the three parenting factors. The first parenting factor, Supportive Nurturance, is comprised of the proportion of comfort-verbal, verbal instruction, and quiz-feelings. The second factor, Dismissiveness, includes the proportion of dismissive behavior, as well as narrating and quiz-task (reverse-scored). Lastly, the third factor, Task-Directive, is comprised of the proportion of task-directing verbal and task-directing physical. Comfort-physical loaded approximately equally onto all three factors, and therefore was not included in any factor. Table 4 shows factor loadings of the variables that loaded onto each factor. Because the maternal behavior loadings were approximately equal (range: .58 - .87), they were equally weighted when calculating the factor scores. Gender differences on mean levels of Supportive

Nurturance were identified at the trend level, such that girls tended to experience higher levels of Supportive Nurturance, $t(174) = -1.84, p = .07$. No significant gender differences were identified for the other parenting factors.

Social Engagement

Free play variables. The global ratings of each free play variable were checked for normality. All variables, except wariness, had acceptable values of skew and kurtosis. This variable was highly negatively skewed (Skewness= 10.19), such that the majority of children received global scores of 1 (no wariness) and few children received ratings greater than 1. The skewness of wariness was expected given that as children get older, they tend to exhibit less frozen and self-soothing behaviors, which are part of the wariness code. The wariness global score was transformed using a square root transformation; results did not differ when using these transformed scores and therefore the original wariness scores were used in all analyses. There were significant gender differences for several of the free play global scores. Specifically, boys were significantly higher on positive affect. A summary of the results of these independent samples t-tests is presented in Table 5.

Hypothesis Testing

Hypothesis 1: Inhibition at 24 months will be related to social engagement at 48 months.

Correlation analyses were used to examine the association between behavioral inhibition in toddlerhood and social engagement with an unfamiliar peer at preschool age. There were no significant correlations between behavioral inhibition and the free play global scores. Furthermore, although specific hypotheses concerning associations between behavior inhibition and parenting factors were not made, exploratory analyses

revealed one significant relation. Specifically, children with higher levels of behavior inhibition at 24 months tended to experience lower levels of Task-Directive parenting at 36 months, $r(176) = -.17, p < .05$. No other significant associations were identified.

Hypothesis 2: The quality of maternal socialization of emotion regulation during a fear-eliciting task at 36 months will be related to social engagement at 48 months.

Correlation analyses were used to examine the association between the quality of maternal socialization of emotion regulation at 36 months and social engagement at 48 months. Results of correlation analyses between parenting factors and the free play global scores indicate that higher levels of Dismissive parenting at 36 months were associated with higher levels of negative affect during free play at age four, $r(176) = .25, p < .01$. Furthermore, higher levels of Supportive Nurturant parenting were associated with lower levels of negative affect during free play at age four at the trend level, $r(176) = -.12, p = .10$. Together these analyses show that Dismissive parenting in toddlerhood may increase the likelihood of future expressions of negative affect with an unfamiliar peer, whereas Supportive Nurturant parenting may decrease its likelihood.

The relation between specific maternal behaviors in the context of different child affect types at age three and free play global scores at age four was also examined. The parenting factors derived from the PCA could not be used in this analysis because of the way in which they were coded. Specifically, because the maternal behaviors were not coded in a mutually exclusive fashion, it is not possible to look at the factors in the context of a specific child affect context. However, it is still informative to examine the specific maternal behaviors in different child affect contexts. Results showed that dismissive behavior was related to higher levels of wariness, regardless of the expression

of the child's affect during which the behavior occurred; overall, maternal dismissive behavior at 36 months was positively correlated with child wariness at 48 months, $r(176) = .16, p < .05$.

The associations of other maternal behaviors with child free play variables, however, varied depending on the context of the child's affect in which the maternal behavior was performed. For example, quiz-feelings at age three was related to lower levels of positive affect at age four, only when performed in the context of children's expressed positive affect, $r(172) = -.22, p < .01$; in the context of children's expressed frustration and sad/fearful affect, however, quiz-feelings was not significantly related to positive affect at age four. Overall, regardless of the context in which maternal behaviors occurred, some behaviors were similarly related to children's free play outcomes; other behaviors, however, had different associations with the free play variables depending on the child affect context in which the behavior occurred.

Hypothesis 3 (Moderation hypothesis): The quality of maternal socialization of emotion regulation during the fear-eliciting task will moderate the relation between behavioral inhibition in toddlerhood and social engagement at preschool age.

Multiple regression analyses were conducted to test the independent and interactive effects of behavior inhibition at age two and the three parenting factors at age three on children's free play global scores at age four. The predictors were centered, as recommended by Aiken and West (1991). The multiple regression analyses were done with variables entered in the following order: (1) behavioral inhibition (centered), (2) parenting factor (centered) and (3) interaction between behavioral inhibition (centered)

and parenting factor (centered). Of the 15 regression analyses conducted, two revealed significant interaction effects over and above the main effects described above.

Results showed that Task-Directive parenting significantly moderated the relation between behavior inhibition at age two and social interest at age four. The first step of the model showed that behavioral inhibition predicted social interest at age four at the trend level, $\beta = .18$, $t(173) = -1.83$, $p = .07$. Because this trend was in an unexpected direction, a scatterplot showing the relation between behavior inhibition and social interest was reviewed. This inspection revealed a binomial outlier who scored extremely high on both variables and seemed to pull the regression line in a way that was contradictory to all other cases. A leverage analysis showed that this case had a leverage score of .13, more than five times the average leverage ($M = .02$, $SD = .02$), indicating that this single observation would likely have an excessive influence on the outcome of the regression model. Thus, this case was removed from this regression model.

After removing the outlier from the sample, the first step of the regression model showed that behavioral inhibition was unrelated to social interest at age four, $\beta = .14$, $t(172) = 1.34$, $p = .18$. The second step in the model examined whether Task-Directive parenting significantly predicted social interest above and beyond behavior inhibition. Results showed that this step was also not significant, $\beta = -.01$, $t(172) = -.15$, $p = .88$. The final step in the model examined whether Task-Directive parenting significantly moderated the relationship between behavioral inhibition and social interest. This step was significant, $\beta = -.28$, $t(172) = -2.72$, $p < .01$. Overall, this model significantly predicted social interest at age four, $R^2 = .05$, $F(3, 172) = 3.2$, $p < .05$.

To examine the nature of this interaction effect, the interaction was probed following procedures outlined by Aiken and West (1991) and further elaborated by Holmbeck (2002). The interaction was graphed and it can be seen in Figure 1. Simple slope analyses indicated that when Task-Directive parenting was low (-1 *SD* below the mean), 24-month behavior inhibition did not predict social interest with an unfamiliar peer, $\beta = .11$, $t(172) = .99$, $p = .32$. When Task-Directive parenting was observed to be high ($+1$ *SD* above the mean), though, 24-month behavior inhibition was negatively related to 48-month social interest at the trend level, $\beta = -.22$, $t(172) = -1.93$, $p = .06$. The identified outlier case was included in remaining analyses; post-hoc comparisons with and without the outlier in the sample revealed no significant differences in results.

Results also showed that Task-Directive parenting significantly moderated the relationship between behavior inhibition at age two and unfocused behavior at age four. The first step of the model showed that behavior inhibition did not predict unfocused behavior at age four, $\beta = -.11$, $t(173) = -1.13$, $p = .26$. The second step examined whether Task-Directive parenting significantly predicted unfocused behavior above and beyond behavior inhibition. Results showed that this step was also not significant, $\beta = -.01$, $t(173) = -.11$, $p = .92$. The final step in the model examined whether Task-Directive parenting significantly moderated the relationship between behavioral inhibition at age two and unfocused behavior at age four. This step was significant, $\beta = .28$, $t(173) = 2.91$, $p < .05$. Overall, this model significantly predicted unfocused behavior at age four, $R^2 = .05$, $F(3, 173) = 3.19$, $p < .05$.

To better understand the nature of this interaction effect, the interaction was probed in the same way as the first interaction. The interaction was graphed and is

shown in Figure 2. Simple slope analyses indicated that when Task-Directive parenting was low (-1 *SD* below the mean), 24-month behavior inhibition did not predict unfocused behavior in a free play session with an unfamiliar peer, $\beta = .04$, $t(173) = .10$, $p = .93$. When Task-Directive parenting was observed to be high ($+1$ *SD* above the mean), however, 24-month behavior inhibition was positively related with 48-month unfocused behavior, $\beta = .02$, $t(173) = 2.40$, $p = .02$.

It was expected that children's affective expressions during the fear-eliciting task would affect the amount and types of maternal behaviors performed. Therefore, post-hoc analyses were conducted to explore whether the proportion of different types of child affect expressed during the fear-eliciting task were related to the levels of parenting styles. Results showed that children who expressed more sadness received higher levels of Supportive Nurturance, $r(176) = .54$, $p < .01$, as well as higher levels of Dismissiveness, $r(176) = .25$, $p < .01$. Conversely, children who expressed more positive affect received lower levels of Supportive Nurturance, $r(176) = .50$, $p < .01$, as well as lower levels of Dismissiveness, $r(176) = -.28$, $p < .01$. Because these correlations were significant, proportion scores of the expression of all child affect types during the fear-eliciting task at 36 months were separately added to the significant regression models as a control variable to determine if it changed the nature of the relationship between behavior inhibition and the free play variables. When adding these control variables in post-hoc analyses, results showed no differences from the original model in the relationship between behavior inhibition and social engagement or unfocused behavior. Thus, it is

clear that the relation between behavior inhibition and social engagement identified by the significant regression model can be attributed to the parenting factors, and not the child's expression of affect at 36 months.

Additionally, post-hoc analyses were conducted to determine whether the inclusion of children with disabilities changed the nature of the main findings. When children were five years old, parents were given the Health and Behavior Questionnaire (HBQ) and were asked about whether their child received special services (e.g., speech/language therapy, occupational/physical therapy, counseling). Hypotheses were tested with and without children who received any kind of service (n= 22) and results showed that there were no discrepant findings.

CHAPTER 4: DISCUSSION

Many factors influence whether behaviorally inhibited toddlers' tendencies toward shyness and withdrawal will continue or subside throughout childhood and adolescence. The purpose of this study was to better understand specific parenting behaviors that contribute to the development of effective emotion regulation skills that will in turn facilitate children's social engagement. It was hypothesized that maternal socialization of emotion regulation strategies during a fear-eliciting situation at age three would significantly impact social engagement at age four. Of particular interest was identifying effective ways of socializing fear regulation among behaviorally inhibited toddlers who have a tendency toward continued shyness in early and middle childhood. An interaction between behavior inhibition and parenting behaviors was predicted, such that behaviorally inhibited toddlers were expected to benefit most from sensitive maternal socialization of emotion regulation strategies.

Overall, results show that some parenting behaviors play an important role in changing the trajectory of behaviorally inhibited toddlers' predisposition toward social withdrawal, while other parenting behaviors do not seem to affect children's social outcomes. The amount of not significant findings illustrates the importance of replicating these findings, as well as the importance of identifying other factors that may play an important role. Lastly, results were consistent with a goodness of fit model, such that the effect of parenting behaviors on future social engagement differed depending on the child's level of behavior inhibition.

Goodness of Fit

The goodness-of-fit model, a concept proposed by Thomas and Chess (1977), explains how child-rearing environments that flexibly adapt to children's temperament can encourage more adaptive functioning. In other words, goodness-of-fit describes the interaction between a child's biologically-based temperament and parenting socialization to produce optimal child outcomes. This concept is well illustrated in the findings of this study, as children of varying levels of behavioral inhibition responded differently to the same type of parenting behavior. Specifically, behavioral inhibition at age two was related to poor social outcomes at age four, but only for children who at age three received high levels of Task-Directive parenting, a parenting style characterized by verbally and physically directing a child during the fear-eliciting task. For children who received low levels of Task-Directive parenting, however, behavioral inhibition was unrelated to future social outcomes. Several interpretations may explain why the relation between behavior inhibition and social outcome variables is contingent on the type of parenting received in toddlerhood.

Past research has shown modest stability of early behavioral inhibition across contexts and over time (Fox et al., 2001; Pfeifer, Goldsmith, Davidson & Rickman, 2002). In the current study, behavior was assessed in three novel contexts: an adult stranger, a robot, and an inflatable tunnel. Findings show that mothers who demonstrate high levels of directiveness may exacerbate the tendency toward stability by leading highly inhibited children to feel incompetent in situations in which they may already feel inefficient and fearful. Although mothers are likely trying to help their child by telling him or her how to cope with the situation, this type of maternal behavior repeated over

time may convey a message to the child that he or she is not equipped to handle the situation on their own. This finding is consistent with past research showing that maternal intrusive behaviors in free play, clean up, and snack time contexts moderated the relation between inhibition in toddlerhood and social reticence at preschool age (Rubin et al., 2002). Rubin et al. (1997) also examined the negative effects of oversolicitous parenting, defined as parents who are highly affectionate and overprotective in a setting where it is neither appropriate or sensitive to do so. They found that behaviorally inhibited children with oversolicitous mothers tend to be the most inhibited across contexts, whereas behaviorally inhibited children whose mothers are not oversolicitous tend to show little consistency of inhibited behavior.

Although the coding of Task-Directive parenting in the current study did not account for whether the maternal behavior was performed in an imposing manner, the construct is similar to oversolicitousness and intrusiveness in that the parent dictates to the child what to do, rather than helping the child figure out ways to approach the problem. This appears to be a subtle difference, but it seems that behaviorally inhibited children interpret these actions very differently and accordingly internalize cognitions that form the building blocks of their self-confidence in social situations (e.g., “Mom is going to help me do this on my own,” or “Mom needs to this for me because I don’t know how.”). Additionally, children of highly intrusive parents have fewer opportunities to practice coping with situations they find difficult or uncomfortable. Their limited practice will likely negatively affect children’s self-confidence and actual performance in future similar situations.

It is important to understand the nature of parenting styles with low levels of directiveness because results from the current study show that behaviorally inhibited children may benefit from this type of parenting. Mothers coded as low in Task-Directiveness did not engage in task-directive verbal or physical behaviors; however, it would be interesting and helpful to better understand what these mothers *did* do. In other words, are certain behaviors particularly helpful for behaviorally inhibited children's development of emotion regulation and future social engagement? Past research that examines the role of parenting behaviors in this regard has been limited, but its importance cannot be underestimated. Theoretical work examining both exogenous and endogenous factors that contribute toward the process of resilience among behaviorally inhibited children is promising (Degnan & Fox, 2007), but empirical work in this area is in its beginning stages. Thus far, findings demonstrate that the content and style of maternal discourse in toddlerhood predicts increases in children's emotion understanding (Laible, 2004). Other empirical work shows that "sensitive" parenting helps taper off the stability of behavioral inhibition, but the broad and varied definitions for sensitivity do not allow for a precise understanding of the parenting behaviors that lead an inhibited child to become more socially engaged.

A thorough understanding of how parents contribute to behaviorally inhibited children's ability to become more socially competent could help inform prevention protocols for children at-risk for the development of anxiety disorders. In the current study, it was expected that the positive parenting style, Supportive Nurturance, would predict better social outcomes, especially for children who were relatively high on behavioral inhibition. It is possible that this parenting style was not predictive because

mothers may have engaged in this type of parenting when their child was not feeling distressed. In other words, Supportive Nurturance may only be beneficial when performed in response to the child's distress; outside of this context, it may not have an effect. Additionally, although the fear-eliciting task used in the current study elicited fear in about half of the sample, the skills needed to successfully navigate this situation, as opposed to a novel, social situation, are markedly different. Therefore, the maternal behaviors observed in this context may be less relevant to children's social outcomes than maternal behaviors in a novel, social situation.

Lastly, although not of primary interest in the current study, an interesting and unexpected finding emerged regarding optimal parenting for children who were low on behavior inhibition. Results showed that when Task-Directive parenting was high, 24-month behavior inhibition was negatively related to social interest and positively related to unfocused behavior at 48 months. These results demonstrate that children who were low on behavioral inhibition benefitted from higher levels of Task-Directiveness as opposed to lower levels of Task-Directiveness. Specifically, for children who were low on behavioral inhibition, higher levels of Task-Directive parenting was related to higher levels of social engagement and lower levels of unfocused behavior during free play with an unfamiliar peer at age four. These results are also consistent with the concept of goodness-of-fit; similar to Caspi et al.'s (2003) work with undercontrolled children, children in the current study who were low on behavior inhibition may be impulsive, restless, and emotionally labile. Thus, a child with this kind of temperament would likely benefit from parental structuring and limit-setting. Children who are high on behavior inhibition, however, are likely overcontrolled by nature, such that having an additional

set of external controls imposed by their mother, could produce more anxiety and self-doubt. Interestingly, Caspi et al. (2003) found that as adults, children who were classified as inhibited at age three, were found to be less affiliative and lacking social support, whereas undercontrolled children were found to be intolerable and aggressive. Given the kinds of social problems that may be encountered in adulthood, it is adaptive for highly inhibited children to receive a parenting style that allows them freely explore their social environment, and for children who are low on behavioral inhibition to receive a parenting style that helps them externally regulate impulsive tendencies that may impair future peer relationships.

Contextual Effects on Maternal Behaviors

An aim of the current study was to better understand positive parenting behaviors that helped children better regulate their emotions, such that they become more socially engaged at preschool age. Results showed that some maternal behaviors, such as dismissive, were related to poor social outcomes (i.e., more wariness), regardless of the context of the child's affect in which it was performed. Other maternal behaviors, however, cannot be viewed as either "good" or "bad" in a vacuum, and instead, context needs to be considered. In the current study, maternal behaviors that had consistently negative effects were identified, but behaviors with consistently positive effects on children's social outcomes were not.

To illustrate, mothers' engagement in quiz-feelings was related to lower levels of negative affect at age four when performed in the context of children's expression of positive or sad affect. In the context of a child's expression of frustration, however, quiz-feelings had no relation with the expression of negative affect. Jointly, these findings

suggest that children may interpret their mother's behaviors differently depending on how they are feeling. It is important to note that an area of strength of this study is the clarity of directions of effects. Proportion scores of children's expressed affect were entered as separate control variables to the regression models in post-hoc analyses and results showed no differences in the association between early behavior inhibition and later social interest and unfocused behavior; therefore, the significant interaction effects cannot be attributed to the influence of children's expressed affect on maternal behaviors. Instead, the actual maternal behaviors in toddlerhood were shown to play a role in how children engage with an unfamiliar peer at preschool age.

Given that children's expressions of positive and sad/fearful affect were related to certain parenting styles, however, it is also important to consider the influence of children's affective expressions on socialization goals, as past research has shown that certain contexts tend to elicit specific types of parenting goals. Hastings and Grusec (1998) found that parent-centered goals were related to the use of power assertion and were of most concern in public situations, perhaps due to feeling as though their parenting skills were being evaluated by other adults. The fear-eliciting task in this study may have elicited these same feelings and thus elicited power assertion because a Research Assistant recorded the mother-child interaction. The influence of child factors on parenting goals have not been examined, but it is likely that a child's expression of sad and/or fearful affect would affect the motivations of parents' behavior. For example, children's expression of sadness may elicit the parenting goal of protection, which might in turn elicit intrusive behaviors that will protect the child.

When children are asked about their feelings while expressing positive affect, they may interpret their mother's questions as sharing in their own joy and in the future, and these types of interactions may lead the child to want to share positive affect with others. Similarly, if asked about their feelings while expressing sad affect, a child might interpret the question as concern for their own well-being and sensitive questioning may lead the child to learn to better regulate their emotions over time. If asked about their feelings during the expression of frustration, however, a child's frustration might escalate because he or she may feel misunderstood. Alternatively, if the questioning is done sensitively, it could help the child regulate his or her frustration. These two possible child interpretations may explain why there is no association between maternal quiz-feelings in the context of child frustration and the expression of negative affect at age four.

Results also suggest that children may interpret task-directing verbal behaviors differently based on the affective context of the situation. Task-directing verbal behaviors predicted increases in future positive affect when performed in the context of sad affect possibly because children interpreted the behavior as an attempt to help. Thus, these kinds of repeated interactions may help a child learn of effective ways of coping with sad/scared feelings. In the context of children's expressed positive affect, however, suggestions of what to do and/or commands may be interpreted as overbearing and lead children to believe that their mother does not trust that they can handle the task independently. Over time, this interpretation may cause a child to lose confidence in their ability to navigate social situations and in turn lead to less positive affect while playing with a peer. Additionally, the socialization goals parents have in mind when

engaging in task-directive behaviors in the context of the expression of a child's sadness versus positive affect may also play a role in how children interpret parenting behaviors.

In summary, some maternal behaviors, such as dismissive behavior, have a predictable, stable effect on social outcomes, whereas other behaviors require the consideration of the child's expressed affect during which the behavior was performed. Therefore, when interpreting the effects of a particular parenting behavior, it is important to keep in mind the context of the situation, especially how the child is feeling at the time. It is also important to consider the child's temperament, as children who are more or less inhibited may respond differently to the same kinds of maternal behaviors.

Limitations and Future Directions

This study was conducted within a sample of high-income, highly educated, and primarily Caucasian families. The demographics of this sample may help explain the limited variability observed among dismissive maternal behaviors. Therefore, future research should investigate these processes in families of low socio-economic status (SES), where this kind of negative parenting behavior may be more common. The effects of parenting behaviors on children's social outcomes observed in this study may differ among high-risk sample for two reasons. First, children from high SES families tend to have many protective factors other than parenting behaviors that contribute toward positive outcomes in social development. Among high-risk children who may have fewer protective factors, however, parenting may be a more important predictor of social development outcomes. Second, what is considered "bad" parenting in this sample because of its negative effects on future social engagement and unfocused behavior, may not have the same effects in a low SES and/or more ethnically diverse sample. Future

research should also examine the influence of maternal behaviors in a more naturalistic context; the fear-eliciting situation in the current study involved a mechanical robot that made unpredictable sounds and movements. Maternal behaviors in a novel, social situation, however, may be a more powerful predictor of children's future social outcomes.

Past research has shown that the associations between certain parenting behaviors and children's developmental outcomes may be moderated by culture. For example, Ispa et al. (2004) found that among European Americans, an intrusive style of parenting negatively predicted child engagement and dyadic mutuality, but these associations were not significant among Mexican and African- American families. Thus, the different relations observed suggest that the interpretation of maternal intrusiveness differs depending on the cultural context. Ispa et al. (2004) speculated that parental control in general could be associated with negative feelings in individualistic cultures because it opposes goals that promote independence, whereas in a collectivistic culture, parental control may be related to positive feelings because it is in accordance with the aim of helping one another as much as possible. Likewise, highly directive parenting styles may be interpreted differently in other cultural and/or socioeconomic contexts.

Additionally, during the 36-month home visit task, a set of forbidden toys was placed near the child, which resulted in many children expressing frustration. Therefore, it is difficult to disentangle whether children expressed frustration in response to the Unpredictable Toy or the inaccessibility of the forbidden toys. This is a limitation of the current study because it is difficult to interpret analyses that examined maternal behaviors in the child affect context of frustration without knowing the cause of the frustration.

Also, given the low R squared value of the two significant models in this study ($R^2 = .05$), it is important that future research examine factors, other than maternal socialization of emotion regulation, that may influence the relationship between early behavior inhibition and future social competence with peers. Other potential moderating variables include both within-child and contextual factors. For example, cognitive abilities, as well as physiological reactivity, are important within-child factors that likely play an important role. Engaging in mature forms of emotion regulation, such as cognitive reframing and intentional distraction, require certain cognitive abilities that emerge throughout toddlerhood. Cognitive phenomena, such as executive control of attention and deferred imitation, come online at different times and these variations can affect how soon a child masters more sophisticated emotion regulation strategies (Kopp, 1982). The understanding and usage of these strategies can affect the stability versus change in the trajectory of behaviorally inhibited children's tendencies toward shyness. Past research has shown physiological reactivity should also be included when considering moderating factors between behavior inhibition and social competence. Specifically, studies have shown that right frontal EEG asymmetry, heart rate variability, and salivary cortisol levels play an important role in predicting stability versus discontinuity of early behavior inhibition (Fox et al., 2001; Garcia Coll, Kagan, & Reznick, 1984; Schmidt, Fox, Rubin & Sternberg, 1997).

Contextual factors, such as exposure to others who model effective emotion regulation strategies, are also important to consider. For instance, Fox et al. (2001) found that children who were in out-of-home care for at least 10 hours per week were more likely to change their future behaviors, such that they became less inhibited, whereas

equally reactive infants who did not attend out-of-home care and were more likely to remain inhibited in the future. An underlying mechanism that can explain these differences may be that children in out-of-home care observe models of effective emotion regulation and internalize these observed strategies. Similarly, they observe the consequences of poor emotion regulation skills, which may affect their own tendency to use certain strategies. In other words, observing models similar in age will provide children with a better sense of what does and does not work in terms of emotion regulation strategies, which can help them in the development of their own emotion regulation, and hence contribute toward the stability versus change of behavior inhibition.

Other important contextual factors are maternal variables, such as maternal psychopathology and maternal discourse in general. Maternal psychopathology factors, such as depression and anxiety, could play an important role in children's learning of emotion regulation strategies. Additionally, past research has shown that different aspects of maternal discourse, such as the discussion of emotion in toddlerhood, play an important role in children's future understanding of emotions (Laible, 2004). Thus, observing maternal discourse in general, as opposed to exclusively in a fear-eliciting situation, may be especially important for behaviorally inhibited children; a fear-eliciting situation may be too overwhelming and cause them to "freeze" such that they do not have the cognitive capacity to engage in regulation strategies or shift their attention to their mother. However, in a more neutral situation, behaviorally inhibited children may have greater cognitive and attentional capacity to listen to their mothers and to learn to effectively manage a future emotion-eliciting situation.

Summary and Conclusions

To summarize, the current study found that children's exposure to different levels of a directive parenting style in toddlerhood moderates the relationship between early behavior inhibition and future social engagement. However, identifying other within-individual and contextual moderating factors in addition to maternal socialization of emotion regulation will provide a more complete picture of how to predict change and stability in trajectories of behaviorally inhibited toddlers. A thorough understanding of the factors that play a role in this complex process can help inform preventative treatments targeted toward children at-risk for the development of anxiety disorders.

TABLES

Table 1
Descriptive Statistics for Child Affect during the Fear-Eliciting Task (N=176).

	<i>M</i>	<i>SD</i>
Positive affect	.83	.24
Frustration/Anger/Irritation	.30	.26
Sad/Fearful/Anxious	.28	.33

Note. Values listed are proportion scores. Specifically, values reflect the percent of epochs during which children expressed that particular affect type.

Table 2
Descriptive Statistics for Maternal Affect during the Fear-Eliciting Task (N=176).

	<i>M</i>	<i>SD</i>
At least low positive affect	.97	.07
At least moderate positive affect	.77	.27
At least low negative affect	.07	.15

Note. Values listed are proportion scores. Specifically, values reflect the percent of epochs during which mothers expressed that particular affect type. “Low” is defined as a 1 on a zero to three Likert scale and “Moderate” is defined as a 2 on the same scale.

Table 3
Occurrence of Maternal Behaviors (Proportion scores) in the Context of Child Affect Types.

	Child Affect			
	Positive	Frustration	Sad/Fearful	Neutral
Maternal Behaviors				
Comfort-Verbal	.06	.05	.14	.10
Comfort-Physical (Mother-Initiated)	.14	.13	.21	.00
Verbal Instruction	.10 _a	.15 _b	.20 _b	.07
Narrating	.85	.85	.85	.73
Task-Directing Verbal	.43	.44	.46	.61
Task-Directing Physical	.35 _a	.44 _b	.38	.53
Quiz-Task	.50	.48	.46	.40
Quiz/Label-Feelings	.10	.12	.17 _a	.03 _b
Dismissive	.13 _a	.17 _{bc}	.25 _b	.00 _c

Note. Different subscripts in the same row denote mean values that are significantly different from each other.

Table 4
Factor Structure for the Socialization of Emotion Regulation (N= 176)

	Factor Loading
Supportive Nurturance	
Comfort Verbal	.80
Verbal Instruction	.86
Quiz/Label Feelings	.64
Dismissiveness	
Narrating	-.59
Quiz-task	-.56
Dismissive	.67
Task-Directive	
Task-Directing Verbal	.63
Task-Directing Physical	.87

Note. Proportion scores of maternal behaviors were entered into the PCA. Comfort-physical loaded onto all three factors (all loadings <.45) and therefore was not included.

Table 5
Gender Differences in Mean Levels of Free Play Global Scores.

	Boys		Girls		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Social Interest	4.72	1.16	4.89	1.55	-.84
Wariness	1.07	.67	1.05	.31	.26
Unfocused	3.26	1.15	3.10	1.06	.96
Positive affect	3.87	1.18	3.23	1.17	3.56**
Negative affect	2.71	1.13	2.43	1.26	1.56

* $p < .01$ ** $p < .001$

FIGURES

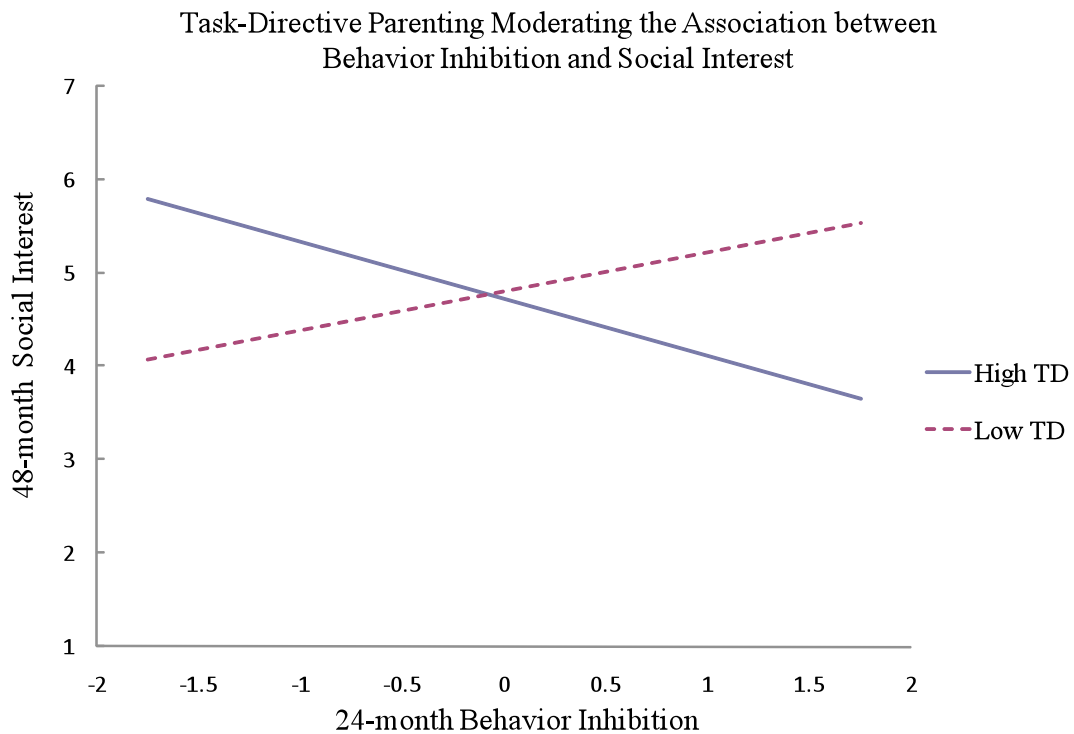


Figure 1. The relationship between behavior inhibition at age two and social interest at age four differed according to the level of Task-Directive Parenting received at age three. Among children receiving high levels of Task-Directive parenting there was a negative relationship between behavior inhibition at 24-months and social interest at 48-months. Among children receiving low levels of Task-Directive parenting, however, there was not a significant relationship between behavior inhibition and social interest.

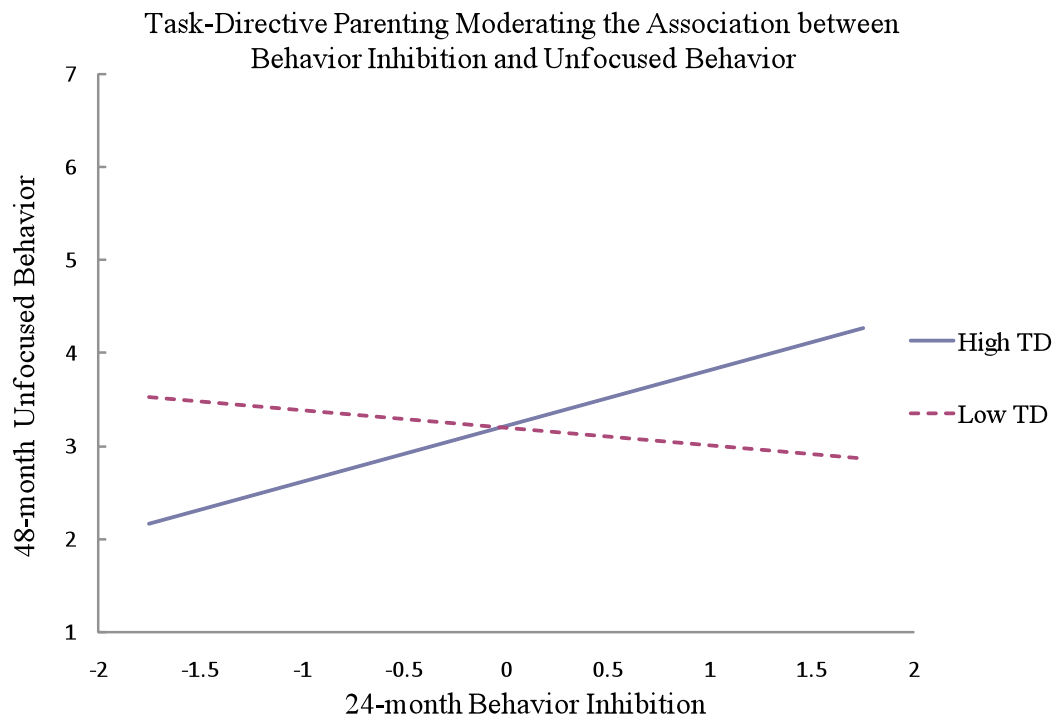


Figure 2. The relationship between behavior inhibition at age two and unfocused behavior at age four differed according to the level of Task-Directive Parenting received at age three. Among children receiving high levels of Task-Directive parenting there was a negative relationship between behavior inhibition at 24-months and social interest at 48-months. Among children receiving low levels of Task-Directive parenting, however, there was not a significant relationship between behavior inhibition and social interest.

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Appendix A

36 Month Child Affect Coding

- *Affect coding* - Facial expressions, body language, and tone of voice are all indicators of affect. When deciding level of intensity keep in mind the frequency of expressed affect. High frequencies correspond with higher intensity ratings. Bursts of affect and escalations of affect also contribute to higher intensity ratings.

Neutral (0 on all 3 affect scales): No emotional expression. Child appears comfortable, but not smiling or frowning. There may be *subtle* signs of fatigue or boredom, but no clear sign of a well-defined negative affect.

Positive Affect: Happy, Joyful, Excited

- Low-intensity: a smile; a mild tone; an excited movement (e.g., jump, skip, quick run, moving toy vigorously)
- Medium intensity: smiley (~ 4 sec. smile); little singing/dancing, laughing, giggling, excited tones, play noises
- High-intensity: excited yelling, squealing, shrieking

0 = Complete absence of positive affect

1 = One or two instances of low-intensity positive affect

2 = A few instances of low-intensity positive affect
One or two instances of medium-intensity positive affect

3 = Low-intensity positive affect throughout most of the epoch
A few instances of medium-intensity positive affect
If a child is smiley throughout (only), give a code of 3

4 = Several instances of medium-intensity positive affect
One instance of high-intensity positive affect

5 = Expressions of medium positive affect for most of the time
At least a few instances of high-intensity positive affect

Negative Affect: Frustration, Anger, Annoyance, Irritation, Disgust, Boredom

- Low-intensity: a low-intensity whine, subtle signs of boredom (e.g., a sigh, hand on chin), an angry body movement (e.g., stomp, arms crossed against chest, clenched fists, handling toys roughly), angry facial expression (e.g., rolling eyes, tight lips, furrowed eyebrows, eyebrows slanted downward toward nose).
- Medium intensity: an intense whine; angry body movements; an angry yell
- High-intensity: angry yelling, crying due to anger or irritation, tantrums

Appendix A (continued)

0 = Complete absence of negative affect

1 = One or two instances of low-intensity negative affect

2 = A few instances of low-intensity negative affect
One or two instances of medium-intensity of negative affect

3 = Low-intensity negative affect throughout most of the epoch
A few instances of medium-intensity negative affect

4 = Several instances of medium-intensity negative affect
One short instance of high-intensity negative affect

5 = Frequent expressions of medium negative affect
A long instance of high-intensity negative affect (or a few short instances)

Negative Affect: Fearful, Wary, Sadness, Worried/Anxious

- Low-intensity: a frown, a worried expression/tone, a sad tone, self-soothing behavior (e.g., thumb-sucking, hair-twirling, twiddling thumbs, manipulating/rubbing self, mom, and/or clothing), fidgety, frozen/muscle tension, sad body movement (e.g., slumped shoulders, chin/head down), a pout (protrusion of lips), clinging to mom *because scared/anxious*, signs of discomfort, hesitation, and apprehension
- Medium intensity: whimpering; sign of pain (e.g., ouch)
- High-intensity: crying

0 = Complete absence of negative affect

1 = One or two instances of low-intensity negative affect

2 = A few instances of low-intensity negative affect
One or two instances of medium-intensity of negative affect

3 = Low-intensity negative affect throughout most of the epoch
A few instances of medium-intensity negative affect

4 = Several instances of medium-intensity negative affect
One short instance of high-intensity negative affect

5 = Frequent expressions of medium negative affect
A long instance of high-intensity negative affect (or a few short instances)

Appendix B

Maternal Socialization of Emotion Regulation (36 mo. Home Visit)

For each 30-second epoch, code whether the following maternal behaviors are present or absent (0 or 1).

1- Comfort- verbal: Mom makes a statement to help child feel better (e.g., It's okay. You're being a good girl.) This may include compliments, praise in general (e.g., You are so smart.), and/or praise of affect regulation (e.g., You're being so brave.) This code trumps narrating.

- Example: Statements where the *content* does not clearly indicate Comfort-Verbal, such as "It's just a dinosaur" is coded as comfort-verbal *only* if the child is experiencing negative affect. If the child is neutral, or expressing positive affect, this statement would be coded as Narrating.

2- Comfort- physical: Offering/seeking physical affection (e.g., carries, hugs, pats, kisses); may be via dinosaur. **Indicate whether affection is child or mother-initiated** (there may be both in 1 epoch).

- If an initiation happens in one epoch, and the physical action (e.g., sitting on lap) simply *continues* in later epochs, only code initiation in the epoch when the initiation actually occurred.
- If mom is being playful with the dinosaur (e.g., having the dinosaur give the child kisses), only code comfort-physical (do not code task-directing physical).

3- Verbal Instruction: Mom provides a strategy for coping with negative affect (even if child is not showing negative affect). If child suggests a strategy and mom simply reflects the strategy back to the child, this would only be coded under Narrating, not Verbal Instruction (e.g., C: Put him away. M: You want to put him away?). Mom may:

- Verbally reframe the situation so that the child will see it more positively (e.g., It's just a toy; He wags his tail like our doggie!; It's your pet dinosaur!)
 - Mom may reframe the situation as a non-scary situation. For example, "See I'm petting him and he doesn't bite." → This implies that the child can do it too because the dinosaur is not scary.
- Suggest behavioral strategies (e.g., Lets put him away; Do you know how to turn it off?).
- Redirect the child's attention from cause of negative affect (e.g., new conversation topic, encouraging child to think about something else).

4- Narrating: 4 kinds

- a. Comments about task. Can be phrased as question (e.g., He's moving fast, isn't he?) or a statement (e.g., His tail is so big!); may be only one word, as long as the word is descriptive (e.g., Strange.)

Appendix B (continued)

- b. Pointing out features of the dinosaur/what the dinosaur is doing (e.g., Look at his tail!). If mom *only* says “Look” or “Let’s see,” do not code that, unless it is accompanied by a physical action indicating *where* to look.
- c. Narrating what the child is doing (e.g., You’re petting him.) or what mom herself is doing in the task (e.g., I’m going to put him here.). If the child is performing an action, and mom asks if the child would like to perform that action, that is also coded as Narrating (e.g., Child is petting dinosaur and mom says, “Do you want to pet him?”)
- d. Restating/reaffirming/reflecting back to the child what the child said about the task (e.g., C: His tail is moving! M: Yes, his tail is moving!). Also includes reflecting what the child is doing (e.g., Child pets dinosaur and mom says: “You want to pet him?” or “You like petting him.”)

5- Task Directing (Verbal): Mom provides child with directions/suggestions to perform a specific action. Verbal directives may be phrased as a question (e.g., What happens if you touch his tail?) or command (e.g., Put him on the carpet.)

- If mom suggests/commands that the child do something that he/she is already doing, do not code Task-Directing. Instead, code Narrating (e.g., Mom says, “You want to hug him?” while child is already hugging the dinosaur.)
- Also includes “Don’t” commands (e.g., “Don’t pull him by his tail.”)

6- Task Directing (Physical): Mom provides direction in a physical manner in the context of child’s play (e.g., moves child’s hand or grabs and moves robot). Only coded if child is aware of movement.

- This code does not include instances when Mom grabs and moves dinosaur in order to provide physical affection to the child (e.g., picks up dinosaur and nuzzles child’s face with it). This would be coded in Comfort-Physical Mother Initiated.

7- Quiz-task: Questions about the task that do not suggest an action. Questions may be about what the dinosaur is doing (e.g., Is he growling? What is he doing? What happened?) or questions about what the child is doing in the task (e.g., Why are you hitting him?)

- Mother’s responses to their own questions and corrections to child’s response are included in this code.
- This code does not include questions about what mom is doing or could do with the dinosaur (e.g., Do you want me to feed him?)

8- Quiz/Label feeling: Mom asks child questions about how the child feels (or might feel). Includes questions related to why child feels the way they do (e.g., You don’t like that toy? Why are you scared? What do you think about the dinosaur?). May be phrased in terms of how Mom should feel (e.g., Should I be scared?)

Appendix B (continued)

- Also includes instances where Mom labels the child's emotion or verbally acknowledges it (e.g., You look mad. You seem upset.). Statements may be phrased as a question (e.g., You feel scared, don't you?). This includes comments to the RA, as well (e.g., saying to RA, I think he's scared).

9- Active Ignoring/Dismissive:

Child showing moderate amount of sad/fearful negative affect (e.g., complaining multiple times, whining, crying, running away from dinosaur, frightening screaming)
AND Mom notices child's negative affect:

*But does not provide any kind of verbal or physical comfort.

*And indicates that child isn't justified in their expression of negative affect (e.g., Oh, come on. It's no big deal—it's just a robot). Tone is either negative or neutral.

*Mom makes fun of child for experiencing negative affect.

Whether or not child is experiencing negative affect, code Dismissive if:

*Mom makes fun of the child by laughing, making derisive/teasing comments (e.g., Don't be such a baby). Teasing comments do not have to be related to dinosaur (e.g., name calling, "Don't lick the blanket—weirdo").

Incoherent: Unable to code mother's speech because it is unclear.

****Notes:**

-Code everything mothers say that is related to the task. Do not chunk statements that seem to go together.

-When mom's talk to the dinosaur, this is not coded under maternal behaviors. The tone that they use when talking to the dinosaur, however, should be taken into consideration when coding maternal affect.

-Do not code clarification of speech (e.g., huh? I can't hear you.) or speech unrelated to task (e.g., Don't touch those forbidden toys. Do you need a tissue for your nose?) toward maternal behaviors, but yes toward affect.

Maternal Affect

- *Affect coding* - Facial expressions, body language, and tone of voice are all indicators of affect. When deciding level of intensity keep in mind the frequency of expressed affect. High frequencies correspond with higher intensity ratings. Bursts of affect and escalations of affect also contribute to higher intensity ratings. If maternal affect is unrelated to the interaction (e.g., mother distracted by baby crying in the background), do not code this expression of affect.

Neutral (0 on all 3 affect scales): No emotional expression. Mother appears comfortable, but not smiling or frowning.

Appendix B (continued)

Pretend affect: Do not code pretend negative affect. If pretend affect is *positive*, rate it using the positive affect scale; numbers on the scale would correspond with how enthusiastic/excited the mother is in her display of positive affect (higher numbers = more enthusiastic).

***Notes:** If mom's perform 2 or more of the features of one level, bump to the next affect level. Pretending to be scared usually counts toward positive affect depending on how playful it is.

Positive Affect: Happy, Joyful, Pleasant, Excited

0 = Complete absence of positive affect

1 (low) = [1 to 3 smiles and/or mildly positive tones]; a playful whisper; small chuckle; a mild play noise

2 (mod) = Smiley (> 5 s); a few enthusiastic tones (high-pitched voice); a laugh; mild tones throughout; playful whispers; multiple mild play noises or an intense play noise

3 (high) = smiling and/or laughing often; many enthusiastic tones or a few *very* excited tones; smiling the whole time

Negative affect- Frustration (Anger/Irritation):

0 = Complete absence of negative affect (frustration/anger)

1 (low) = a frown; slight irritation in tone

2 (mod) = a few frowns; clear episode of irritation in tone; stern voice

3 (high) = frowning throughout the epoch; multiple episodes of irritation in tone; angry yelling

Appendix C

Free Play Behavior Ratings – 4 year visit

For each 2-minute interval, assign a code for each variable based on the descriptions below. At the end of the 10 minutes, assign a global code for each variable.

Social Interest: How interested the child is in their peer

****If interactions have a negative tone (e.g., “I don’t want to play with you”): then always give a code of 2. If there is positive interaction in addition to the negative, then give a higher code****

****Imitation is a type of play that can vary in sophistication and thus be coded along the scale. Copying words or an act may be coded lower but back and forth imitation between the children (imitation with reciprocity) may be coded higher on the scale****

1 = little to no acknowledgment, lack of reciprocity, ignores initiations of peer

2 = acknowledgement of peer, looking at or watching peer, no interaction or only negative interactions

3 = sometimes responds to peer, moves close to peer, but rarely initiates interactions (passive interest)

4 = an initiation combined with other social interest behaviors or some initiations (active interest)

5 = proactive interest, initiates interactions for the majority of the interval (even if peer shows low/moderate

interest); child plays or initiates but sometimes goes off by him/herself, usually playing with each other

about half the time

6 = child plays with peer more than half the time; plays about half the time but continues to initiate or

engage in conversation for the rest of the time

7 = total engagement with peer

Wariness: Hesitance to play

****Examples of wary behaviors: stands in one place, hovers, watching peer, engaging in self-soothing behaviors. Examples of self-soothing behaviors (e.g., sucking thumb, hair twirling, fidgeting with clothes). Duration and intensity of this behavior should be considered when coding.****

1 = quickly and easily moves around room, engaging with toys

Appendix C (continued)

- 2 = a little hesitant moment
- 3 = slow to warm, hesitant at start OR small period of hesitance
- 4 = very slow to warm OR hesitant periods
- 5 = hesitance and some play
- 6 = hesitant throughout, some uneasy behavior, and little play
- 7 = clearly uneasy for the majority of the time

Activity Level

****Examples: walking, skipping, running, throwing the ball intensely, jumping, sliding, dancing, etc. Consider intensity and duration of these behaviors to guide you along the scale****

- 1 = stays in one place, slow movements. Child moves from one place to another (one time only).
- 2 = moves as needed (walking only)
- 3 = one or two small bursts of movement
- 4 = short and infrequent (some) bursts of activity
- 5 = frequent bursts of activity
- 6 = movement for a majority of the time
- 7 = quick and intense continuous motion OR very intense movements for a majority of the time

Unfocused/Disengaged: Focus on play or an activity.

- 1 = very focused on one activity at a time
- 2 = very focused with few moments of short distractions
- 3 = a little empty time OR various short distractions; some switching between activities
- 4 = empty time and short distractions; very frequent switching between activities
- 5 = some empty time (wandering, staring), some focused play (about ½ and ½)
- 6 = little focused or semi-focused play
- 7 = completely lacks engagement in activities

Appendix C (continued)

Positive Affect

- Low-intensity: smile(s), small amount of excited tones, a giggle
- Medium-intensity: smiley, little singing/dancing, laughing, excited movements, giggling, excited tones
- High-intensity: excited yelling, squealing, shrieking

1 = complete absence of positive affect

2 = one or two instances of low intensity positive affect

3 = a few instances of low-intensity; one or two instances of medium-intensity of positive affect

4 = several instances of medium-intensity positive affect; one or two instances of high-intensity positive affect

5 = frequent instances of medium-intensity positive affect; a few instances of high-intensity positive affect

6 = frequent bursts of medium to high positive affect

7 = continued expressions of intense joy

Negative Affect

- Low-intensity: frown, pout, a whine, a negative tone
- Medium-intensity: whiny, infrequent yelling and crying, some negative tones
- High-intensity: crying, screaming, and tantrums

1 = complete absence of negative affect

2 = one or two instances of low intensity negative affect

3 = a few instances of low-intensity; one or two instances of medium-intensity of negative affect

4 = several instances of medium-intensity affect; one or two instances of high-intensity affect

5 = frequent instances of medium-intensity negative affect; a few instances of high-intensity negative affect

6 = frequent bursts of medium to high negative affect

7 = continued expressions of intense negative affect

Appendix C (continued)

Aggression: includes threatening language or behaviors with intention to harm peer either physically or emotionally.

*****If the actual content of the harsh language is negative, code as harsh language regardless of tone. If the content is not negative, but it is said in a threatening manner, then code as harsh language. In general, one episode of harsh language corresponds to a point on the scale, but you must consider intensity and duration of the episode, and move along the scale accordingly*****

1 = complete absence

2 = slight object struggle (i.e. none or small amount of resistance); one mildly threatening remark

3 = actual object struggle; very low-intensity physical action; a few threatening remarks OR one very threatening remark

4 = 2 object struggles; low-intensity physical action; several threatening remarks

5 = A few object struggles; a few low-intensity physical actions OR an intense physical action; frequent

threatening remarks

6 = repeated physical and/or verbal aggression

7 = very intense physical and/or verbal aggression