ABSTRACT

THE EFFECT OF TODDLER EMOTION REGULATION ON MATERNAL EMOTION SOCIALIZATION: MODERATION BY TODDLER GENDER AND MATERNAL DEPRESSIVE AND ANXIOUS SYMPTOMATOLOGY

by Julie E. Premo

Although developmental research continues to connect parenting behaviors with child outcomes, it is critical to examine how child behaviors influence parenting behaviors. Given the emotional, cognitive, and social costs of maladaptive parenting, it is vital to understand the factors that influence maternal socialization behaviors. The current study examines children’s observed emotion regulatory behaviors as one influence. Mother-child dyads ($n = 91$) with toddlers around 24 months of age participated in novelty episodes from which toddler emotion regulation behaviors were coded, and mothers reported their use of emotion socialization strategies. The concurrent and predictive relation between emotion regulation and emotion socialization was examined in the context of several moderators. It was found that child gender, depressive, and worry symptoms individually moderated the relation between emotion regulation and emotion socialization. Results from the current study have the potential to inform the literature on when child-elicited effects are most salient in the parent-child relationship.
THE EFFECT OF TODDLER EMOTION REGULATION ON MATERNAL EMOTION
SOCIALIZATION: MODERATION BY TODDLER GENDER AND MATERNAL
DEPRESSIVE AND ANXIOUS SYMPTOMATOLOGY

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Julie Elizabeth Premo

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Advisor________________________
(Elizabeth J. Kiel, Ph.D.)

Reader________________________
(Aaron Luebbe, Ph.D.)

Reader________________________
(Vaishali V. Raval, Ph.D.)
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The Effect of Toddler Emotion Regulation on Maternal Emotion Socialization: Moderation by Toddler Gender and Maternal Depressive and Anxious Symptomatology

Emotion regulation and emotion socialization are crucial and formative emotional processes that have been found to influence both individual socioemotional outcomes in children as well as the quality of parent-child relationships (Eisenberg et al., 1996; Malatesta-Magai, 1989). Children’s emotion regulation has been most frequently studied as an outcome of maternal behavior or as a predictor of children’s own outcomes. Its role as a predictor of maternal behavior remains understudied. Relatedly, although maternal emotion socialization has been studied as a predictor of child outcomes (Eisenberg, Fabes, Carlo, & Karbon, 1992; Eisenberg, Fabes, & Murphy, 1996), it has seldom been studied as an outcome. By examining emotion regulation as a predictor of emotion socialization longitudinally, the current study can contribute to the growing literature on how children affect the parenting they receive. Furthermore, the effects of child gender and maternal internalizing symptoms have been found to provide an important context in which to understand parent-child interactions (Eisenberg et al., 2001; Fivush & Buckner, 2000). By examining these variables as moderators, the current study will address the conditions under which toddler emotion regulation predicts maternal emotion socialization.

Emotion Regulation

Emotion regulation refers to the initiation, maintenance, and modulation of emotional arousal in order to support individual goals and effectively adapt to one’s social environment (Bridges & Grolnick, 1995; Thompson, 1994). In younger children, emotion regulation involves the behaviors that children use to soothe themselves and cope with their environment. Though definitions and methods of analyzing emotion regulation can vary, researchers generally view emotion regulation as encompassing both external and internal processes related to the management and modulation of emotion (Morris et al., 2007). Cole, Martin, and Dennis (2004) asserted that emotion regulation is a unique construct because it can account for how and why emotions organize and facilitate other processes, and how these processes can be beneficial or detrimental to child development. In children, emotion regulation is encompassed in self-regulation, an active process developing throughout toddlerhood that relies both on internal mechanisms, like genetic heritability and temperament, and external processes such as parenting (Sroufe, 1996). Indicators of adaptive and maladaptive emotion regulation differ depending on
the age of the group being studied, and naturally, this leads to different measuring tools for different ages.

For infants, emotion regulation is primarily managed externally by caregivers, while for school-aged children, adolescents, and adults, “self” emotion regulation is dominant (Kopp, 1982, 1989; Eisenberg & Morris, 2002; Silk, Steinberg, & Morris, 2003). Due to cognitive and emotional advances in toddlerhood, children transition between relying on their caregivers and more independent strategies to regulate, so a variety of caregiver-focused and independent strategies would be expected to be observed (Grohnick, Bridges, & Connell, 1996). Caregiver-focused regulation is considered to be a critical part of infant and toddler socioemotional development (Bowlby, 1982; Greenspan & Greenspan, 1985). In this age group, caregiver-focused or “other-directed” regulation is characterized by contact seeking (e.g., reaching for or running toward their caregiver) and looking to their caregivers (e.g., social referencing; Ainsworth & Wittig, 1969; Grohnick, Bridges, & Connell, 1996). Independent regulation behaviors include self-soothing behaviors such as self-touching, self-stimulation (e.g., rhythmic, often unconscious touching or rubbing), and fidgeting (e.g., squirming), as well as attention-related behaviors, like gaze aversion and distraction (Goldsmith & Rothbart, 1996; Kopp, 1989; Mangelsdorf, Shapiro, & Marzolf, 1995; Rothbart & Derryberry, 1981). These specific behaviors have been found to regulate negative affect in young children during observed emotion reactivity studies (Cole, Martin, & Dennis, 2004; Rothbart & Bates, 1998; Stifter & Braungart, 1995).

Overall, young children can use both independent regulation and caregiver-focused regulation to handle emotionally taxing situations, but as children develop they decrease the amount of caregiver-focused regulatory behaviors, and increase the amount of independent regulatory behaviors (Kopp, 1989).

It is unclear whether specific types of emotion regulatory behaviors are absolutely adaptive or maladaptive. The effectiveness of regulation strategies may vary by the specific emotional context. Research has asserted that mother-focused regulation and relying on mothers as a source of support are adaptive responses, particularly so during highly charged emotional situations (Smith, Calkins, & Keane, 2006). Furthermore, Kopp (1989) points out that adaptive emotion regulation has long been considered in the specific context of how closely the child meets their parents’ expectations for emotional expression. Thus, although it is unclear whether specific behaviors reflect adaptive or maladaptive emotion regulation in the toddler years, it is
clear that toddlers may use a variety of behaviors during this stage in development. Certain emotion regulation behaviors may be more or less adaptive for particular children based on whether they fit maternal expectations.

Emotion regulation is a dynamic, developmental process that is related to many later child outcomes. Younger children may be especially underdeveloped in regulating their own emotions. Due to their young age, infants and toddlers less effectively self-regulate their emotions (especially when their parents are absent or passive), and may be at a higher risk of experiencing bouts of negative emotion because of their less developed coping skills (Bridges, Grolnick, & Connell, 1997; Kopp, 1989). As children leave toddlerhood, the longer term effects of emotion regulation or dysregulation may be found in social competence with their peers; children with poor emotion regulation skills are more likely to respond with irritation to others’ distress, have poor peer relations, and have few friends into adolescence (Benson, McWey, & Ross, 2006; Eisenberg et al., 1997; Walden, Lemerise, & Smith, 1999). On the other hand, children who develop strong emotion regulation skills are less likely to show internalizing or externalizing behavior problems in school settings (Calkins & Dedmon, 2000; Cole, Michel, & O’Donnell, 1994; Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996). Thus, emotion regulation affects many aspects of children’s lives in the long-term.

It is well-established in the literature that parents affect the development of emotion regulation in children. Malatesta-Magai (1989) remarked on the cyclical nature of parent-child relationships, wherein negative parent-child interactions have severe repercussions for later child development. One important external element that dictates successful emotion regulation is the quality of parent-child interactions (Malatesta-Magai, 1989; Sroufe, 1996). Mothers’ responses to their children in distress are a critical piece of this relationship, which has been long recognized in the attachment literature (Bowlby, 1982; Masters, 1991). Parental effects on toddler emotions, such as maternal sensitivity and contingency of response, have subsequently been examined (Campos, Campos, & Barrett, 1989). For instance, McElwain and Booth-LaForce (2006) found that increased maternal sensitivity to infant emotional distress at 6 months increased the chances of secure mother-child attachment. Lastly, some parents may not expose their children to situations resulting in negative emotions in the first place. This has been hypothesized to result in less mastery in the regulation of negative emotions as children age (Gordon, 1989; Kopp, 1989). Thus, parents may affect children’s emotion regulation and the
parent-child relationship, but it has not yet been determined how this emotion regulation may, in turn, affect the parenting that children receive. Because it falls under the same larger domain of emotion processes, a particular type of parenting that may be affected by children’s early emotion regulation is that of emotion socialization.

**Emotion Socialization**

Emotion socialization characterizes how parents express, model, discuss and react to emotion with their children (Eisenberg, Cumberland, & Spinrad, 1998). Maternal emotion socialization may be particularly relevant for very young children. Although older, school aged children may be more subject to peer influence (e.g., friends and classmates) and larger family contexts (e.g., siblings, relatives) (Bronfenbrenner, 1979), infants and toddlers most directly learn from their parents’ reactions to emotion. Recently, parental responses to young children’s positive and negative emotions have been a particular focus of research on emotion socialization (Lovejoy, Graczyk, O’Hare, & Neuman, 2000). Of particular interest to the current study is how parents react to children’s negative emotions.

Emotion socialization has been conceptualized as involving both supportive and non-supportive reactions to negative emotions such as fear, sadness, and anger (Eisenberg et al., 1998). According to Spinrad and colleagues (2007), the supportive reactions include problem-focused responses, emotion-focused responses, and expressive encouragement. Problem-focused responses involve helping children solve the problem which is causing them distress. Emotion-focused responses include comforting or distracting the child from the source of the distress. Expressive encouragement is the degree to which parents encourage the expression of negative emotion. Non-supportive reactions, on the other hand, include minimization reactions, or the devaluing or discounting of children’s negative emotions (e.g., saying, “get over it”), and punitive reactions, which include verbal or physical punishment used to control children’s display of negative emotions (Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002). It is important to note that supportive and non-supportive responses are not opposites on a single spectrum. In a factor analysis performed by Spinrad and colleagues (2007), supportive and non-supportive responses loaded onto different factors, indicating that these responses are independent. Two other types of reactions include distress reactions, or the degree to which parents are upset by their child’s distress, and wish-granting reactions, in which parents give in to their children’s requests in order to decrease their distress (Eisenberg et al., 1998).
Overall, the literature has found that parental responses to children’s negative emotions affect childhood emotional outcomes. Parental acceptance of emotion, greater frequency of positive emotion expression, and allowing children to have opportunities to express and learn about emotion may result in benefits such as early and later childhood social competence, constructive coping, and fewer behavioral problems (Denham & Grout, 1993; Eisenberg et al., 1996; Eisenberg et al., 2001, Eisenberg & Fabes, 1992; MacDonald & Parke, 1984; Saarni, 1990, Tomkins, 1962, 1963). For instance, Eisenberg, Fabes, Schaller, Carlo, and Miller (1991) found that parents who respond to children’s distress in a supportive, sympathetic manner contribute positively to the development of children’s socioemotional competence, as was measured by child sympathetic and empathetic social responses in middle childhood. Non-supportive reactions ultimately lead to unhealthy emotional development by teaching young children to suppress emotional expressions and to use inappropriate emotion regulation strategies (e.g., avoidance, escape, revenge-seeking). These responses also promote the development of internalizing disorders, including child anxiety (Buck, 1984; Cicchetti, 1990; Eisenberg & Fabes, 1994; Eisenberg, Fabes, Carlo, & Karbon, 1992; Eisenberg et al., 1996; Gross & Levenson, 1993; Hammen, Brennan, & Shih, 2004; Jones, Eisenberg, Fabes, & MacKinnon, 2002; Saarni, 1999; Shipman & Zeman, 2001). Little research has examined either the predictors or outcomes of wish-granting and distress reactions. There has been very little research addressing the predictors of emotion socialization in general, but given the emerging evidence for a variety of child outcomes related to maternal emotion socialization, it is important to understand how mothers’ responses to negative emotions develop. The proposed study will address this gap by examining toddlers’ emotion regulation behaviors as predictors of maternal emotion socialization.

Few studies have heeded the call by previous researchers to acknowledge and focus on child-driven effects for these variables. Pettit and Lollis (1997) and Pardini (2008) have noted that researchers often persist in considering children as passive recipients of the parenting they receive, and that there is a lack of research examining child-directed effects on parenting. Morris et al. (2007) point out that the relation between parental practices (influenced by parental characteristics) and child emotion regulation is influenced by child characteristics. They also noted that while there is research focused on how socialization of emotion affects children, there is less research focused on how parents react to their children’s expressions of emotion. Thus,
there is room to explore how children elicit the parental responses they are receiving. Recently, there have been a variety of studies that have begun to investigate how young children shape the parenting they receive. One of the most prominent child characteristics studied in this regard is child temperament (Gallagher, 2002; Grusec & Hastings, 2008; Kochanska, 1993; Morris et al., 2002). Rubin, Nelson, Hastings, and Asendorpf (1999) found that 24-month-old children’s temperament, specifically social wariness and inhibition, influenced parental perceptions of child shyness, which subsequently predicted a lack of encouragement of independence at age 4. Similarly, a study by Kennedy, Rubin, Hastings, and Maisel (2004) found that young children’s cardiac vagal tone predicted specific parenting practices: mothers of children who were highly or moderately physiologically dysregulated were more likely to report restrictive parenting practices when children were 2 and 4-years-old. There is also a growing literature describing how a broad array of child characteristics affect levels of parenting stress. For instance, children with chronic illness and internalizing, attention, and conduct disorders increase levels of maternal stress (Breen & Barkley, 1988; Fischer, 1990; Goldberg, Morris, Simmons, Fowler, & Levison, 1990; Lytton, 1990). In a rare study examining maternal emotion socialization as an outcome, Eisenberg et al. (1999) found that the relations between children’s problem behavior and parental punitive and distress reactions are bidirectional. Because of the existing evidence demonstrating that children are capable of altering the parenting they receive, there is merit in the specific examination of how children’s emotion regulatory behaviors predict subsequent emotion socialization.

As previously discussed, children seek comfort from parents as well as learn to cope and soothe themselves in very early childhood, and socialization of emotion informs this process. Parental socialization of emotion demonstrates to children that emotion regulation is necessary to handle inevitable negative emotions by expressing, focusing on, suppressing, or minimizing them (Fredrickson, 1998). Mothers may also begin to hold expectations for their young children’s emotional regulation. For instance, they may expect increasingly independent regulation from their toddlers when they experience negative emotion in novel situations. Based on whether or not their toddlers conform to their mothers’ expectation for increased independent regulation, mothers will respond differently to displays of negative emotion in the future. More specifically, if mothers expect their toddlers to show more independent and less caregiver-focused regulation, toddlers who conform to these expectations will have mothers who respond
to their toddlers’ negative emotion with decreased responses that indicate impatience (wish granting), disapproval (non-supportive) or distress, and increased supportive responses. If toddlers do not conform to these expectations and use more caregiver-focused regulation, mothers must expend greater amounts of cognitive and emotional energy on soothing their children, which may increase mother’s non-supportive, wish-granting, and distress responses, and decrease supportive responses. Thus, mothers may react to their toddler’s negative emotion in such a way as to encourage or sustain adaptive, independent emotion responses from their toddlers.

When examining the predictive relation between toddlers’ emotion regulation and maternal emotion socialization, it is important to consider that regulatory behaviors may not predict maternal socialization in the same manner for all toddlers or mothers. Therefore, the moderating influences of toddler gender and maternal symptomatology are considered.

**The Moderating Influence of Gender**

Gender differences have been found in a variety of observed emotion processes. Most broadly, it has been found that girls and boys as young as the toddler years can express emotions differently. For instance, Brody (1999) found that across early and middle childhood, boys tend to express more anger than girls, and girls express more sadness than boys. A study by Buss, Brooker, & Leuty (2008) examined gender differences in toddler emotion regulation and found that girls were more likely to seek contact from and stay in closer proximity to their mothers compared to boys, even after controlling for distress. However, the association between distress and contact seeking or proximity was significant for boys but was not for girls. Although it has been proposed that differences in expression may be a result of girls’ faster cognitive development, these differences may occur in part because parents may discuss, express, or tolerate particular emotions in girls and boys respectively (Keenan & Shaw, 1997). There are many examples in the literature of parents responding to emotion and behavior differently in girls and boys. Most generally, several studies have found that parents tend to openly discuss emotion overall more frequently around girls versus boys (Dunn, Bretherton, & Munn, 1987; Garner, Robertson, & Smith, 1997). It has also been found that parents are more tolerant of anger reactions in boys than in girls (Condrey & Ross, 1985). Mothers put more effort into their interactions and use higher levels of control to socialize difficult girls, whereas mothers of difficult boys tended to reduce the effort in their interactions (Maccoby, Snow, & Jacklin, 1984;
Smith et al., 2006). Furthermore, mothers respond to their boys more often with punishment in negative emotional situations (Smetana, 1989). In Simpson and Stevenson-Hinde (1985), parents responded differentially to shy boys versus shy girls. Shyness in girls was associated with more positive parenting behaviors, such as acceptance of the child, while shyness in boys was negatively associated with positive parenting behaviors and resulted in more parental worrying. This was consistent with the authors’ hypothesis that girls are encouraged to act according to sex-typed behaviors, including fearfulness, shyness, withdrawal, and compliance. Furthermore, it has been proposed that these different responses may occur because parents interpret behaviors differently for boys and girls (Keenan & Shaw, 1997). Not all studies have found meaningful gender differences in either child emotion regulation, expression, or parental responses to children’s emotions (Fivush, Brotman, Buckner, & Goodman, 2000; Fivush & Buckner, 2000; Lytton & Romney, 1991). Despite this, there is enough evidence to warrant the continued investigation of gender differences (Chaplin, Cole, & Zahn-Waxler, 2005). Specifically, because parents may respond differently to the exact same behavior in boys and girls, emotion regulatory behaviors might evoke different responses in mothers when displayed by boys versus girls. Therefore, the current study hypothesizes that gender may serve as a moderator of the relation between toddler emotion regulation and maternal emotion socialization.

The Moderating Role of Maternal Internalizing Symptoms

Cognitive and emotional symptoms of depression include negative or sad affect, irritability, and hopelessness, and may also include emotional unavailability, confusion, and self-absorption (Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985). Patients with depressive symptoms who are not diagnosed may present with somatic complaints, and mixed anxiety and depression, as well (Blacker et al., 1987; Widmer & Cadoret, 1983). Particular anxiety symptoms of concern include excessive worry and cognitive distortions and deficits (Compton & Mintzer, 2001). Worry is not only a key feature of Generalized Anxiety Disorder, but also a very common symptom across all anxiety disorders (Barlow, 1988, Meyer et al., 1990). Internalizing disorders like depression and anxiety are not only debilitating, they are extremely common. One in five women and one in ten men will suffer from a depressive episode over the course of their lifetimes (Goodman & Gotlib, 2002), and the lifetime prevalence of anxiety disorders is between 10 and 25% (Robins et al., 1984). Mild depressive and anxious symptoms are even more common: 5.7% to 11.2% of patients presenting at primary care clinics suffer from internalizing
symptoms that are not diagnosable by DSM standards (Blacker, Clare, & Thomas, 1987; Barrett et al., 1988; Hoepner, Nycz, Cleary, Regier, & Goldberg, 1979). Parents may even experience greater levels of depressive and anxious symptoms as compared to the general population (Zuckerman & Beardslee, 1987). Therefore, attention to depressive and worry symptoms, rather than specific disorders, is important.

Depressive and worry symptoms can increase parents’ negative assessments of the environment and their interactions with others (MacLeod & Byrne, 1996). Even mild levels of depression and anxiety have been shown to result in children’s emotion regulatory difficulties, as well as result in an increased level of both internalizing and externalizing problems in children (West & Neuman, 2003). Furthermore, Berg-Nielsen, Vikan, and Dahl (2002) found that parental negativity, responsiveness, and social functioning were the most crucial to parenting skills regardless of the presence of a psychiatric disorder. More recently, it has been found that mothers with neuroticism display similar parenting behaviors as those mothers who are clinically depressed or anxious (Belsky, Crnic & Woodworth, 1995; Britton, 1969). Considering the overlap of neuroticism and negativity with depressive and anxious symptoms, it is logical to examine mothers across the symptomatology spectrum. The thoughts, feelings, and perceptions of mothers with depressive and anxious symptoms likely affect mothers’ responses to their children. It is probable, therefore, that internalizing symptomatology would influence the relation between the emotion processes of child emotion regulation and maternal emotion socialization.

Parents with more depressive or anxious symptoms may express, model, or react to (socialize) emotion in different ways than parents with few or no symptoms. Parents with more depressive or anxious symptoms may be too focused or overwhelmed with their own distress and lack the additional resources to be supportive in teaching their children how to manage stressful situations (Woodruff-Borden et al., 2002). Indeed, both depressive and anxious symptoms are associated with mothers’ disengagement from their children (Lovejoy, 2000; Whaley, Pinto, & Sigman, 1999). Field et al. (1995) found that depressed mothers had less contingent responsivity, provided less stimulation, and showed more flat affect during interactions with their 3-month-old infants than did less depressive mothers. This suggests that when toddlers of mothers with more symptoms use caregiver-focused regulation strategies, they will receive less supportive reactions than when mothers have fewer symptoms. Mothers with increased symptoms have also been found to engage in non-supportive behaviors. For instance, parents’ depressive symptoms are
related to higher levels of negative affect, criticism, and coercive parenting behaviors (Cummings, Davies, & Simpson, 1994; Lovejoy et al., 2000). Anxious parents are more likely than non-anxious parents to engage in anxiety-enhancing behaviors which subsequently affect their children, such as fostering a feeling of diminished perceived control or helplessness (Chorpita & Barlow, 1998; Ginsburg, Grover, & Ialongo, 2004). For instance, studies focusing on parent-relevant schemas, or the goals and expectations mothers have for their children, show that at-risk mothers tend to hold unrealistic, inflexible goals for their children (Azar, Reitz, & Goslin, 2008). These unrealistic goals result in maternal insensitivity toward the child’s developmental needs, and furthermore, may lead to more maternal intolerance and impatience, and to less maternal warmth. This is especially salient in distressing, overwhelming parent-child interactions (Azar, 1986; Keller, Speiker, & Gilchrist, 2005). Children’s caregiver-focused regulation strategies may overwhelm mothers with higher levels of these symptoms, who would then be more prone to non-supportive reactions to their children’s expressions of negative emotions. For instance, they may try to decrease these expressions by punishing or minimizing them.

It is also possible that if symptoms influence mothers to withdraw when children engage in caregiver-focused strategies, that they would be more inclined to give in to the child’s desires (i.e., engage in “wish-granting”). In support of this, Gelfand and Teti (1990) noted that depressed mothers can demonstrate extreme “lax undercontrol.” Similarly, mothers with internalizing symptoms have been observed to over-indulge their children (Martins & Gaffan, 2000; Weissman, Paykel, & Klerman, 1972). These mothers may be “giving in” more often to their children than mothers with lower levels of symptoms. Furthermore, adult women with depression express more distress than women without depression in a variety of social and emotional contexts (Hops et al., 1987; Weissman, Paykel, Siegel, & Klerman, 1971) suggesting that mothers with these symptoms may experience more distress reactions when their children are in distress and using regulatory behaviors focused on them. If children rely on independent regulatory behaviors, this may not tax mothers with symptoms to the same extent and so moderation may not be expected for self-focused and attention regulatory behaviors. Although not all research finds a positive relationship between internalizing symptoms and negative maternal parenting behaviors (Eisenberg et al., 2001; Woodruff-Borden et al., 2002), and the effects of the symptoms of depression and anxiety on mothers’ emotion socialization responses
have not been studied explicitly, the evidence above guides the hypothesis that symptoms will moderate the relation between toddlers’ caregiver-focused emotion regulation behaviors and maternal emotion socialization outcomes in the current study. Thus, the current study hypothesizes that maternal internalizing symptoms will change the way in which toddler emotion regulatory behaviors predict maternal emotion socialization.

**Current Study**

Overall, this study is concerned with clarifying the predictive relation between emotion regulation in young children and maternal socialization of emotion in the presence of moderating child and mother characteristics. Given the importance of and outcomes related to these emotional processes for parent-child relationships, it is critical to understand when these processes develop. Furthermore, this study is unique because these child-elicited effects on emotion socialization have not been explored. In addition, it examines both the concurrent relation between emotion regulation and emotion socialization when toddlers are 24 months old as well as the relation between emotion regulation and change in emotion socialization across one year. Child gender and maternal internalizing symptoms are conditions under which there may be differences in maternal emotion socialization responses. Therefore, hypotheses of the current study are as follows:

A. Gender moderates the relation between toddlers’ emotion regulation and emotion socialization. Specifically,

a1. Research suggests mothers foster more independence in their boys by disengaging from them (Maccoby et al., 1984), which naturally discourages caregiver-focused means of soothing themselves. Likely, caregiver-focused regulation behaviors are contrary to maternal expectations for their boys’ behaviors and mothers will become less supportive in reaction to negative emotions over time. Therefore, I hypothesize that boys who demonstrate higher levels of caregiver-focused regulation behaviors are less likely to receive supportive socialization reactions from their mothers. However, I hypothesize that boys who demonstrate higher levels of independent regulation are more likely to receive supportive socialization responses from their mothers. On the other hand, girls can express mild anxiety and dependency that is considered normative by parents (Keenan & Shaw, 1997). For girls, I hypothesize that a higher frequency of caregiver-focused behaviors will receive more supportive reactions. Girls who demonstrate a higher
frequency of independent regulation will not receive significantly different levels of supportive socialization responses.

a2. Predictions for non-supportive socialization responses are complementary to predictions for supportive responses. Boys who demonstrate higher levels of caregiver-focused regulation will receive increased non-supportive socialization responses, while boys’ increased levels of independent regulation will receive decreased non-supportive socialization responses. Girls who demonstrate higher levels of caregiver-focused regulation will receive fewer non-supportive reactions from their mothers. Girls who demonstrate a higher frequency of independent regulation will not receive significantly different levels of non-supportive reactions.

a3. Given the lack of evidence suggesting any relation, I do not hypothesize that any specific relation between caregiver-focused or independent regulation and wish-granting reactions will be moderated by gender.

a4. Because boys may be expected to demonstrate more independent coping, I hypothesize that boys who demonstrate a higher frequency of caregiver-focused regulation will receive increased distress responses from their mothers. Similarly, I hypothesize that increased levels of self-soothing regulation in boys will result in decreased maternal distress responses. However, I hypothesize that girls who demonstrate a high frequency of caregiver-focused regulation will not receive significantly different levels of distress reactions. I do not hypothesize any relation between self-focused regulation and distress reactions in girls.

B. Maternal internalizing symptoms moderate the relation between child emotion regulation and maternal emotion socialization.

b1. Given that mothers with internalizing symptoms express more negative affect, disengagement, and increased life stress related to parenting (Cummings et al., 1994; Lovejoy et al., 2000; Cornish et al., 2006), toddlers who demonstrate a higher frequency of caregiver-focused behaviors and who also have mothers with higher levels of symptoms will receive fewer supportive socialization reactions from their mothers. Toddlers who demonstrate a higher duration of independent regulatory strategies, and who have mothers with higher levels of depressive or anxious symptoms, will receive more supportive socialization reactions from their mothers.
b2. It is likely that under the heavy cognitive load of these symptoms, mothers would respond in favor of more independent, self-regulating behaviors in their children. It is thus hypothesized that toddlers who demonstrate a higher frequency of self-soothing behaviors will receive less non-supportive socialization reactions from their mothers. However, toddlers who demonstrate increased caregiver focused regulation will elicit increased non-supportive socialization responses from their mothers when mothers report higher levels of internalizing symptoms.

b3. Given that mothers with depressive or worry symptoms are more likely to be cognitively taxed and “give in” to their children in distressing situations (Martins & Gaffan, 2000), I hypothesize that mothers who report higher levels of depressive or worry symptoms whose toddlers use a higher frequency of caregiver focused regulation will respond with increased wish-granting socialization responses. Toddlers who use an increased duration of independent regulation will elicit decreased wish-granting reactions from mothers who report higher levels of depressive and worry symptoms.

b4. Given a lower threshold for negative emotional reactions to events, I hypothesize that mothers with increased depressive and worry symptoms will respond to their toddlers’ increased caregiver-focused regulation with increased distress responses. Similarly, I hypothesized that mothers with increased internalizing symptoms will respond to toddlers’ increased independent regulation with decreased levels of distress reactions.

Method

Participants

A group of 117 mother-child dyads participated in the current study. Mothers were recruited through the mail based on birth announcements published in local newspapers and in person at meetings of the Women, Infants, and Children (WIC) program. The sample was reduced to those participants who completed the age 2 measures of emotion socialization and internalizing symptoms assessments (n = 91). Toddlers (51 male and 40 female) were approximately 24-months-old (M_age = 24.74 mos., SD_age = 0.70 mo.) at the time of the age 2 assessment. Children were 84.6% European American, 5.5% African American, 7.7% Asian American, 1% American Indian, 1% biracial, and 1% “other.” Mothers in this sample tended to be college-educated (years of education: M = 16.35, SD = 2.36) with a range of 11 to 20 years of education. Family gross income ranged from below $16,000 to higher than $61,000, with 40.7%
of families making $60,000 or less. Mothers then completed a second questionnaire battery approximately 1 year after the age 2 assessment, with 23 mothers having been lost to attrition.

**Procedure**

Once a mother showed an interest in the study by mailing back a postcard or signing up at a WIC meeting, a laboratory staff member called the mother to arrange a laboratory visit and mailed her a packet with a consent form and a questionnaire packet including demographics and emotion socialization measures. At the laboratory, the experimenter told the mother that her toddler would be participating in a variety of activities (referred to as “episodes”), involving novel stimuli (i.e., a female clown, a puppet show, and a remote-controlled spider toy) modeled after the Laboratory Temperament Assessment Battery (Lab-TAB; Buss & Goldsmith, 2000; Goldsmith & Rothbart, 1996) and previous studies in the literature (Buss, 2011; Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996). After the visit, mothers were given a pre-addressed envelope to return questionnaires assessing depressive and worry symptoms. Mothers were asked about their symptoms after the visit to prevent their answers from affecting their behaviors in the laboratory.

**Novelty episodes.** For this study, child behavior was observed in three novelty episodes: interaction with a female clown, puppet show, and remote-controlled spider. Mothers were told to behave naturally or “as they typically would” for the duration of these episodes.

In the Clown episode, the child was invited to play a variety of games with a female undergraduate research assistant dressed in a clown costume, complete with a wig and a nose. Games included blowing bubbles, playing catch with beach balls, and playing with musical instruments. Each game lasted approximately 1 minute, and then the clown asked the child to help her clean up the toys.

In the Puppet Show episode, the child was invited to watch and interact with lion and elephant puppets, which were controlled by the same undergraduate research assistant from behind a small wooden stage. Children were invited to play two games with the puppets; the first was to play catch with a small ball, and the second was a fishing game. After the games, the child received a sticker from the puppets as a prize. The undergraduate research assistant then appeared from behind the stage, showed the child the two puppets, and departed, leaving the puppets in the room for the child to examine until the primary experimenter returned.
In the Spider episode, children interacted with a remote-controlled spider. The experimenter asked the mother to begin the episode with the child seated in her lap. A large plush spider, which was affixed to a remote-controlled truck hidden by a box lid, sat in the opposite corner of the room. The spider was controlled by remote from behind a one-way mirror. First, the spider approached half-way towards the child, paused for 10 seconds, and then retreated to its starting place in the corner. After another 10 seconds, it approached the child and mother the entire way, pausing for 10 seconds before it retreated back to the corner. The experimenter then re-entered the room and gave up to three friendly prompts for the child to touch the spider.

**Measures**

**Emotion regulation.** Toddler emotion regulation behaviors were coded by undergraduate and graduate level research assistants naïve to the hypotheses of the current study. Coders were trained by a master coder (E. Kiel) for a minimum of 15-20 hours and were required to establish minimum reliability (kappa = .80) before coding independently. The master coder double-coded approximately 20% of cases to maintain reliability throughout coding. The coders and master coder reconciled discrepancies by watching episodes together and determining appropriate scores. Coding was conducted using the emotion regulation coding definitions provided in the Lab-TAB manual. Coders scored the presence versus absence of an array of toddlers’ behaviors that fit into broader categories of attention regulation, self-soothing, and caregiver-focused regulation established in previous studies (Cole, Martin, & Dennis, 2004; Grolnick, Bridges, & Connell, 1996; Rothbart & Bates, 1998) on a second-by-second basis. Although there is precedent in the literature to consider both attention and self-soothing behaviors as autonomous forms of regulation (Kopp, 1989), they are separated here due to differences in how they were observed in the laboratory. Attention-regulation behaviors included distraction (e.g., looking for several seconds at nothing in particular) and gaze aversion (e.g., brief glances away from the episode stimulus). Self-soothing behaviors were also coded, including self-touching, or when a child inactively touched themselves (e.g. resting their hands on their lap), self-stimulation, when a child touched herself unconsciously and for soothing purposes (e.g. rubbing their hands, sucking their thumb), and fidgeting, when a child actively and/or nervously moved (e.g. waving their hands and/or limbs). Lastly, caregiver-focused behaviors were coded, such as looks to their caregiver and contact-seeking (e.g., running to or reaching for their caregivers). Several
summary variables were computed for each of these behaviors. Specifically, the current study used the frequency of attention-regulation and caregiver-focused behaviors (because these behaviors tend to occur for short periods of time) and the duration of self-soothing behaviors (because these behaviors may continue for extended periods). The frequencies and durations of these regulatory behaviors were summed across the novelty episodes in order to provide longer periods of observation that are more representative of typical child experiences.

**Emotion socialization.** Emotion socialization was measured using the Coping with Toddlers’ Negative Emotion Scale (CTNES; Spinrad, Eisenberg, Kupfer, Gaertner, & Michalik, 2004), a toddler variant of the Coping with Children’s Negative Emotions Scale that adjusted vignette content to be more appropriate for toddlers versus preschool or school-aged children (Eisenberg et al., 1996; Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002). The CTNES was administered at both age 2 and age 3. The CTNES is a self-report measure with seven subscales that reflect how parents respond to their children’s negative emotions. Parents were asked how they would respond to their toddlers’ emotional expression in 12 hypothetical scenarios (e.g., “If my child becomes angry because he wants to play outside and cannot do so because he is sick, I would…”). Each situation was followed by seven responses, and parents rated the likelihood of responding on a scale from 1 (very unlikely) to 7 (very likely). Emotion-focused responses are strategies that are designed to help the child feel better, for instance in the above example, “I would: Soothe my child and/or do something with him to make him feel better.” Problem focused responses occur when parents help the child solve the problem that caused the child’s distress (e.g., “I would: Help my child find something he wants to do inside”). Expressive encouragement occurs when parents encourage children to express negative affect or validate children’s negative emotional states (e.g., “I would: Tell my child it’s ok to be angry”). Minimization responses capture how parents may devalue their children’s negative emotions (e.g., “I would: Tell my child that he is making a big deal out of nothing.”) Punitive responses capture how parents may punish or threaten their children for displaying negative emotions, for instance, “I would: Tell my child we will not get to do something else fun (i.e., watch T.V., play games) unless he stops behaving like that.” Wish-granting responses occur when mothers “give in” to their child’s wishes, for instance, “I would: let my child play outside.” Distress reactions reflect the degree to which parents report distress when their children display negative affect, for instance, “I would: feel upset myself.” Following previously established guidelines resulting
from a factor analysis by Spinrad et al. (2007), a “supportive reactions” composite was created as
the aggregate of emotion-focused responses, problem-focused responses, and expressive
encouragement (36 items; a_{age2} = .83, a_{age3} = .87) whereas the “non-supportive reactions”
composite includes minimization responses, and punitive responses (24 items; a_{age2} = .87, a_{age3} =
.72). Wish-granting (10 items, a_{age2} = .76; a_{age3} = .87) and distress responses (12 items, a_{age2}
=.73; a_{age3} = .70) did not factor with any other scales (Spinrad et al., 2007), so they will be
examined separately. The CTNES demonstrates good validity, with scores on the CTNES being
related in expected ways to mothers’ attitudes about parenting, maternal responsivity, as well as
the parents’ use of physical punishment. It also has acceptable test-retest reliability (rs = .65 to
.81) (Spinrad et al., 2004). The CTNES also shows good discriminant validity such that
subscales capture parenting behaviors that are related to, yet distinct from broader based
parenting measures (Fabes et al., 2001).

**Maternal depressive symptomatology.** Mothers reported on their depressive symptoms
using the Center for Epidemiological Studies-Depression scale (CES-D, Radloff, 1977), a 20-
item self-report measure used to assess depression in the general population. The CES-D shows
excellent internal consistency in community samples (coefficient alpha > 0.85) and test-retest
reliability (r > 0.5) (Radloff, 1977). The CES-D was administered during the age 2 assessment.
Mothers were asked to rate on a 4-point scale ranging from 0 (*rarely to none of the time*) to 3
(*most or all of the time*) how often they experienced various depressive symptoms (e.g., “I felt
depressed”). A mean of the 20 items yielded an overall depressive symptom score (α = .80).

**Maternal anxious symptomatology.** Mothers reported their worry symptoms using the
Penn State Worry Questionnaire (PSWQ, Meyer et al., 1990). The PSWQ is a 16-item measure
on which mothers reported the extent of worry concerns related to generalized anxiety disorder
(e.g., “I am always worrying about something”) on a 5-point Likert type scale ranging from 1
(*not at all typical*) to 5 (*very typical*). The PSWQ demonstrates high test-retest reliability (r >
.46) over a span of 8-10 weeks, and demonstrates high validity when compared to clinical
interviews of worry (Meyer et al., 1990). A mean of all items was used as the measure of worry
symptoms (α = .93).
Results

Missing Data

Independent samples t-tests determined that mothers missing the age 3 assessment had higher mean levels of depressive symptoms \((t (89) = 2.41, p = .018; M = .59, SD = .30)\) than mothers who were not \((M = .42, SD = .30)\). Age 2 supportive socialization responses were higher for mothers with age 3 \((t (89) = -2.11, p = .037; M = 5.70, SD = .80)\) than for mothers who were missing age 3 \((M = 5.36, SD = .80)\). Missing Value Analysis in SPSS 19.0 (SPSS, 2010) and Little’s MCAR test suggested that these data were missing completely at random \((\chi^2 = 47.08, p > .05)\). Because listwise deletion has been found to bias results and reduce power of the analyses (Jeličić, Phelps, & Lerner, 2009; Widaman, 2006), missing Age 3 CTNES outcomes were imputed using multiple imputation, with emotion regulation strategies, gender, maternal depressive symptoms, maternal worry symptoms, SES, age 2 values of CTNES scales, and existing values of age 3 CTNES used in the algorithm.

Preliminary Analyses

Emotion regulation composites, age 2 and age 3 emotion socialization scales, and moderator variables were all found to have a normal distribution (skew < 2.0). Descriptive statistics and gender t-tests for primary study variables are presented in Table 1.

Although primary study analyses use a mean of CESD item scores as the measure of depressive symptoms, a sum was also computed to compare sample scores with clinical samples. Summed scores had a mean of 9.28, a standard deviation of 6.02, and a maximum of 27.00. Scores below 15 are representative of subclinical depressive symptom levels, scores at and above 15 are indicative of ‘possible depression,’ and scores at and above 23 indicate ‘probable depression’ (Radloff, 1977). Thus, the sample, on average, was in the subclinical range, and one standard deviation above the mean depressive symptom score corresponded to a clinical score of about 15. Thus, mothers approximately at or above one standard deviation above the mean demonstrate at least mild clinical levels of depression.

There were no significant differences between boys and girls in mean level use of regulatory behaviors. Mothers of girls reported significantly higher mean levels of worry \((M = 3.02, SD = 0.72)\) than mothers of boys \((M = 2.71, SD = 0.68)\). Mothers also reported marginally higher mean levels of age 2 supportive socialization with girls \((M = 5.76, SD = 0.69)\) versus boys \((M = 5.46, SD = 0.86)\). There were no significant gender differences in age 3 socialization scores.
Bivariate correlations are presented in Table 2. Some regulatory behaviors were correlated; attention regulation was marginally, positively related to caregiver-focused regulation, and significantly, positively related to self-soothing regulation. For age 2 socialization responses, wish granting responses and distress responses were positively correlated; this pattern held at the age 3 assessment, but with a lower correlation. Socialization responses at age 2 and age 3 correlated with maternal depressive and worry symptoms. Increased depressive symptoms correlated positively with levels of age 2 and age 3 non-supportive responses at significant levels, suggesting that mothers with increased depressive symptoms reported higher concurrent and future use of non-supportive socialization strategies. Mothers’ worry was significantly positively correlated with age 2 as well as age 3 distress responses, indicating that mothers who reported increased worry also reported increased personal distress when their toddlers show emotional distress. Given no significant relations of variables to socioeconomic status (all \( p > .05 \)), this variable was not included in further analyses.

**Moderation Analyses**

It was hypothesized that the relation between toddler emotion regulation behaviors and maternal socialization behaviors would depend on toddler gender and maternal depressive and worry symptoms. In a series of multiple regression models, caregiver-focused, self-soothing, attention-focused regulation, a particular moderator, and its cross product with each of the regulatory behaviors were entered as predictors of a particular emotion socialization strategy. Each model contained all three regulatory behaviors and each of their interactions with that particular moderator variable. A first set of analyses examining the predictors of age 2 emotion socialization as the outcome were conducted. Secondly, models testing the outcome of each age 3 emotion socialization strategy, controlling for the appropriate age 2 emotion socialization strategy, were conducted to assess change in these constructs. All moderation analyses described below follow guidelines set forth by Aiken and West (1991); continuous variables were centered at their means prior to creation of interaction terms. Child gender was dummy-coded (with males initially coded as 0) to enable probing of simple effects. Significant interactions found in any of the analyses were probed for simple effects by re-centering the moderator at standard values (-1 SD, mean, +1 SD) or recoding the gender dummy variable, and a region of significance for simple effects involving continuous moderators was computed. Because the information required for the computation of regions of significance could not be obtained from a multiple imputation.
file, a dataset consisting of variables computed by averaging the imputations was used to compute the region of significance. An online calculation tool provided by Preacher, Curran, and Bauer (2004, 2006) yielded the exact point of the moderator at which the relation between the predictor and the outcome became significant.

**Gender.** Toddler gender was first examined as a moderator of the relation between child emotion regulation and age 2 emotion socialization strategies. It was found that gender moderated the relation between caregiver-focused regulation and supportive socialization (see Table 3). Higher levels of caregiver-focused regulation in boys was linked to higher levels of age 2 supportive socialization responses \((b = .028, t (83) = 2.09, p = .04, SE = .014, 95\% CI [.002, .055])\), with no relation for girls \((b = -.026, t (83) = -1.44, p = .15, SE = .016, 95\% CI [-.053, .008])\). Furthermore, for girls, higher levels of self-soothing regulation were related to lower levels of non-supportive socialization \((b = -.004, t (83) = -2.47, p = .01, SE = .001, 95\% CI [-.006, -.001])\). There was no relation for boys \((b = .002, t (83) = 1.36 , p = .18, SE = .002, 95\% CI [-.001, .005])\). No relations for age 2 distress and wish granting involving gender as a moderator were found.

Toddler gender was then examined as a moderator of age 2 emotion regulation predicting age 3 emotion socialization, controlling for age 2 socialization. A significant interaction between self-soothing regulation and gender was found in relation to non-supportive socialization (see Figure 1). Specifically, as boys displayed higher self-soothing regulation, they received more non-supportive socialization responses \((b = .003, t (82) = 2.17, p = .03, SE = .001, 95\% CI [.000, .005])\). Moreover, a marginally significant interaction for the moderating role of gender in the relation between caregiver-focused emotion regulation and non-supportive socialization was found. For boys, it was found that an increase in caregiver-focused emotion regulation resulted in less non-supportive socialization \((b = -.030, t (82) = -2.73, p = .007, SE = .011, 95\% CI [-.052, -.008])\). No significant effect was found for girls in probing either of these interactions (self-soothing regulation: \(b =-.002, t (83) = -1.25 , p = .22, SE = .001, 95\% CI [-.004, .001];\) caregiver-focused regulation: \(b =.002 , t (83) = 0.14 , p = .89, SE = .012, 95\% CI [-.022, .025]).\) In the model predicting age 3 supportive socialization, no interactions were significant, but when they were dropped from the model, one marginal main effect for regulatory behavior was found. An increase in self-soothing regulation related to decreased age 3 supportive responses \((b = -.002, t (83) = -1.67, p = .09, SE = .001, 95\% CI [-.003, .000]).\) No other significant main effects for
regulatory behaviors or interactions were found in predicting age 3 wish granting or distress socialization outcomes with gender as a moderator.

**Depressive symptoms.** In the second set of models, maternal depressive symptoms were examined as the moderator. In the first set of regressions, the effects of maternal depressive symptoms on the relations between regulation and socialization response at age 2 were examined. A significant interaction between self-soothing regulation and depressive symptoms was found as it relates to distress responses (see Table 4). Probing this interaction revealed that at low \( b = .001, t (83) = 0.80, p = .43, SE = .002, 95\% CI [-.002, .004] \) and mean levels \( b = -.002, t (83) = -1.52, p = .13, SE = .001, 95\% CI [-.004, .000] \) of maternal depressive symptoms, there was no relation. However, at high levels of depressive symptoms, the relation between self-soothing regulation and distress responses was negative and significant, with lower levels of self-soothing regulation predicting increased distress responses at age 2 \( b = -.005, t (83) = -2.89, p = .004, SE = .002, 95\% CI [-.008, -.001] \). The lower boundary of the region of significance found that the relation was positive and significant at and below 1.57 SD below the mean of depressive symptoms, and negative and significant at approximately .87 SD above the mean of depressive symptoms. Thus, as mothers displayed higher levels of depressive symptoms, lower levels of self-soothing regulation displayed by toddlers related to distress responses at age 2. For age 2 wish-granting responses, no interactions were significant, and thus were dropped from the model. Main effects were found for all three regulatory behaviors. Specifically, higher levels of self-soothing regulation related to decreased wish-granting responses \( b = -.003, t (83) = -2.78, p = .005, SE = .001, 95\% CI [-.005, -.001] \), while higher levels of caregiver-focused regulation related to increased wish granting \( b = .021, t (83) = 2.26, p = .009, SE = .009, 95\% CI [.003, .040] \). Higher levels of attention-regulation related to increased wish-granting responses as well \( b = .038, t (83) = 2.18, p = .029, SE = .017, 95\% CI [.004, .072] \). No main or interactive effects were significant in relation to supportive and non-supportive outcomes with depressive symptoms as the moderator.

A second set of regressions examined maternal depressive symptoms as a moderator of the relations between age 2 emotion regulation behaviors and age 3 maternal emotion socialization responses. Specifically, depressive symptoms moderated the relation between caregiver-focused regulation and age 3 wish-granting socialization responses (see Figure 2). Probing revealed that there was no relation between caregiver-focused regulation and age 3
wish-granting responses at low ($b = -0.14, t(82) = -1.25, p = .21, SE = .015, 95\% CI [-.037, .008]) or mean levels of depressive symptoms ($b = 0.007, t(82) = 0.77, p = .44, SE = .009, 95\% CI [-.011, .024]). However, at high levels of maternal depressive symptoms, toddlers who demonstrated higher levels of caregiver-focused regulation received increased wish granting socialization at age 3 ($b = 0.028, t(82) = 2.02, p = .047, SE = .014, 95\% CI [.000, .055]). The lower boundary of the region of significance of this interaction revealed that the relation was negative and significant at and below 1.14 $SD$ below the mean and positively significant at and above .20 $SD$ above the mean. No other main effects or interactions for regulatory behaviors were found in relation to distress, supportive, or non-supportive socialization outcomes with depressive symptoms as the moderator.

**Worry symptoms.** Finally, moderation analyses focused on symptoms of worry. Regressions measuring the effects of worry symptoms on the relation between emotion regulation and supportive socialization at age 2 found that there was a significant interaction between worry and caregiver focused regulation in relation to supportive socialization (see Table 5). Probing for simple effects revealed that at low levels of maternal worry symptoms, higher levels of caregiver-focused regulation were related to higher levels of supportive socialization ($b = .034, t(83) = 2.25, p = .024, SE = .015, 95\% CI [.004, .064], see Figure 3). At mean levels of worry symptoms, there was no relation between caregiver focused regulation and supportive socialization ($b = .006, t(83) = 0.63, p = .53, SE = .010, 95\% CI [-.013, .026]), as was the case at high levels of maternal worry symptoms ($b = -.022, t(83) = -1.52, p = .13, SE = .014, 95\% CI [-.050, .006]). The lower boundary of the region of significance of this interaction revealed that the relations were positive and significant at and below .66 $SD$ below the mean, as well as negative and significant at and above approximately 2.02 $SD$ above the mean. Thus, mothers with lower levels of worry symptoms responded to toddlers’ increased caregiver focused regulation with higher levels of supportive socialization responses, but at higher levels of worry symptoms, mothers responded with decreased levels of supportive responses. There were no significant interactions for age 2 wish-granting responses, thus they were dropped from the model. Main effects were then found for all three regulatory behaviors in relation to age 2 wish-granting responses. Specifically, increased levels of self-soothing regulation related to decreased wish-granting responses ($b = -.003, t(83) = -2.76, p = .006, SE = .001, 95\% CI [-.005, -.001]), while increased caregiver-focused regulation related to increased wish granting ($b = .021, t(83) = 2.18,
Increased attention-regulation related to increased wish-granting responses as well \((b = .042, t (83) = 2.40, p = .016, SE = .017, 95\% CI [.008, .076])\). No main or interactive effects with regulatory behaviors were significant in relation to supportive or non-supportive responses with worry symptoms as the moderator. All other interactive and main effect analyses for worry symptoms as a moderator of the relation between regulation and age 2 socialization responses proved non-significant.

Lastly, a set of regression analyses examining how maternal symptoms of worry moderated the relation between age 2 emotion regulation and age 3 maternal socialization were conducted. Maternal worry symptoms moderated the relation between caregiver-focused regulation and age 3 wish granting socialization responses at a marginal level (see Table 5). Probing the interaction did not yield significant results at low \((b = -.014, t (82) = -1.27, p = .21, SE = .011, 95\% CI [-.037, .008])\), mean \((b = .002, t (82) = 0.23, p = .82, SE = .009, 95\% CI -.016, .020])\), or high levels of worry \((b = .019, t (83) = 1.29, p = .20, SE = .015 , 95\% CI [-.010, .048])\). The region of significance for the interaction revealed that the relation became negative and significant at and below 1.69 SD below the mean, as well as positive and significant at and above approximately .75 SD above the mean. The difference between probing results and the region of significance are likely due to the use of a multiple imputation file versus an aggregate variable to compute the regions. Overall, mothers who are lower in worry symptoms respond to toddlers with higher levels of caregiver-focused regulation with decreased wish-granting responses. Once symptoms reach higher levels, mothers with increased worry symptoms respond to an increase in caregiver focused regulation with increased wish granting responses at age 3. Lastly, there were no interactions found in relation to age 3 supportive responses, thus they were dropped from the model. One marginal main effect for regulatory behavior was then found, with an increase in self-soothing regulation resulting in decreased age 3 supportive responses \((b = -.002 , t (83) = -1.75, p = .08, SE = .001, 95\% CI [-.003, .000])\).

**Discussion**

The purpose of the current study was to examine how toddler emotion regulation concurrently relates to and longitudinally predicts maternal emotion socialization, as moderated by child gender, maternal depressive symptoms, and maternal worry symptoms. Examining this relation contributes to the expanding knowledge of child-directed developmental effects, and when toddler and maternal characteristics play a role in these effects. Evidence has consistently
found support for parental characteristics informing the parental behaviors that influence child emotion regulation (Eisenberg et al., 1996; Eisenberg et al., 2001, Eisenberg & Fabes, 1992). The current study broadens the larger picture of emotional development by providing evidence for how children elicit the parenting they receive. As age 2 analyses provided intriguing concurrent relations among these variables, age 3 analyses yielded longitudinal evidence for when toddler gender, maternal depressive symptoms, and maternal symptoms of worry moderated the predictive relation between age 2 toddler emotion regulation and age 3 maternal emotion socialization. Although the current study does not explicitly explore potential bidirectional effects between emotion regulation and emotion socialization, it does provide evidence that both maternal and child characteristics inform when toddlers may elicit parental socialization responses.

Gender was found to moderate the relation between emotion regulation and age 2 supportive and age 3 non-supportive socialization, but in an unexpected manner. Contrary to hypotheses, when boys demonstrated higher levels of caregiver-focused regulation, they received higher levels of supportive socialization at age 2 and decreased non-supportive socialization by age 3. Complementary to these findings, mothers also responded with more non-supportive socialization at age 3 when boys had demonstrated an increased duration of self-soothing regulation. Another way to conceptualize these results is that lower levels of caregiver-focused regulation related to lower levels of supportive socialization at age 2 and increased non-supportive socialization by age 3. These results have significant implications for boys because increased levels of non-supportive emotion socialization are linked to a variety of maladaptive child outcomes including the development of internalizing disorders (Eisenberg & Fabes, 1994; Eisenberg, Fabes, Carlo, & Karbon, 1992; Eisenberg et al., 1996; Gottman et al., 1997; Gross & Levenson, 1993; Hammen, Brennan, & Shih, 2004; Shipman & Zeman, 2001). Similarly, provided the importance of supportive socialization responses in the development of socioemotional competence (Eisenberg et al. 1991), decreased supportive socialization is equally concerning. It is surprising that mothers are responding maladaptively to their toddlers when they self-soothe. The specific development of socialization of effective self-soothing emotion regulation in young children has seldom been studied, so it is difficult to interpret this result in the context of the current literature. Literature stemming from the theory of Vygotsky suggests that the origins of broader self-regulation in childhood, including regulation of emotional
processes, first come from adult-child interactions (Diaz, Neal, & Amaya-Williams, 1990). It can be further suggested that the success of effective self-regulation in toddlers is dependent on parent-child interactions. Since toddlers are less adept at self-soothing than older children, parent-child interactions should seek to reinforce the adaptive use of self-regulatory behaviors (Kopp, 1989). Assuming supportive socialization responses are adaptive, mothers should then encourage the use of increased self-soothing regulation with supportive responses. But as may be the case here, boys at this age may not be deemed to be “ready” by their mothers for using independent coping, and need more emotional scaffolding before they are thought to regulate their emotions effectively. Thus, mothers may prefer to see increased caregiver-focused regulation, and respond to both more self-soothing and less caregiver-focused regulation with decreased supportive and increased non-supportive responses.

The current results provide more context for the main effects previously found in the literature. For instance, it has been found that boys receive more punishment in negative emotional situations (Smetana, 1989). The current study suggests this may depend on boys’ specific regulatory strategies. Gender differences in maternal non-supportive response to self-soothing regulation may be similar to findings of gender differences in other emotional competencies, such as emotion understanding, that develop within the parent-child relationship. For example, in Denham et al. (1994), children with the lowest emotion understanding scores had mothers who showed more anger (which could be considered a punitive, non-supportive response). Boys’ self-soothing regulation may be received with less support and more punitive and minimizing responses from mothers because they are (or are perceived as) less emotionally prepared, and less effective at soothing themselves as compared to girls. In the same vein, boys who use more caregiver-focused strategies receive less punitive and minimization responses because of these age and gender expectations—perhaps mothers would prefer that young boys continue to rely on them to regulate until they are adept at soothing themselves. However, the current study cannot speak directly to this interpretation. Future research could investigate how explicit or implicit measures of maternal gender expectations moderate the relation between emotion regulation’s effect on emotion socialization over time.

The current findings may relate to previous literature on another type of emotion socialization, discussion of emotions. For instance, Brody (1993) found that mothers discussed positive emotions and emotional states more with their daughters than their sons, and focused on
the causes and consequences of the child’s emotions more so with their sons than their daughters. Brody (1993) posited that this was suggestive of mothers’ attunement to girls’ increased verbal abilities at young ages as compared to boys, which is consistent with findings that young girls may be more cognitively developed than boys (Keenan & Shaw, 1997). Therefore, differences in verbal ability may explain parental differences in emotion discussion. Gender differences in emotion discussion are similar to maternal emotion socialization results presented here, with mothers responding to boys with less support and more punitive and minimizing responses when boys focus less on them to regulate their emotions. These effects could also be related to mothers’ attunement to boys’ less developed verbal abilities relative to girls, with maternal responses suggesting boys are less adept at soothing their own negative emotions. However, as Eisenberg, Cumberland, & Spinrad (1998) noted, more evidence is needed to determine if differences in verbal ability, sex-typed parental beliefs, or other variables are the cause of these differences in the Brody (1993) study and thus the gender differences in how emotion regulation predicts maternal supportive and non-supportive emotion socialization responses.

There were no interactive effects for gender and emotion regulation in predicting distress and wish-granting responses. Overall, distress and wish-granting responses have been studied less than supportive and non-supportive socialization responses in the literature. It could be that wish-granting, or “giving in” responses, are related to other constructs in parenting, such as permissive parenting. While some evidence suggests parents of boys are more likely to have authoritarian parenting styles, and parents of girls are more likely to be authoritative (Russell et al., 1998), child gender differences in permissive parenting have not been found, which is consistent with findings in the current study that gender did not moderate any relation between regulation and maternal wish-granting responses. Permissive parenting style, and related behaviors and responses such as wish-granting, however, should be explored further in the mother-child relationship, especially in light of maladaptive child outcomes associated with permissive style (e.g., externalizing behaviors, Rinaldi & Howe, 2012). In general, further exploration of the determinants, function, and outcomes of wish-granting behavior and distress responses by both mothers and fathers in response to their children is needed.

There was no relation for any form of emotion regulation as it related to socialization outcomes in girls at the age 3 assessment. Specifically contrary to hypotheses, there was no relation between girls’ use of caregiver-focused regulation and supportive socialization, but it
was found that higher levels of self-soothing regulation in girls resulted in lower levels of non-supportive socialization at age 2. This pattern of results seems to suggest that girls are allowed a more flexible range of regulation strategies without changes in maternal socialization responses, and that there is a unique relation between emotion regulation and socialization for boys as toddlers age. Although there was a concurrent relation for girls, emotion regulation did not predict how emotion socialization changed over time—this effect was unique to boys. One potential explanation centers on findings that suggest fathers’ parenting behaviors and responses affect girls more strongly than mothers’ behaviors do. For instance, Starrels (1994) found that fathers’ characteristics, such as education and parenting style, were related to supportive parenting outcomes only for daughters. Perhaps higher levels of caregiver-focused regulation in girls, as it relates to increased supportive or decreased non-supportive socialization responses, is significant only when paternal emotion socialization responses are considered. The relation between child emotion regulation as it relates to paternal emotion socialization could not be explored in the current study, but it is a promising direction for exploring both parent and child gender-specific effects on this relation.

Depressive symptoms moderated the relation between emotion regulation and age 2 distress and age 3 wish-granting socialization responses. Consistent with hypotheses, decreased self-soothing regulation related to higher levels of maternal distress responses as maternal depressive symptoms increased, but only in concurrent relations. This would suggest that as toddlers use less self-soothing to regulate their emotions, mothers who are putatively cognitively and emotionally taxed by depressive symptoms experience more distress when their toddlers express negative emotions, but not over time. This could suggest that the relation between self-soothing regulation and distress responses, as moderated by depressive symptoms, is not a child-driven effect. Also consistent with hypotheses, for toddlers who used increased levels of caregiver-focused regulation, mothers higher in depressive symptoms responded with increased levels of wish granting socialization responses a year later. These results suggest it is more likely for mothers to “give in” to their toddlers when they are coping with depressive symptoms, which have been found to increase levels of disengagement with their toddlers.

Specific maternal depressive symptoms and associated behaviors may influence how child emotion regulation elicits maternal socialization responses such as distress and wish-granting. Current results add to the literature showing that the symptoms of maternal depression,
such as negative mood, apathy, and helplessness, directly influence mothers’ relationships with their toddlers. For instance, infants of depressed mothers, as compared to infants of non-depressed mothers, have been found to display both more negative affect and self-oriented regulation strategies in social interactions and share more negative affect and less positive affect with their mothers (Field, 1984; Field et al., 1988; Field, Healy, & LeBlanc, 1989; Pickens & Field, 1993). These mother-child affective relations fit the current study’s results: lower levels of self-soothing regulation related to higher concurrent levels of distress responses at higher levels of maternal depressive symptoms. Maternal depressive symptoms have also been linked to parenting behaviors such as overindulgence, disengagement, and excessive concern for the child (Gelfand & Teti, 1990; Martins & Gaffan, 2000; Weissman, Paykel, & Klerman, 1972). Results in the current study for maternal wish-granting are consistent with this evidence, with increased levels of caregiver-focused regulation resulting in increased wish-granting responses when toddlers were 3-years-old, but only in mothers with higher levels of depressive symptoms. Wish-granting responses, compared to more positive, adaptive forms of responding to toddlers, may require less cognitive and emotional attention. Thus, mothers with higher levels of symptoms may be more likely to respond by giving in to toddlers who rely more on them to be soothed. It seems that wish-granting socialization responses, which can be described as indulging or “giving in,” may be used by increasingly symptomatic mothers in lieu of more adaptive responses, such as emotion and problem-focused responses, or perhaps in a maladaptive ratio.

Worry was found to moderate the relations between caregiver-focused regulation and both supportive and wish-granting socialization. Results for maternal symptoms of worry are consistent with hypotheses. First, when mothers had lower levels of worry, they were more likely to respond to toddlers displaying higher levels of caregiver-focused regulation with higher levels of concurrent supportive socialization. Toddlers who displayed higher levels of caregiver-focused regulation were more likely to receive lower levels of supportive socialization when mothers were high in worry. In addition, mothers who reported higher levels of worry symptoms were more likely to respond to toddlers displaying increased levels of caregiver-focused regulation with increased wish-granting responses at the age 3 assessment. Notably, like with higher levels of depressive symptoms, mothers who are cognitively taxed by higher levels of worry symptoms may be more likely to cope with their toddlers’ caregiver-focused regulation by giving in to them.
Mothers are responding to toddlers using caregiver-focused regulation in a positive manner, as long as they are low in symptoms of worry. In general, mothers may encourage their young children to rely on them to be soothed, but once they become taxed by symptoms of worry, they are no longer able to respond with adaptive supportive socialization responses, including focusing on children’s emotions and solving problems. These results are in line with evidence that suggests symptoms of worry are related to changes in maternal behavior, such as decreased warmth and high criticism, but inconsistent with evidence that suggests mothers affected by anxiety symptoms grant less autonomy than non-anxious mothers (Hudson & Rapee, 2001; Woodruff-Borden et al., 2002). These symptoms have been found in other studies to influence the development of child anxiety (Moore, Whaley, & Sigman, 2004). It would be valuable to examine if children’s caregiver-focused regulation continues to elicit less supportive socialization in middle childhood; if so, this could augment understanding of the transmission of anxiety from parent to child, as elicited by child emotion regulation.

Just as mothers higher in worry symptoms are decreasing adaptive supportive responses related to increased caregiver-focused regulation, children who utilize caregiver-focused regulation, even at a young age, are eliciting more maladaptive “giving in” responses from mothers with higher levels of worry symptoms. Like depressive symptoms, symptoms of worry are cognitively and emotionally draining. Thus, mothers’ use of less cognitively and emotionally demanding parenting responses, such as wish-granting, is consistent with the effects of anxiety symptoms. Wish granting may be related to protective parenting, which is associated with maternal anxiety. Given that child anxiety may also play an important role in relations among maternal anxiety and parenting, future studies could examine other child characteristics (like anxiety) that may buffer or amplify this effect. Thus, connecting increasingly specific maternal characteristics, and a broader range of child characteristics could further inform child directed effects in predicting how emotion regulation affects parental socialization.

Although reports of depressive and worry symptoms were not correlated in this sample, both types of symptoms are cognitively and emotionally demanding. These symptoms drive mothers to give in when their toddlers focus on them in order to cope with distress in novel situations. It has been previously established that maternal characteristics, alongside child characteristics, affect the relation between emotion socialization as it relates to emotion regulation in children (Morris et al., 2007). Consequently, this model suggests that these
maternal characteristics are important in determining parent-driven effects on children’s emotion regulation. Results of the current study importantly suggest that maternal characteristics such as maternal depressive and worry symptoms also determine when child-directed effects of emotion regulation on parenting occur.

Both worry and depressive symptoms are considered to be cognitively demanding for mothers, but there may be a key difference in how these symptoms affect mother-child behavioral interactions. Whereas mothers with depressive symptoms have been found to demonstrate decreased engagement and increased undercontrol, mothers who are high in symptoms of worry exhibit increased levels of controlling and overprotective parenting behaviors. Results of the current study are consistent with these previous findings in that it was only at higher levels of symptoms when toddler regulatory behaviors related to increases in maladaptive responses, but also because results were not entirely the same for depressive and worry symptoms. Although children who used higher levels of caregiver-focused regulation were more likely to receive increased wish-granting responses in mothers with higher levels of either depressive or worry symptoms, only maternal depressive symptoms moderated relations for concurrent distress responses. Furthermore, unlike depressive symptoms, for mothers higher levels maternal worry symptoms, children’s increased caregiver-focused regulation was related to decreased supportive socialization responses. While both higher levels of depressive and worry symptoms were found to moderate the relation between specific regulation strategies and maladaptive outcomes, there appear to be at least some differences between depressive and worry symptoms in how they affect child-driven effects in parent-child relationships.

Notably, the presence of these effects is valuable and informative, as the overall mild to moderate levels of depressive and worry symptoms in the sample make results generalizable to a significant portion of mothers. West and Newman (2003) sought to determine how mild levels of depression and anxiety affected children’s emotional development. The authors found that even mild depressive and anxiety symptoms were linked to maladaptive child outcomes, including temperamental difficulties in attention and emotion regulation, and behavior problems. Specifically, they found that while mild maternal depressive symptoms were related to increased child behavioral problems, maternal anxiety symptoms were only related to child dispositional traits, such as being difficult to soothe, being more distractible and less socially adept. These findings suggest that both kinds of symptoms, even at mild levels, play an important role in the
relation between toddler emotion regulation and maternal socialization of emotion, perhaps in different ways. The current results further suggest that mild to moderate levels of depressive and worry symptoms have important implications for children’s caregiving environments and warrant further study.

Outside of the significant interactions, several main effects were found. In the models including worry, increased self-soothing regulation resulted in decreased age 3 supportive socialization at a marginal level. These results are complementary to findings for boys in models with gender as a moderator, where increased duration of self-soothing regulation resulted in increased non-supportive socialization. Models with worry did not also consider gender, so because gender was found to be important in other analyses, this main effect should be interpreted with caution. A model examining the effects of both gender and worry on the relation between self-soothing regulation and non-supportive socialization could address this discrepancy, though this was not pursued in the current study in order to maintain adequate statistical power. There was another main effect present in both maternal depressive and worry symptoms models, which indicated that an increase in self-soothing regulation resulted in decreased age 3 wish-granting. This seems to make sense in that children who are more self-reliant may not elicit “giving in” from their mothers. In the same depressive symptoms model, when caregiver and attention regulation increased, wish-granting increased. It would seem that the general hypotheses of the current study regarding wish-granting, specifically that higher levels of caregiver-focused regulation would relate to increased wish-granting socialization in mothers with increased depressive or worry symptoms, were supported. Notably, although self-soothing and attention regulation have both been considered to be under the umbrella of autonomous regulation (Kopp, 1989), in these models, attention regulation presents an effect opposite to that of self-soothing regulation. This may suggest that attention regulation and self-soothing regulation differ in what maternal behaviors they elicit.

Limitations and Future Directions

Several limitations of the current study provide insight into future directions of study. First, the current study used a community sample that was mild to moderate in depressive and worry symptoms. Although this is informative as results are generalizable to a large proportion of parents, testing these relations in a clinical sample with greater internalizing symptoms would provide a more robust understanding of the moderating effects of these symptoms. Specifically,
it would determine whether results are specific to this symptom range or applicable at even higher levels. Second, the community sample recruited for this study was composed mainly of European Americans. A valuable future direction would be to examine these relations in a more ethnically, racially, and geographically diverse sample. It could be that different cultural groups present different frequencies of emotion regulation strategies and socialization responses, and different relations between them, much like reactivity and emotional expressivity have been found to differ (Saarni, 1998). For example, Raval and Martini (2009) found that collectivism, religion, and social organization affected Gujarati mothers’ acceptance of emotions in children ages 5 to 9 years old. Cultural differences may also shape moderating effects, particularly those for gender. Gender role constructs, and thus maternal expectations for boys and girls, may differ by cultural group.

Although the current study does not explicitly examine the bidirectional relation between child emotion regulation and maternal emotion socialization, it provides needed evidence for the role of child-driven effects in a literature strong in documenting the effects of parent characteristics and practices on child outcomes. Morris et al. (2007) posited that parental characteristics such as depressive and worry symptoms influence parental behaviors, and that child characteristics subsequently influence how those parenting behaviors predicted child emotion regulation and subsequent child outcomes. However, the current study suggests that both child characteristics and maternal characteristics moderate how toddlers elicit maternal socialization responses. Future studies should incorporate this new perspective by providing a true test of bidirectional effects, and comparing the strength of parent-driven and child-driven effects.

**Conclusion**

Although previous research has examined how maternal emotion socialization predicts child emotion regulation, and the conditions in which this relation holds, the current study examines when, under the condition of various moderators, child emotion regulation predicts emotion socialization. Both maternal characteristics, maternal depressive and worry symptoms and a child characteristic, gender, were found to moderate this relation. Results intriguingly suggest that children’s regulation strategies relate to specific socialization outcomes, and that child gender and maternal symptomatology influences how toddlers elicit the parenting they
receive. These results add to existing models of how these processes unfold, and suggest that these child-elicited effects should be included in larger models of emotional development.
References


Fivush, R., & Buckner, J. (2000). Gender, sadness and depression: The development of emotional focus through gendered discourse. In A. H. Fischer (Ed.), *Gender and


Table 1

Descriptive Statistics for Predictor, Moderator, and Outcome Variables

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Note. N = 91. *t* = independent samples *t*-test. Age 3 CTNES variable descriptives were obtained using a aggregate data set consisting of mean variables from 20 imputed data sets.

*p < .05
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Bivariate Correlations of Primary Variables

Note: N = 91.

- *p < .05
- **p < .01
### Table 3

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<th>Variable</th>
<th>Age 2 CTNES Scale</th>
<th>Age 2 non-supportive</th>
<th>Age 2 Supportive</th>
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**Note.** N = 91. The above models were taken from pooled estimates of parameters from 20 imputed data sets, with ANOVA and R-squared determined from an aggregated data set consisting of the mean of imputed data. Continuous predictors and covariates were centered at their means. Gender was dummy coded, with 0 = boys and 1 = girls.

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<th>t-test</th>
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<th>F</th>
<th>df</th>
<th>p-value</th>
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### Table 4

Summary of Regression Models Predicting Emotion Socialization with Depressive Symptoms as a Moderator

#### Age 2 Distress

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<td>0.006</td>
</tr>
<tr>
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<td>1.16</td>
<td>0.013</td>
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#### Age 3 Distress

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#### CESD

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#### CESD X CTNES

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Note. N = 91. The above models were taken from pooled estimates of parameters from 2 imputed data sets, with ANOVA and R-squared determined from an aggregated data set consisting of the mean of imputed data. Continuous predictors and covariates were centered at their means.

**p < .05, ***p < .001
Table 5
Summary of Regression Models Predicting Emotion Socialization with Anxiety Symptoms as a Moderator

<table>
<thead>
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<th>Variable</th>
<th>B (SE)</th>
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<tr>
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<td>Attention regulation</td>
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<td>PSQW</td>
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Note: N = 91. The above models were taken from pooled estimates of 20 imputed data sets, with ANOVA and R²-squared determined from an aggregated data set. Continuous predictors and covariates were centered at their means. A *p < .10, *p < .05, **p < .01, ***p < .001
**Figure 1.** Simple Slopes of the Relation Between Caregiver-Focused Regulation and Age 3 Non-Supportive Socialization as Moderated by Gender

*Figure 1. Probing of the interaction between caregiver-focused regulation and gender in relation to age 3 non-supportive socialization. Caregiver-focused regulation was centered at its mean. Gender was dummy coded to assist in probing ($n = 91$).

*p < .05
Figure 2. Simple Slopes of the Relation Between Caregiver-Focused Regulation and Age 3 Wish-Granting Socialization as Moderated by Maternal Depressive Symptoms

*Figure 2.* Probing of the interaction between caregiver-focused regulation maternal depressive symptoms in relation to age 3 wish-granting socialization. Simple slopes were examined at Low (-1 SD), Mean, and High (+1 SD) levels of depressive symptoms.

*p < .05*
Figure 3. Simple Slopes of the Relation Between Caregiver-Focused Regulation and Age 2 Supportive Socialization as Moderated by Maternal Worry Symptoms

* $p < .05$