The Pennsylvania State University
The Graduate School
College of the Liberal Arts

EMOTION AND CONVERSATION IN THE TODDLER YEARS:
EXPLORING CHILD-LEVEL, PARENT-LEVEL AND FAMILY-LEVEL
DETERMINANTS OF PARENT-TODDLER CONVERSATIONAL ENGAGEMENT

A Thesis in
Psychology
by
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Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science

December 2014
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ABSTRACT

The thesis investigated the role of toddler positive and negative emotion expression in relation to the frequency of parent-toddler conversational engagement. Specifically, higher frequency of toddler positive emotion expression was expected to relate to greater conversational engagement (more successful initiations, more conversational responses, more elaborations, and fewer failed attempts to initiate conversation), whereas higher frequency of toddler negative emotion expression was expected to relate for fewer successful initiations, fewer conversational responses, fewer elaborations and more failed attempts to initiate. Measures of toddler emotion expression and parent-toddler conversation were derived from naturalistic home observations of rural and semi-rural economically strained families when the target child was 18 months old. These relations were examined while controlling for toddler expressive vocabulary size and while taking into consideration known correlates of parent language input and child language development (family income-to-needs ratio, parent education, and parent perceived daily hassles). The relations were examined separately for mothers and fathers. Contrary to expectations, toddler negative emotion expression related to few aspects of parent-toddler conversational engagement, although there was a significant interaction of mothers’ hassles and toddler negative emotion expression. However, for fathers, toddler positive emotion expression accounted to significant variance in multiple aspects of father-toddler conversational engagement. For mothers, toddler expressive vocabulary size and maternal education consistently accounted for mother-toddler conversational engagement. For fathers, toddler positive emotion expression and, to a lesser extent, family income-to-needs ratio and an inverse relation of paternal education accounted for variance in father-toddler conversational engagement.
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Chapter 1. INTRODUCTION

Toddlerhood, spanning from the beginning of the second year of life to the end of the third, marks a crucial period of development in the human lifespan (Brownell & Kopp, 2007). It is a stage characterized by rapidly emerging skills in variety of domains, including emotional, self-regulatory, language, cognitive, motor, attention and physiological capacities (Edwards & Liu, 2002). At the same time, and in large part due to these developmental accomplishments, toddlerhood also presents unique challenges to parents (Brownell & Kopp, 2007; Edwards & Liu, 2002). Toddlerhood is marked by child autonomy assertion as well as by high frequency and high intensity displays of negative emotion (Cole, Armstrong, & Pemberton, 2010; Kopp, 1982; Kopp, 1989; Raikes, Robinson, Bradley, Raikes, & Ayoub, 2007). Parent-child interactions during this period are emotionally charged, and there is a higher rate of tantrums, characterized by high-intensity anger, in contrast with any other developmental period (Brownell & Kopp, 2007; McCurdy, Kunz & Sheridan, 2006; Potegal & Davidson, 2003). Thus, parenting a toddler is uniquely challenging. Evidence suggests that parenting stress peaks during toddlerhood (Crnic & Booth, 1991; Mulsow, Caldera, Pursley, Reifman, & Huston, 2002), and mothers and fathers frequently cite the developmental characteristics of toddlers as a source of stress (Kwon, Han, Jeon & Bingham, 2013).

Parenting during toddler period is challenging in part because it is viewed as a transitional period from “other-controlled” regulation to increasingly self-controlled regulation of behavior or affect (Garner, 1995; Raikes, 2007, p. 130). That is, the transition involves a shift from almost complete dependence on caregivers during infancy to the emergence of developmental capacities that allow the child to learn to rely on one’s own internal resources to regulate behavior or emotion during toddlerhood. Parents play a critical role in this transition. A central parenting task in toddlerhood is not only managing the child’s behavior or emotion, but also supporting the development of child successful autonomous regulation, i.e. self-regulation. It is during toddlerhood that the onset of explicit parent socialization attempts is observed (Brownell & Kopp, 2007); caregivers increase their demands for child behavioral and emotion regulation, and begin to use instruction, explanation, and correction to promote child self-regulation (Brownell & Kopp, 2007; Cole et al., 2010; Kopp, 1982; Kopp, 1989; Raikes et al., 2007). For example, an infant who cries or fusses while her mother is on the phone may receive a
prompt response from her mother, whereas a toddler’s emotional bids are more likely elicit a reaction such as “You need to wait until Mommy’s done talking.”

Because of the dramatic normative changes in young children’s capacities as well as increases in parental expectations for self-regulation, it is hypothesized that toddlerhood is the period during which parental emotion socialization practices should have the greatest influence (Calkins & Bell, 1999; Raikes et al., 2007; Zeman, Cassano, Perry-Parrish, & Stegall, 2006). Moreover, it is a developmental stage in which children may be more vulnerable to unsupportive parental socialization strategies (Denham, Mitchell-Copeland, Strandberg, Auerbach & Blair, 1997). Early difficulties in emotion regulation are linked to poor socioemotional and behavioral outcomes such as problems in peer relations, lower academic achievement, externalizing problems, and psychopathology (Eisenberg, Cumberland, Spinrad, Fabes, Shepard & Reiser et al., 2001; Graziano, Reavis, Keane, & Calkins, 2007; Hill, Degnan, Calkins, & Keane 2006; Keane & Calkins, 2004; Keenan, 2000). Thus, there is a public health need to understand the factors that predict problematic parenting (e.g. low income, low parent education, or stress), which may be particularly detrimental to the development of emotion-regulation during the toddler years (e.g. Brooks-Gunn & Duncan, 1997; Hoff-Ginsberg, 1995; Raver, 2004).

An aim of this thesis is to understand a particular parental socialization practice that should support the toddler’s development of emotion regulation and key factors that might account for individual differences in parenting during this period. Numerous studies indicate that early in development, maternal warmth and sensitivity predict more optimal social emotional development (e.g. Grolnick, Bridges, & Connell, 1996; Kopp, 1989; NICHD Early Child Care Research Network, 2004; Thompson, 1990). However, there have been repeated calls to deconstruct global qualities such as parental warmth and sensitivity, defining the specific practices in which warm, sensitive parents engage (Eisenberg, Cumberland, & Spinrad, 1998; Katz, Maliken & Stettler, 2012). One view is that effective parenting during toddlerhood may require parental practices that specifically help toddlers integrate their emerging competencies, e.g. expressive language, in the service of emotion regulation (Brownell & Kopp; Cole et al., 2010). Indeed, the idea that language (or, the ability to “use your words”) aids emotion regulation is generally accepted as conventional wisdom by parents and educators. Parents’ emotion socialization practices that enlist toddlers’ emerging language skills may be particularly helpful in establishing the foundations of independent regulation of behavior.
To contribute to the need for specifying parenting practices that are sensitive and foster self-regulation in toddlers, this thesis focuses on parent-toddler conversation. Conversation about a child’s experiences provides a linguistic framework for the child to develop the ability to reflect on situations and behaviors, a component skill in the aggregate of skills comprising self-regulation. Before focusing on parent-toddler conversation specifically, the broader literature on parental socialization of emotion is reviewed, with particular consideration of the role that parental language plays in emotion socialization practices. This focus is motivated by a) the increasing attention to the importance of language in the development of emotion regulation (e.g. Cole et al., 2010; Eisenberg, Sadovsky & Spinrad, 2005; Kopp, 1982; Kopp, 1989) and b) the robust relation between socioeconomic risk factors (e.g. family income, parent education) and parental language use (e.g. Hart & Risley, 1992), which may explain greater risk for emotional problems in lower income children (Raver, 2004).

**Parent Socialization of Emotion**

Parents influence their children’s emotional competence in numerous ways; research has examined emotion socialization mechanisms such as parental emotional expression, parental reactions to child emotion, emotion coaching, use of terms for internal states, such as emotions, and conversations about emotional experience (Denham et al., 1997; Gottman, Katz, & Hooven, 1997; Morris, Silk, Steinberg, Myers & Robinson, 2007; Eisenberg et al, 1998). These practices are not discrete, mutually exclusive characteristics; yet there are distinct literatures for each of these specific elements. Parents’ emotion socialization practices influence immediate outcomes, such as child arousal or regulation in the moment, as well as the acquisition of developmentally salient capacities, such as emotion expression, emotion understanding and emotion regulation (Brophy-Herb, Stansbury, Bocknek, & Horodyski, 2012; Denham, Cook, & Zoller, 1992; Denham, Zoller, & Couchoud, 1994; Eisenberg et al., 1998; Katz et al. 2012).

**Parent emotion expression.** Parents express emotions as they interact with their children, both spontaneously and strategically. This emotion expression is one salient way that parents contribute to their children’s emotional development. Though parents’ emotion is embedded in many socialization practices, most research does not attempt to disentangle parental emotion expression from other parenting behaviors, such as dismissal, coaching, or use of emotion terms. Instead, overall emotion expression is typically assessed independently of other socialization behaviors.
At the broadest level, parental emotion expression contributes to the family emotional climate, i.e. the general expressiveness and emotional valence of how families interact. Some families are characterized by greater or lesser expressivity as well as by more or less positive or negative emotion expressiveness. In this line of research, it is found that parental emotional expression is important in terms of both the predictability of parental emotional expressions and general emotional stability of the home environment (Darling & Steinberg, 1993; Eisenberg et al., 1998; Morris et al., 2007).

Parents also express emotions that are specifically linked to child behavior. These reactions to child behavior, or more specifically, to child emotion, are discussed in the proceeding section. However, parents’ overall emotion expression, and particularly the valence of this emotion expression, is also studied in its own right. These studies typically assess the overall frequency of parent emotion expression, rather than assess emotional expressions that are contingent upon child behavior. Parents’ expressions of emotion influence toddler emotional development by providing information about emotional display rules (rules about which valence and intensity of emotions are appropriate in social contexts) (Dunsmore & Halberstadt, 1997; Halberstadt, Crisp & Eaton, 1999). In their review of the research on family emotion expressiveness, Halberstadt and colleagues (1999) concluded that children who are raised in families that express high levels of positive emotions are generally positively expressive themselves. Both parent positive and negative emotion expression predict overall emotion expressiveness in preschoolers, as well as the balance of their positive and negative emotion expression (Denham & Grout, 1993; Denham et al., 1997).

Through their observations of specific parental emotional expression, young children also receive implicit, and sometimes explicit, messages about which emotions are appropriate to display and about the associations among situations, emotions and behaviors, the emotional significance of events, and potential strategies to regulate their emotions (Eisenberg, et al., 1998; Morris et al., 2007; Parke, 1994). For example, infants look to their parents in uncertain situations; this social referencing has been shown to guide infant behavior and emotional reactions (Emde, Biringen, Clyman, & Oppenheim 1991). In toddlerhood, parent positive emotional expressive is generally associated with emotional competence (Brophy-Herb et al., 2009). Maternal positive emotion expression predicts children’s expression of more positive emotion and less anger or negative affect (Robinson et al., 2009). Parent positive expression of
emotion is also associated with more advanced emotion understanding in preschoolers; however, this relation has not been assessed at the toddler age (Denham et al., 1997). Finally, parent expression of positive emotion is associated with toddlers’ emotion regulation abilities (Brophy-Herb et al., 2012; Garner, 1995), physiological indicators of regulation (Calkins, Smith, Gill & Johnson, 1998) and indicators of behavioral regulation and effortful control (Robinson et al., 2009). In contrast, higher levels of parent negative emotion expression is associated with toddlers’ increased negative emotion expression (Robinson et al., 2007), less emotion understanding (Dunn & Brown, 1994) poor emotion regulation (Garner, 1995; Rubin et al., 1998), poor physiological regulation (Calkins et al., 1998) and poor self-regulation and effortful control (Robinson et al., 2007). In preschool populations, higher levels of parental negative expression is associated with children’s poorer emotional competence, less affective balance, and less expression of positive emotion; however, these specific relations have not been assessed in toddlerhood (Denham, 1997; Denham et al., 1997; Denham et al., 1994).

Thus, the valence of parent emotion expression contributes to child emotional development, such that parent positive emotion seems linked to better socioemotional outcomes, whereas parent negative emotion is linked to poorer outcomes. However, there are conflicting results that suggest greater complexity in the relation between parent emotional valence and child emotional outcomes. For example, in one sample of toddlers, maternal warmth was found to be associated with boys’ emotion dysregulation (Rubin, Hastings, Chen, Stewart & McNichol, 1998). Moreover, family conflict may provide opportunities for children to learn situational knowledge about sad emotions (Garner, Jones & Miner, 1994). Finally, in some research, maternal neutral emotion expression, but not positive expression, is linked to preschoolers’ understanding of the causes of emotions (Denham et al., 1994).

Reviews of this literature conclude that parental emotion expression of moderate breadth and moderate intensity is optimal for the child’s development of emotional skills (Denham et al., 2007; Eisenberg et al., 1998). Indeed, Wong and colleagues (2008) found a curvilinear association between observed family negative expressiveness and child socioemotional outcomes in school-aged children. Expressing a range of emotions at moderate levels likely allows a child to learn to distinguish among emotions and connect emotions to behaviors or events, whereas frequent, high intensity parental emotion displays, particularly negative displays, may interfere with child emotion regulation and sense of emotional security (Cummings & Davies, 2011;
Denham et al., 2007; Eisenberg et al., 1998). Thus, children raised in families with very high or very low intensity emotion expression may miss opportunities for emotion socialization (Dunn & Brown, 1994).

Expression of emotion occurs in multiple modalities; affect can be communicated nonverbally, via facial expressions, gestures, body language, and nonverbal vocalizations, such as laughing or crying. Affect can also be communicated in both the content and the prosody of verbal expressions. In the research on emotion socialization, parent emotion expression is measured in two chief ways: by parent report of family expressiveness via questionnaire (e.g. Brophy-Herb et al., 2009, 2012; Garner, 2005), or by observational coding of emotion expression in the home or lab (Calkins et al., 1998; Rubin et al., 1998). These methods often, but not always, incorporate verbal communication in their measurement of emotion expression; however, verbal and nonverbal indicators of emotion expression are aggregated and therefore not distinguished when reporting results. Thus, we know little about whether verbal and nonverbal expressions of emotion contribute differently to child socioemotional outcomes. Parental use of language in their affective communication with their toddlers may be an important aspect of emotion expression that is not captured in the current literature.

**Parental reactions to child emotion.** Caregivers engage in socialization practices, again implicitly or explicitly, when they react to children’s own emotion expressions. During infancy, the focus of research has largely been on parental contingent responding to the infants’ affective cues, which is thought to promote early understanding of emotion expressions and their meaning (see Thompson, 2006). According to the contingency hypothesis (Malatesta & Haviland, 1982), parents’ responses to infant emotional cues help shape infants’ emotion expression. Typically, these reactions serve to maximize positive emotion expressions, and minimize negative emotion expressions during infancy (Capatides & Bloom, 1993; Malatesta & Haviland, 1982). Moreover, parental reactions to child emotional expression serve to aid the child’s differentiation among emotions (intensity and valence), and provide information about which emotions and intensities are appropriate in specific contexts (Denham et al., 1997; Denham et al., 1994; Malatesta-Magai, 1991; Malatesta & Haviland, 1982). Surprisingly little is known about parents’ reactions to child emotion during toddlerhood (but see Cole, LeDonne, & Tan, 2013). This seems a critical gap in our knowledge given that toddlers are notorious for high frequency and high intensity negative emotion expression.
During the preschool period, research has distinguished supportive parental reactions, e.g., encouraging or rewarding child emotion expression, from punitive reactions, usually in terms of minimizing child emotion. One approach to this subject has been parental “matching” of child emotion. Matching overlaps significantly with general parent emotion expression, but is included in the current section because it refers to contingent emotional responses to child emotion expression. Parent matching of child positive emotion predicts child affective balance in classroom and emotional competence (Denham et al., 1997), whereas matching of negative affect is associated with children being less cooperative (Denham et al., 1997). Other types of supportive responses (calm, positive, tender or encouraging) to child emotion expression also predict more competent emotional functioning in the toddler and preschool years, including more positive and less angry and fearful emotion expression, better emotion understanding and better ability to decode others’ emotions (Cole, Dennis, Smith-Simon & Cohen, 2009; Denham, 1993; 1997; Denham & Grout, 1993; Denham et al., 1994; Denham et al., 1997). Finally, positive responsiveness to child emotion expression predicts children’s behavior during challenging or distressing tasks (Brophy-Herb et al., 2012; Cole et al., 2009). Maternal positive responsiveness to child emotion predicts better emotion regulation abilities, more effective emotion regulation strategies as well as physiological indicators of regulation (Eisenberg & Fabes, 1994; Perry et al., 2012). There is also evidence for specificity of reactions to emotion: parental responsiveness to child distress, but not their warmth, predicts better affect regulation in school-aged children (Davidov & Grusec 2006).

In contrast, parental responses that dismiss, minimize, discourage or punish preschoolers’ emotion expression are generally associated with poor child socioemotional outcomes. Parents who respond to their children’s negative emotion in dismissive, punitive or minimizing ways have children who are high in emotional reactivity and in negative emotional intensity (Fabes, Leonard, Kupanoff, & Martin, 2001). Unsupportive parental responses to child emotion are also associated with children’s poorer emotion knowledge and social competence and higher levels of behavior problems (Denham et al., 1994; Denham et al., 1997; Fabes et al., 2001, Garner et al.,1994; Perlman, Camras, & Pelphrey, 2008; Root & Stifter, 2010). In addition to these punitive or dismissive responses to child emotion expression, maternal distress in response to child negative emotion is associated with poor child emotional outcomes, such as emotional reactivity (Fabes et al., 2001), defensiveness in the classroom (Eisenberg & Fabes,
less skill at decoding emotions and generally poorer social competence (Fabes et al., 2001; Fabes et al., 2002).

Again, relations between parental practices and child outcomes may be more nuanced than simply correlations between optimal parenting and optimal child outcomes. Mothers’ use of reassurance and comforting during laboratory tasks designed to challenge a child have been associated with more child distress, both in terms of behavioral observations and physiological arousal, during tasks that require children to self-regulate (Grolnick, McMenamy, Kurowski, & Bridges, 1998; Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996). Maternal tenderness and encouragement of child sadness has been linked to less competent child behavior, such as less positive affiliative behavior and greater aggression or anger (Zahn-Waxler, Friedman, Cole, Mizuta, & Hiruma, 1996). As with the literature on parent emotion expression, the evidence suggests that moderate levels of parental encouragement of child negative emotion may be most optimal for child socioemotional development (Roberts & Strayer, 1987; Wong, Deiner, & Isabella, 2008). However, as noted, this research has surprisingly tended to neglect toddlerhood. What constitutes optimal parental response to child emotion in toddlerhood? To what degree does this depend on the child’s emotional traits and/or the child’s emotion in the moment?

Finally, in documenting the variations in parental responses to toddler emotion, it is worthwhile to distinguish between the verbal content of parental reactions and their emotional responses. Parental responses to child emotion expression involve affective, physical, and verbal elements. However, few studies distinguish among the modes of communication despite the fact that at young ages (a) parental emotion may convey more accessible information than parental language and (b) parental language input may be an important bridge between parental socialization and children’s developing ability to self-regulate emotion and behavior.

Given developmental changes in parents’ use of language to respond to child emotion (Capatides & Bloom, 1993), better assessment of parent language surrounding child emotion expression would be an informative direction to take in future research. The amount or quality of parents’ verbal responses to child affective communication may be one mechanism by which parents help to integrate emotional and linguistic skills.

**Emotion coaching.** Emotion coaching is a construct first developed by Gottman and colleagues (1996) to refer to the didactic practices that parents use in the socialization emotion.
This construct incorporates aspects of other emotion socialization strategies, such as reactions to child emotion, and emotion talk (discussed below). Parental emotion coaching is typically assessed via self-report; Gottman and colleagues (1996) developed a measure to assess parental meta-emotion philosophy (PMEP), or “an organized set of feelings and thoughts that parents have about their own emotions and those of their children” (Katz et al., 2012, p. 417). Parents who are rated as high on emotion coaching philosophy report being aware of their child’s emotion, that they accept and validate these emotions, and that they view their child’s negative emotion displays as teaching opportunities (Katz et al., 2012). These parents also report helping a child label their own or others’ emotions, discussing or explaining emotions and emotion-eliciting situations, and engaging the child in problem solving surrounding difficult emotional events. This might involve coming up with strategies for better regulation of emotion, or solutions to the event or problem that led to the negative emotion (Gottman et al., 1996; Katz et al., 1996). These practices are associated with greater child emotional and social competence, including emotional awareness, emotion understanding, and emotion regulation (Katz et al., 1996; Denham et al., 1997; Denham & Auerbach, 1995; Fivush, 2007; Gottman et al., 1996; Ramsden & Hubbard, 2002; Lunkenheimer et al., 2007). In contrast, an emotion dismissing philosophy is characterized by a lack of awareness of low-intensity emotions, perceiving negative emotions as overwhelming and aversive, and criticizing or invalidating children’s emotions (Gottman, Katz, & Hooven, 1996). Emotion dismissing is linked to poor socioemotional outcomes, including emotion regulation difficulties and internalizing and externalizing problems (Lunkenheimer et al., 2007).

There is surprisingly little work examining parent emotion coaching during the toddler period, likely because the ability to be coached depends upon more advanced language and cognitive capacities that are only beginning to emerge in toddlerhood. In particular, the ability to be coached about emotions depends in part upon their repertoire of vocabulary about internal states (Ayoub Vallaton & Mastergeorge, 2011; Parke & Kellam, 1994). In the one known study of emotion coaching in toddlerhood, an emotion coaching intervention was adapted for parents of toddlers (Lauw, Havighurst, Wilson, & Harley, 2014). Adaptations to the intervention included providing parents with information about the development capacities and needs in toddlerhood. How do parents socialize their toddlers’ emotion before language skills support coaching strategies? One leading view is that providing children with terms for describing
emotions is critical (e.g. Brown and Dunn, 1996). Another related possibility is that conversing with a child about child (emotional) experiences is also important. Each of these possibilities in considered next.

**Internal State Language and Emotion Talk.** In regard to parental verbal input, over the past 30 years, considerable attention has been given to parental use of internal state language. Internal state language (ISL) includes references to perceptions and sensations, physiological states, emotions, volition, ability, cognitions and moral judgment (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986; Bretherton & Beeghly, 1982). Although this work originated with an interest in theory of mind (e.g., Bretherton & Beeghly, 1982; Brown, Donelan-McCall, & Dunn, 1996), it has been applied to other domains of socioemotional development, including emotional competence. Between 18 and 24 months, mothers increase their references to feelings and engage in longer conversations about them, including both the child’s and others’ emotion and the causes of emotion (Dunn, Bretherton, & Munn, 1987). As references to emotion increase, mothers reduce references to child desire and increase references to others’ desires (Taumoepeau & Ruffman, 2006; 2008). Late in the second year, toddler use of ISL begins to emerge; after 24 months, though mother talk about feeling states does not increase significantly over the course of the third year, child talk about feeling states increases rapidly (Dunn, Bretherton, & Munn, 1987).

Consistently, studies demonstrate relations between maternal labeling of emotions and child emotional competencies. Individual differences in mothers’ emotion talk are evident at child age 15 months, and seem to remain stable across the toddler and preschool period (Dunn et al., 1987; Kuersten-Hogan & McHale, 2000; Taumoepeau & Ruffman, 2006; 2008). Moreover, individual differences in parent (usually maternal) ISL use early in the second year predicts toddler’s use of ISL in the third year of life (Dunn et al., 1987; Taumoepeau & Ruffman, 2006; 2008). Parents’ references to emotions and other mental states predict children’s emotion recognition abilities, their concurrent and subsequent emotional understanding, and their own use of emotion terms and other mental state terms (Denham et al., 1992; Denham et al., 1994; Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991; Tamopeau & Ruffman, 2006; 2008). Children’s use of mental state terms with parents, siblings, and peers predicts their later ability to label others’ emotions, as well as infer emotions given contextual cues (Brown, Donnelan, & McCall, 1996; Denham et al., 1992; Denham et al., 1994; Dunn et al., 1991). These effects are
well established in the preschool age, and have been investigated more recently in the toddler
years. Mothers’ talk about desires at 15 months predicts child emotion understanding at 24
months and mothers’ talk about thoughts and cognitions at 24 months predicts further advances
in emotion understanding at 33 months (Taumoepeau & Ruffman, 2006; 2008).

Importantly, it is not the mere use of emotion terms that matters for child emotional
competence. The quality of parental emotion talk appears to be crucial, at least in studies of the
use of ISL when children are preschool age. Maternal explanations about emotions to which they
refer are associated with better child emotion understanding and sadness regulation, whereas
simple comments about emotions are not associated (Denham et al., 1992). Moreover, mothers’
use of ISL while engaged in conversation with their preschoolers predicts theory of mind
knowledge, whereas mothers’ references to mental states without conversation are not (Ensor &
Hughes, 2008). This large body of literature suggests that important next steps for understanding
parental use of language in emotion socialization are to examine contexts (particularly emotional
contexts) that influence parent-child discourse about emotions as well as factors in families’ lives
that are associated with greater or lesser emotion discourse.

**Contextual factors in parental use of ISL.** The main methods used to study parents’ use of
ISL are (a) parent-child reminiscing about past emotions, (b) parent-child book-reading (often
wordless picture books for pre-readers) and (c) observations of spontaneous speech at home or in
laboratory free play or other tasks. The majority of studies use lab tasks such as wordless picture
book reading or reminiscing tasks that are designed to elicit emotion talk. These contexts may
not represent the everyday life of parents and toddlers, or may represent only a small proportion
of typical parent-toddler interactions.

Little is known about how situational context might influence mother’s use of ISL. There
are theoretical reasons for expecting variation across contexts; different types of social
exchanges are associated with different parental socialization goals, well as different pressures
and influences on parenting behaviors (Howe, Rinaldi, & Recchia, 2010). Studies that do
consider situational context reveal the wide variation in parental references to internal states
(Denham et al., 1992; Kuersten-Hogan & McHale, 2000; Laible, 2004). For example, a study
using both book-reading and reminiscing tasks reported few significant relations between
mother-child talk about emotions across tasks, suggesting that context greatly influences this
type of conversation (Laible, 2004). Another study assessed ISL in two structured and two
unstructured tasks, finding little consistency in parents’ use of ISL (Kuersten-Hogan & McHale, 2000). Therefore, situational context influences the use of emotion talk and may also influence its relation to child outcomes. One study used an enactment of emotion task (simulation) and a photograph discussion task, finding that maternal explanation of emotions during simulation was correlated with better emotion knowledge in preschoolers, but explanations during the photograph task were associated with less emotion knowledge (Denham et al., 1992). On the other hand, maternal repetition of emotion terms during the photograph task, but not during the simulation task, was associated with preschoolers’ affective balance in the preschool classroom (Denham et al., 1992). Thus, situational context, at least in regard to task type when maternal emotion language is assessed, is related to different child outcomes.

However, there is more situational context variation to be considered than which type of laboratory task was used, particularly if an aim is to capture more ecologically valid aspects of interaction that contribute to child emotional development. Studies of parental and child use of ISL in naturalistic settings reveals that emotion talk occurs infrequently in contrast to some lab tasks. In a study of low-income families with toddlers, families used emotion terms with a mean frequency of 1.43 terms in 30 minutes (Ensor & Hughes, 2008). Comparisons between laboratory and naturalistic settings reveal that mothers use emotion terms twice as frequently in the lab as they do at home (Howe et al., 2010). This is noteworthy given that home interactions are often extended (at least 30 minutes) whereas standard lab tasks are usually 10 minutes and rarely longer than 15 minutes. Thus, though parental use of internal state language during lab tasks predicts later emotion understanding and social competence, due to the relative infrequency of emotion talk during less structured home interactions, we know less about the ways that ISL use in the home predicts later socioemotional competence.

Yet, how parents talk to children about emotion in the natural situations of their lives should matter for child emotional development. Particularly when the research shifts from frequency of emotion terms to the quality of the conversations in which emotional experience are discussed, there are several open questions: (1) what are the determinants of parental engagement in conversation about children’s experiences, (2) to what degree do they vary depending upon the child’s emotions, and (3) to what extent are they associated with family or parental characteristics? A child’s positive or negative emotions may enhance or diminish a parent’s inclination to engage in discourse about the child’s experience. Moreover, this may
depend in part on the parent’s circumstances, given that of the most robust predictors of general parental language input in the toddler years is socioeconomic status (Hart & Risley, 1995).

Arguably crucial to the understanding of the development of emotional competence, the emotional context of the discourse seems to influence maternal use of ISL, as well as the utility of ISL in predicting later emotional understanding. The emotional valence of parent-child interactions seems to contribute to the likelihood of parents using ISL with their young children; however, contradictory findings exist. One study of mother-child preschool dyads compared frequencies of mothers’ ISL use during positive, negative, and neutral interactions in the home. They found the lowest means for maternal ISL during the negative home interactions, and the highest means during the positive home interactions (Howe et al., 2010). A study of a slightly younger sample (33 months), however, found that parents are more likely to talk about feelings when their child is expressing negative affect (Dunn & Brown, 1994). However, only maternal causal talk about emotions during positive interactions, and not during negative interactions, predicted child emotion understanding.

Summary. Thus, many of the strategies that parents employ (e.g., emotion expression, reactions to child emotion expression, and emotion coaching) in their socialization of toddler emotion involve language, yet parents’ use of language in these literatures is not systematically assessed. On the other hand, research on parents’ use of internal state language, or emotion talk, has directly addressed how parents talk to their children in ways that promote emotional development; this literature has made important contributions to our understanding of that way that toddlers learn about emotions. Yet, recent research has revealed that parents use internal state language relatively infrequently in naturalistic settings with their young children, and that they may use ISL even more infrequently when children are expressing negative emotion (e.g. Howe et al., 2010). Surprisingly little is known about how parents’ conversations with their toddlers during more emotionally charged and negatively valenced events, despite the fact that negative emotion expression peaks during this stage. Such parent-child exchanges might have important implications for the development of emotion regulation in toddlerhood. Importantly, it may not only be the amount of internal state language, but the quality of the interactions in which discussions of emotions are embedded, that matters in the development of emotion understanding and emotion regulation capacities. In other words, both content and process of parent-child verbal interactions should play a role in the way that children gain understanding of
emotion (Ensor & Hughes, 2008). It is this process that has received much less attention in the emotion socialization literature, and that will be the focus of the current study.

**The Importance of Parent-Child Conversation**

The importance of parent-child discourse for children’s development is supported by various and diverse studies. From the sociocultural perspective, collaborative communication between a child and a more mature social partner facilitates the development of increasingly advanced capacities (Vygotsky, 1978). Moreover, variation in the quantity and quality of such interactions is thought to contribute to individual differences in developmental outcomes (Fivush, Haden, & Reese, 2006). Less is known about how the quality of parent-child conversations contributes to emotion regulation development in toddlers, but there is considerable evidence indicating that parent-child conversations are crucial for a child’s language acquisition. In the following sections, the research on parent contributions to toddler language development is reviewed. Next, the literature on what is known about parent-child conversation and its links to emotional development are discussed.

**Parent-child conversation and child language acquisition.** Evidence from the language development literature indicates that it is not only parental input that matters to a child’s language acquisition, but that dyadic, reciprocal interactions between parents and children play an important role in promoting language growth. It is well established that the amount of language to which young children are exposed predicts the quality and rate of their language acquisition (e.g. Hart & Risley, 1992; Hoff, 2003). But more than mere exposure, the amount of speech directed toward a child is vital in predicting vocabulary growth, speech processing speed and verbal ability in the second year (Fernald, Marchman, & Furtado, 2008; Weisleder & Fernald, 2013; Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). Moreover, in addition to the sheer quantity of child-directed speech, specific qualities of parental speech are related to variations in child language development (Hoff, 2003). For example, mothers’ vocabulary diversity and grammatical complexity contribute to toddler vocabulary growth (Hoff, 2003; Pan, Rowe, Singer, & Snow, 2005). In older children (5-year-olds), the sophistication of parents’ words contributes to child vocabulary acquisition (Weizman & Snow, 2001).

But something more than quantity and sophistication of the language input may be at play in understanding relations between parents’ use of language and the child’s development of emotional competence. Indeed, parental input is a misleading term, because, starting early in the
first year of life, children become increasingly able to respond to their parents and engage with this “input”. Well before they are able to talk, infants are socially interactive, and mother-child interactions are reciprocal in nature (Pan et al., 1996; Trevarthen, 1997; 1979). Early precursors of verbal ability, including joint attention (e.g. Farrant & Zubrick, 2011; Morales et al., 2000b; Tomasello & Farrar, 1986) and the use of gestures (e.g Vallotton, 2011), allow parents and their young children to communicate before verbal abilities emerge. Across the toddler period, the frequency of children’s communicative attempts increases as does the proportion of their attempts that are interpretable by adults (Pan et al., 1996). At 14 months, only 47% of toddlers’ communicative attempts are interpretable, whereas by 20 months about 79% are interpretable. In response, mothers begin to interact with their toddlers in more sophisticated and complex ways (Martin, 1998; Sénéchal, Lefevre, Thomas, & Daley, 1998; Wheeler, 1983). Their responses become increasingly verbal (Capatides & Bloom, 1993), and although adult word count does not increase dramatically between child ages 13 and 27 months, there is a steep increase in parent-child conversational turns (Greenwood, Thiemann-Bourque, Walker, Buzhardt & Gilkerson, 2011). Thus, even though their expressive language skills are just emerging, toddlers are conversational partners.

Recent studies report that parents’ engagement with toddlers in discourse contributes substantially to child language development. For instance, parent-child conversational turns, but not adult word count, were associated longitudinally with toddlers’ scores on a standard assessment of language development (Greenwood et al., 2011). In a cross-sectional study of parent language input between 2 and 48 months, parent-child conversations fully mediated the associated between adult-word count and child language outcomes (Zimmerman et al., 2009). Moreover, in a longitudinal study parent-child conversational turns did not fully mediate the association between adult word count and child language, but conversations remained a strong predictor of child language, even when controlling for child baseline language ability (Zimmerman et al., 2009). Thus, the act of engaging in discourse with a parent, rather than simply receiving language input, fosters language acquisition in toddlers and preschoolers.

**Parent-child conversations and emotion socialization.** Drawing from a broad range of child development literatures, the case can be made that parent-child conversation is a critical mechanism by which adult speech contributes to child language development and likely to other domains of child development. Many researchers have stressed the importance of parent-child
verbal interaction for the child’s socioemotional development (e.g. Ensor & Hughes, 2008; Fivush et al., 2006; Laible, 2004; Thompson, 2006). Emotionally salient, often highly-charged, interactions may be particularly relevant in understanding the role of early parent-child discourse in a child’s emotional development (Dunn, 1992; Thompson, 2006). In particular, conversations may contribute, either directly or indirectly, to the child’s development of a crucial emotional competency, emotion regulation. Verbal interactions between toddlers and their caregivers should enable children to express their feelings, receive feedback about the appropriateness of these emotions and their expression, make causal inferences about emotions and behaviors, as well as learn strategies to manage these feelings (Dunn, 1992; Kopp, 1989). Moreover, the quality of such conversations should contribute to individual differences in socioemotional outcomes (Ensor & Hughes, 2008; Laible, 2004a; 2004b). Parent-conversation discourse quality has been assessed in a number of ways, including assessing the shared positive affect or parental warmth during conversations (e.g. Laible & Song, 2006; Laible & Thompson, 2002; Ruffman, Slade Devitt & Crowe, 2006), assessing maternal elaborative style during reminiscing tasks (e.g. Reese, Haden, & Fivush, 1993) and by assessing the function of statements used in discourse (e.g. questions, comments, or elaborations) (e.g. Brownell, Svetlova, Anderson, Nichols, & Drummond, 2013). This thesis focuses on one aspect of parent-toddler conversations, the extent to which conversational partners are “tuned in” to one another’s speech (Ensor & Hughes, 2008, p. 203), engaging in conversational turn-taking on semantically related topics.

**Quality of emotion discourse in mother-child dyads.** Many studies of emotion talk also reveal that, rather than simply hearing emotion terms, children’s engagement in conversation with their parents about emotions contributes to their socioemotional development. For example, over and above mothers’ total feeling state terms, their elicitation of feeling state labels, as well as feeling state explanations, from their toddlers predicted children’s concurrent prosocial behavior (Brownell et al., 2013).

Various researchers have emphasized that both the content and quality of parent-child interactions contribute to children’s socioemotional development (Ensor & Hughes, 2008; Laible, 2004a; 2004b; Ruffman et al., 2006; Thompson et al., 2003). In other words, it’s not just what parents say, but how they say it, that matters (Ruffman et al., 2006). These views have received empirical support. For example, Garner and colleagues (2007) found that, over and above simple comments about emotions, maternal explanations about emotions predict
preschoolers’ emotion situation knowledge. In a younger sample, clarity and use of elaborations in mother-child conversations predicted toddlers’ emotional understanding and resistance to temptation at early preschool age, whereas mothers’ emotion talk did not predict any of these child outcomes (Laible, 2004). Thus, simply engaging children in high-quality conversations about emotional experiences may make an important contribution to socioemotional development that is independent of parents’ actual use of emotion terms. What may be important is the degree to which these verbal interactions are connected, i.e. the extent to which each partner is able to continue discourse on the experience of the child (Cole et al., 2010).

Assessing Conversation Quality and Conversational Engagement. The cited literature, which provides reasonable evidence for the assertion that parent-child conversation contributes to both child language acquisition and socioemotional development has largely focused on maternal style. That is, the focus on discourse quality has been on the degree to which the mother is clear, elaborates, or is sophisticated in her speech rather than on the quality of the dyadic exchange. The current study uses a coding system (Connectedness ; Ensor & Hughes, 2008), which addresses parent-child conversational engagement at the level of the dyad. The quality of each conversational turn is assessed based on the speaker’s success at a) responding to the partner or b) at eliciting a response from the partner. Ensor and Hughes’ coding system evaluates each turn in parent-child discourse in regard to whether it is an initiation (starting a new topic that successfully elicits a response from the conversational partner), is connected (responding to conversational partner in a way that is semantically related to their previous utterance), is failed (not eliciting a semantically related response from the partner) or is conflicted (speaker’s utterance contains a threat or insult). In their study introducing the construct and the coding system, they assessed parent-child ISL and connectedness during naturalistic home observations. They found that references to internal states were more likely to occur during connected turns. Moreover, maternal use of ISL predicted child social understanding with it occurred within connected turns or initiations, but not when ISL occurred within failed or conflicted turns. They concluded that content and quality frequently co-occur, with parental ISL occurring during high-quality, engaged dyadic interactions.

Notably, the number of maternal turns at child age 2 was unrelated to child social understanding at age 4. Instead, it was the type (interpreted by investigators as the quality) of maternal turns that predicted child social understanding. Mother’s connected turns were
significant predictors of child social understanding even when those turns did not contain ISL (Ensor & Hughes, 2008). These findings support those of Laible (2004), which indicated that high-quality parent-child conversations make unique contributions to toddler’s development of emotion understanding and self-regulation. If parent-toddler conversation is to predict emotion regulation, a skill that is thought to rely on language abilities (Cole et al., 2010; Kopp, 1989; Stansbury & Zimmerman, 1999), then it is important to understand the determinants of parental conversational engagement in the toddler years. Of the many factors one could investigate, this thesis focuses on (a) the proximal influences of child positive and negative emotion expressions and (b) the distal influences of parental and family factors that are known to affect language input and quality, parent stress and family socioeconomic status.

Conversations in the context of child emotion expression. Research on parent reminiscing style and emotion talk has revealed that high-quality parent-child discussions about emotions contribute to better emotion understanding (e.g. Fivush, 2007; Laible, 2004). Yet many of these studies utilize a semi-structured picture-book reading task (e.g. Taumopeau & Ruffman, 2006) or ask mothers and children to discuss emotional events that occurred in the past (e.g. Laible, 2004). Thompson (2006) reminds us, however, that “parents and children not only talk about events, but also during events” (p. 4). Parent-child conversations aid conceptual development (such as the development of emotion understanding) by providing semantic references for psychological phenomena and by allowing children to conceptualize their own experiences according to the linguistic categories that they gain from these conversations. Moreover, during their conversations with their toddlers, parents direct children’s attention to specific elements of their experience and help them interpret affective cues, supporting their comprehension and understanding (Ayoub, Vallaton & Mastergeorge, 2011; Thompson, 2006).

In addition, parent-child conversations during emotional “events,” particularly negative emotional events, should contribute to socioemotional development (Dunn, 1996; Lagattuta & Wellman, 2002; Laible & Thompson, 2002). Laible & Thompson (2002) emphasize that parent-child conflict during the toddler period is not only typical but may afford the necessary opportunities for socioemotional development. Furthermore, they suggest that the quality of mother-child discourse during conflicts likely contributes to toddlers’ developing understanding of emotion. In their examination of conflict during naturalistic home visits as well as during semi-structured lab tasks, they found that maternal use of justification (which involved verbal
reasoning and clarification), but not use of emotion terms, predicted toddlers’ emotion understanding 6 months later. In addition, during conflicts assessed in semi-structured lab tasks, both mother’s use of justification and their references to emotions at 30 months contributed to their child’s behavioral regulation during a challenging task at age three (Laible & Thompson, 2002).

Thus, characteristics of mother’s discourse during conflicts with their toddler predicts toddlers’ emotion understanding and to their developing capacity to self-regulate (Laible & Thompson, 2002). However, this study assessed mother’s specific verbal strategies used during conflict (e.g. mitigation, justification, resolution) and moreover focused on only one type of emotional parent-child interaction. Little is known about how the dyadic verbal engagement surrounding child emotion expressions (e.g. positive and negative emotions) contributes to the development of emotional capabilities such as emotional understanding or emotion regulation. Moreover, given that the quality of parent-child conversations seem to make unique contributions to young children socioemotional advances, it will be critical to identify factors that predict variation in parent-child conversational engagement.

**Child Effects on Emotion Socialization**

In sum, parents facilitate the development of their children’s emotional competence in a number of ways, including parents’ own emotion expression, their reactions to child emotion expression, emotion coaching, the use of emotion labels and internal state terms, and conversations about emotions and emotional experiences. Most of this work focuses on parental effects on children, but it must be acknowledged that child characteristics may influence parenting practices. What is often not investigated is the degree to which these parental responses and practices can be predicted by child emotional characteristics, such as emotionality, especially over time. Given that negative emotion expressions are frequent and intense during the toddler years (Potegal & Davidson, 2003), it is important to examine this developmental period and to describe and understand relations among child emotion expression, parent socialization practices and child emotional development. The thesis helped to address this gap by examining the relations between toddler positive and negative emotion expression and parent-toddler conversational engagement. Given that child characteristics reflect only a subset of potential predictors of parenting, the thesis assesses the unique relations of toddler emotion expression with parent-toddler conversation while also accounting for other well known predictors of
parenting: socioeconomic status and parent stress. In the following section, what is known about child, parent and family characteristics and their relation to parent-child conversational engagement is reviewed.

**Predictors of Parenting**

Parent-child verbal exchanges support young children’s developing linguistic and socioemotional capacities. Given that quality of parent-child interactions should moderate any relations between parent socialization practices and child socioemotional outcomes (Laible & Thompson, 2000), better understanding of the factors contributing to the quality of parent-child conversations is warranted. Identifying factors that might disrupt parent-child conversation should help elucidate ways that some young children are placed at risk for emotion regulation difficulties.

There are many determinants of parenting behavior (Belsky, 1984). In general, there is agreement that there are three sources of influence: child characteristics, parent characteristics, and external or contextual factors in which parent-child relationships are embedded (Belsky, 1984; Verhoeven, Junger, Van Aken, Dekovic, & Van Aken, 2007). The thesis proposed here strives to emulate this approach, assessing selected factors that represent each source of influence—child emotion as a child characteristic that contributes to context (operationally defined by child expressions of positive and negative emotion), parental stress as a parent characteristic known to effect parenting quality and child developmental outcomes, and family socioeconomic status, a broad contextual factor in which parent-child interactions are embedded. Each is arguably a factor that may contribute to the quantity and quality of parent-child verbal exchanges during toddlerhood.

Much of what is known about the predictors of parent-child discourse quality originates from the literature on language development. Given that toddler language development is linked to the development of emotion regulation capacities both theoretically and empirically (Cole et al., 2010; Kopp, 1982; Kopp, 1989; Roben, Cole & Armstrong, 2012; Valloton & Ayoub, 2011), this body of work may illustrate one pathway by which broad socioeconomic contexts and parenting stress influence parent-child conversations that then influence child emotional development. The following section focuses on the predictors of parent-child conversational engagement in the context of language development, incorporating evidence from the study of emotion socialization where available.
Child Emotion Expression and Parent-Child Conversation

Contemporary views of child development emphasize that children play an active and meaningful role in their own development (Bell, 1968; Sameroff, 1990; Thomas & Chess, 1984). Socialization influences involve bidirectional transactions: parenting behaviors are known to be influenced characteristics of their own child (Eisenberg & Fabes, 1994; Sameroff, 1990; Zahn-Waxler, 2010). Moreover, child characteristics may moderate the association between parenting practices and child outcomes (Belsky, 1997; Ellis & Boyce, 2008).

There are many child characteristics that can be considered as determinants of parenting behavior. One that has received attention in the differential susceptibility literature is the trait of child negative emotionality (Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2007). In our low risk sample, we focus on related, proximal child influences: child positive and child negative emotion expressions. These are particularly relevant to the study of parent emotion socialization practices, perhaps even more so in toddlerhood when negative emotion expression is frequent and intense and tantrums are common. Specifically, toddler emotion expressions may contribute to developmental outcomes via their influence on their social environment, specifically, parent-toddler conversation (Slomkowski, Nelson, Dunn & Plomin, 1992). For example, mothers’ emotion socialization practices depend in part on their perceptions of their children’s temperament; mothers who view their preschoolers as intensely emotional, particularly emotionally negative, respond to child emotion expression in more minimizing, punishing, or distressed ways (Eisenberg & Fabes, 1994). Young children’s negative emotion expressions are also associated with parental references to internal states (Dunn & Brown, 1994; Howe et al., 2010). Virtually nothing is known, however, about how toddler positive and negative emotion expressions contribute to parent-toddler engagement in conversation, which has potential implications for both child language and emotional development. In the following sections, the literature on the role of emotion in language development is reviewed, because it provides a window into the way that child emotion expression may shape parent language input and parent-child discourse quality.

Early emotion expression and language development. There are two views on the role of emotion in language development (e.g. Bloom, 1995; Bloom, Beckwith, & Capatides, 1988; Moreno & Robinson, 2005; Slomkowski et al., 1992). One view is that early emotion expression interferes with language acquisition, primarily because affect and language compete for infants’
limited cognitive resources (Bloom, 1995; Bloom et al., 1988). The other view- and the perspective employed in the current proposal- regards parent-child interaction (and the language input received during these interactions) as the primary mechanism by which emotion expression contributes to language development (Kubicek et al., 2001; Moreno & Robinson, 2005; Slomkowski et al., 1992). Infant researchers who take this view suggest that expression of any emotion (both positive and negative) affords developmental opportunities by promoting parent-infant reciprocal exchanges, engaging joint attention, supporting exploration and eliciting caregiver assistance in goal-directed behavior (Moreno & Robinson, 2005). During these exchanges, infants learn important communicative routines, such as turn-taking and repairing misunderstandings (Kubicek & Emde, 2012). Indeed, young infants’ emotional vitality, defined as “active sharing of the full range of affects,” predicts cognitive and language abilities at later ages (Moreno & Robinson, 2005, p. 385). Infants who express higher levels of basic emotions—joy, anger and fear—and who direct attention to their mothers during emotionally challenging tasks have higher scores on cognitive and receptive language evaluations at age 2, expressive and receptive language at 30 months, and cognitive assessments at age 3 (Moreno & Robinson, 2005; Robinson & Acevedo, 2001). Thus, expression of both positive and negative emotions provides developmental opportunities for young infants, and their sharing of emotion with caregivers predicts language ability. Given that emotional expressions such as crying or smiling are the primary ways that infants communicate with their caregivers (e.g., Capatides & Bloom, 1993; Kubicek & Emde, 2012), it is not surprising that early emotional behavior contributes to language development.

Thus, in early infancy it is necessary and adaptive to communicate emotionally, signaling one’s needs. However, the salience or function of certain emotions may change throughout development. In early toddlerhood, parents’ acceptance of child negative emotion expression is thought to decline (Moreno & Robinson, 2005). Therefore, the valence of a child’s emotion expressions may begin to play a larger role in developmental outcomes. One hypothesis is that toddlers who express more positive emotion are more engaging and may elicit more language input from their caregivers, whereas toddler expression of negative emotion may discourage or disrupt parental-child verbal exchanges (Slomkowski et al., 1992). In other words, according to this view, relatively happy or content toddlers should develop better language skills than toddlers who are frequently angry or distressed. Research on infant and toddler temperament provides
some indirect support for these theories. For example, 11 month-olds who are high in negative emotionality are less likely to engage in gaze-following (Todd & Dixon, 2010), an aspect of joint attention linked to early language acquisition (Morales et al., 2000). Early in the second year of life, young toddlers who are rated as smiling and laughing frequently and as expressing high intensity pleasure have greater concurrent language abilities than youngsters who are rated less highly (Dixon & Smith, 2000; Salley & Dixon, 2007). Moreover, temperament ratings predict language acquisition longitudinally. Ratings of adaptability, soothability, and positive mood in the first year of life predict better expressive language skills later in the second year (Dixon & Smith, 2000; Karrass & Braungart-Rieker, 2003; Laake & Bridgett, 2014; Morales et al., 2000). Additionally, toddlers scoring higher on affect-extraversion (interest in persons, cooperativeness, happiness and low fearfulness) at age 2 demonstrate better receptive and expressive language skills and continue to demonstrate superior skills at age 3 and age 7 (Slomkowski et al., 1992). Moreover, negative emotion expression may adversely influence language acquisition in early toddlerhood. By logical extension of the fact that increased soothability and diminishing distress to limitations between 10 and 13 months predict more advanced expressive language skills by 20 months, it is believed that higher distress and less soothability are associated with poorer expressive language development (Dixon & Smith, 2000). In preschoolers, negative emotionality is associated with poorer receptive language and less advanced narrative ability (Noel, Peterson & Jess, 2008). Thus, although infant emotional expressivity—both positive and negative—may be important for parent-infant communication and contribute to healthy developmental outcomes, in later infancy and the transition to toddlerhood, positive emotion expression may be more likely to support language development and negative emotion may interfere. These may also have influences on the development of emotional competence.

**Emotion expression and parent-child conversational engagement.** Thus far, the reviewed studies provide evidence for links between child emotionality and child language development. Yet we are limited in the conclusions we can draw about the relation between child emotion expression and parent-child conversation because neither variable is measured directly. Only one known study of toddler temperament directly assesses maternal discourse style (Ontai & Virmani, 2010). Mothers who report their 12-month-old as affectively negative make fewer attempts to engage their children in conversations during a book reading task although they make more attempts to link aspects of the story to the child’s experience. When these affectively
negative children were 18 months of age, their mothers used more evaluative discourse, such as repeating toddler verbalizations and validating toddler contributions to the conversation (Ontai & Virmani, 2010). Thus, certain temperamental characteristics may influence parenting practices. However, parents’ ratings of child temperament are often weakly related to moment-to-moment observations of toddler emotion (Kubicek & Emde, 2012; Tan, Armstrong, & Cole, 2013). It should be noted that in the cited studies the focus is on particular aspects of maternal discourse style during reading tasks and not on parents’ ability to engage toddlers in conversation.

Studies that assess emotion expression and parent-child interactions using behavioral observation provide stronger evidence for the link between emotion expression and language. There is some limited evidence that child expressed emotion predicts parental language input or elements of parent-child discourse quality. Capatides and Bloom (1993) for example, assessed 12 mother-child dyads (N=12) at four time points between 9 and 21 months, using observations of mother-child play interactions in the lab. They found that mothers responded to their young children more often when their child expressed negative emotion than when they expressed positive emotion. They did not however, reported age-related differences or changes in mothers’ tendency to respond to negative versus positive emotion. Given that they captured an important developmental transition between infancy and the toddler period, such information would be valuable in testing the hypothesis that the valence of emotion expression begins influence maternal verbal interactions in the toddler period. Moreover, the study did not distinguish between parents’ affective, physical or verbal responses. Though negative emotions seemed to elicit some sort of response from parents more frequently than positive emotion, we don’t know from this study the extent to which parents tended to respond verbally, or to engage their child in conversation, in response to negative versus positive emotions.

The proposed thesis aims to fill a gap in knowledge by examining whether parent-toddler discourse is related to the degree to which 18-month-olds express positive and negative emotion. One known study has investigated child emotion and maternal language use during the same task, yielding mixed support for the hypothesis that young children’s emotion expression influences maternal language input. In a sample of mother-toddler dyads (N=8), child emotion expression was associated concurrently with maternal language input at toddler ages 14 and 18 months. Mothers used more behavior directives if their toddlers expressed more total emotion during free play at age 14 months. At 18 months, mothers talked more to their toddlers if their
toddler expressed more positive emotion during play (Smolak, 1987). Thus, at 18 months, the valence of toddler emotion was related to maternal language input whereas general emotion expressivity was associated at the earlier age. The hypothesis that child negative emotion might deter or interfere with maternal verbal engagement was not supported in this study. However, the author reported only zero-order correlations in a small sample, indicating that more research is needed to understand the role of child emotion expression in parental discourse with toddlers.

In sum, we know very little about how child emotion expression contributes to the quantity or quality of parent-child verbal interactions during the toddler period. A notable body of empirical evidence links early emotionality and early language development. Despite theoretical foundations implicating parent-child verbal interactions as the causal mechanisms in this link, very few studies include measurement of both emotion expression and parent-child discourse quality. Little is known about whether child-expressed emotion predicts differences parent-child conversational engagement in the moment, that is, during the same interaction. To address this gap, one aim of the current study will be to examine how the frequency of 18-month-olds’ expressions of negative and positive emotion during naturalistic home observations predicts the extent to which parents engage toddlers in conversations.

**Stress and Parenting**

Child characteristics are not the only determinant of parenting behavior. Parental characteristics also contribute to the way parents interact with children. Among the many parental characteristics that influence parenting, one of considerable interest to the study of children’s development of emotion regulation is parental stress. It is considered an important predictor of parenting behaviors and parent-child interaction quality. Children whose parents report high levels of parenting stress are at higher risk for academic, self-regulation, behavioral and socio-emotional problems (e.g. Abidin, Jenkins & McGaughey, 1992; Anthony et al., 2005; Crnic, Gaze & Hoffman, 2005). Yet many studies on the relation between parent stress and parent socialization practices focus on particularly problematic parenting behaviors (e.g. punishment, harshness, coldness, inconsistency, conflict) (e.g. Anthony et al., 2005; Crnic et al., 2005; Guajardo et al 2009; Rodgers, 1998). Studies that focus on skillful parenting often focus on global parenting characteristics, such as sensitivity, warmth or positivity (e.g., Ayoub et al., 2011; Crnic et al., 2005). What is needed is research that investigates how parents’ perceptions
of day-to-day stressors are related to specific parenting behaviors, such as engagement with toddlers in conversation.

Research on parental stress has examined stress in various ways. Some studies infer parent stress by assessing the incidence of potential stressors (e.g. marital conflict, lack of social support, work-family interference, economic strain; Belsky, Woodworth, & Crnic, 1996; Conger, Ge, Elder, Lorenz & Simons, 1994; Coyl, Roggman & Newland, 2002; Pinderhughes, Dodge, Bates & Pettit, 2000). Others ask parents to describe the occurrence and their reactions to potentially stressful life events (e.g. Bee et al, 1989; Brandt, Magyary, Hammond, & Barnard, 1992; Crnic et al., 2005; Fagot & Kavanagh, 1993). Still others assess the frequency and perceived intensity of day-to-day hassles, often showing that daily hassles can be more influential on parenting sensitivity than major life events (Crnic et al., 2005; Crnic & Low, 2002). The two latter approaches emphasize the importance of parental perceptions of stress (e.g. the perceived intensity of minor stressors) and not the mere frequency or occurrence of hassles or events.

One fruitful approach used in some of the studies cited is to assess stress that is directly related to parenting (e.g. Ayoub et al., 2011; Calkins, Hungerford, & Dedmon, 2004; Guajardo, Snyder, & Peterson, 2009; Magill-Evans & Harrison, 1999; 2001; Mitchell & Cabrera, 2009; Noel Peterson, & Jesso, 2008; Vallotton et al., 2012; Voigt et al., 2013; Whiteside-Mansell et al., 2007). Parenting stress is defined as “a set of processes that lead to aversive psychological and physiological reactions arising from the attempt to adapt to the demands of parenthood” (Deater-Deckard, 2004, p. 6). This type of stress makes unique contributions to parent-child interaction quality, even when taking into account parents’ stressful life events (Crnic et al., 2005).

During the toddler years, parenting stress may exacerbate the effects of typical parenting demands as toddler behavior challenges and can even interfere with parental responsibilities or needs (Crnic & Low, 2002). Yet, despite the fact that parenting stress peaks during toddlerhood (Crnic & Low, 2002; Fagot & Kavanagh, 1993), we know surprisingly little about its effects on emotion socialization during this period. Indeed, research on parenting stress typically focuses on early infancy or on later periods, ranging from preschool and early school age to adolescence. Parenting stress during the first year of life predicts child adjustment years later (Abidin et al., 1992). This is likely due to the effect of stress on parenting behaviors; parents who report more parenting stress are less sensitive and more intrusive during their interactions with their infants.
(Calkins et al., 2004). During the preschool years, parenting stress is associated with more reactivity, laxness, and use of discipline as well as less nurturing, positivity and high quality parent-child interaction (Anthony et al., 2005; Crnic et al., 2005; Guajardo et al., 2009). Only two studies assessed the effect of parent stress on parent socialization practices during toddlerhood (Lutz et al., 2012; Mitchell & Cabrera, 2009). Mothers who reported more stress engage in “less optimal” play behaviors with their toddlers who had been born preterm but this did not extend to all specific parenting behaviors (Lutz et al., 2012). For African-American fathers, parenting stress is unrelated to their observed responsiveness or intrusive behaviors with their toddlers, or to father-reported socialization practices (Mitchell & Cabrera, 2009).

Parenting stress and parent-child conversational engagement. The language development literature provides evidence that parenting stress is linked to child language ability, and yields mixed evidence regarding the degree to differences in parenting behavior that accounts for the association. High levels of parenting stress predict lower receptive and expressive language ability in toddlers and slower vocabulary growth over the toddler period (Ayoub et al., 2012; Sylvestre et al., 2012; Vallaton et al., 2012). These effects are evident even when controlling for demographic factors (e.g., parent education level; Sylvestre et al., 2012). Moreover, parenting stress early in development contributes to later language abilities in the preschool years (Magill-Evans & Harrison, 2001).

Despite the evidence, the specific mechanisms by which parenting stress contributes to language development are less clear. One study found that parents who reported more general stress and parenting-related stress were less sensitive and less cognitively stimulating with their young children, which partially mediated the relation between parental stress and child language skills (Ayoub et al., 2011). Notably, these variations in child language skills at 24 months predicted the level and developmental trajectory of self-regulation growth over the toddler period. However, another study found that, although parent-reported stress at 12 months was a significant predictor of child expressive vocabulary at 4 years old, parent-reported stress was unrelated to parenting behaviors (Magill-Evans & Harrison, 2001). These studies differ in a important ways. Although both studies directly assessed parenting stress in the same way (PSI; Abidin, 1990), each sample had unique stressors related to their parenting experience—being at or below the poverty line (Ayoub et al., 2011) or having a preterm infant (Magill-Evans & Harrison, 2001). It is possible, for example, that parents of preterm infants who are more
developmentally delayed may report more stress; however, these parents may be no less likely to interact with their infant in sensitive ways, given their heightened concern for their child’s developmental well-being.

Notably, one study found that parenting stress was associated with parents greater use of verbal descriptions and was unrelated to their imitations, praise, questions, commands, or criticism during play interactions with their preschoolers (Guajardo et al., 2009). The authors did not assess qualitative aspects of maternal speech; it is possible that more stressed parents who provide more verbal descriptions are less likely to elicit participation from their child. Alternatively, in this low-risk sample, there may not have been ample variability in parenting stress. Finally, though all mothers tend to overestimate their children’s vocabulary skills, stressed parents may overestimate child language abilities to a significantly greater degree (Willinger et al., 2011). These overestimations of toddler receptive and expressive abilities may contribute to difficulties in engaging in or sustaining conversations with their toddler, a hypothesis that has not been tested directly.

These inconsistent findings suggest that parent stress likely contributes to child language development via multiple mechanisms and furthermore that its effects may be embedded in the broader characteristics of the ecology of parent-child interaction. In addition, a limitation of the available evidence is that many aspects of parent-child interactions that may be specifically related to child outcomes are not fully captured. The proposed thesis therefore assesses how parent stress, defined by parent perceptions of day-to-day hassles, relates to frequency of parent-toddler conversational engagement, which was measured in the home without investigator-defined structure. These relations were expected to interact with child characteristics (emotion expression), as well as with broader contextual factors such as family socioeconomic status.

**Socioeconomic Status and Parenting**

Socioeconomic status (SES) is a robust predictor of many parenting behaviors (e.g. discipline strategy, language input) and child outcomes (e.g. self-regulation, socioemotional development, language ability, academic achievement, physical health) (see Brooks-Gunn & Duncan, 1997; Evans & English, 2002; Evans & Rosenbaum, 2008; Hoff-Ginsberg, 1995). However, most of the literature on parent emotion socialization is based on studies of middle-class families (e.g., Denham et al., 1997; Fivush, 1993; Gottman et al., 1996). As a result, less is
known about the influence of specific SES factors on parent emotion socialization behaviors, including during the important period of toddlerhood.

Though we know less about the influence of SES on parent emotion socialization, there is extensive evidence that SES predicts variation in the amount that parents talk to their young children and in qualitative aspects of those verbal interactions. Thus, the literature on socioeconomic status and parental language input will be summarized. However, three important points preface this review. First, though lower income confers risk for problematic parenting behaviors and poor psychosocial outcomes in children, there is wide variability in parenting practices and in child functioning within lower SES groups. Many lower income parents are good, sensitive and effective caregivers, and many children living in poverty develop psychosocial competence (Evans & English, 2002; Masten & Coatsworth, 1998; McLoyd & Wilson, 1990). Indeed, it is valuable to understand the determinants of positive parenting in families facing adversities.

Second, it is important to note that low SES is typically confounded with a number of other factors, such as ethnicity, parent age, family size, marital status, urbanicity, neighborhood, exposure to violence, access to resources, nutrition, quality of housing and schools, and family stress (Evans, 2004; Hoff-Ginsberg, 1995). Studies of SES differences in parenting or in child outcomes often treat SES as a discrete, rather than continuous variable (Hoff-Ginsberg, 1995), and thus, often compare groups that differ not only as a function of income, but a number of contextual factors (e.g. white suburban middle class sample versus a poor urban Black sample). Treating SES as a continuous variable can also be problematic. Poverty is correlated with many other risk factors and often, middle to higher class families have many advantages; samples with a full range of status are hindered by this issue when trying to assess the unique effects of SES on parenting. One research group found that, even within a low-income sample, specific demographic factors such as unemployment, limited education, and income below the poverty line were associated with parenting behavior that was less warm, responsive and supportive but, interestingly, unrelated to parent mental state language or emotional expressivity (Brophy-Herb et al., 2012). For this reason, the participants in the proposed thesis are from a study of the early childhood development of emotion regulation in families that were neither poor (by government standards) nor highly advantaged, as will be explained shortly.
Finally, the way that we assess SES may make it difficult to identify the “real carriers” of SES-related individual differences (Hoff-Ginsberg, 1995, p. 169). Socioeconomic status is a multifaceted construct; income, education, and occupational status are all dimensions that might indicate social position (Conger & Donnellan, 2007). SES is typically assessed using these indicators either individually or as a composite. For example, maternal education might be used as a proxy for family SES, or SES might be treated as a composite of many demographic indicators. Yet these three factors are not perfectly correlated, and may contribute differently to parenting behaviors or child outcomes (Hoff-Ginsberg, 1995). For example, characteristics of the parent (e.g. low educational attainment) could contribute to both lower family income and less language input to their toddler. Alternatively- or likely, in addition- the consequences of lower income (e.g. greater stress and strain) might contribute to impaired parenting. Hoff-Ginsberg (1995) concluded that, except in the context of extreme poverty, parent education is the most robust predictor of parenting behaviors. In impoverished samples, however, income is more strongly associated with parenting behaviors because the stressors and lack of resources associated with poverty contribute to parenting stress (McLoyd, 1998). Despite these three points, SES is nonetheless robustly associated with parent language input and child emotional and language development. Given that the effects of child and parent characteristics on parent-child conversation occur within families’ sociocultural context, it is critical to examine the influence of SES factors on these interactions.

**SES and parental language input.** Intensive naturalistic home observations reveal wide variation in the language input of parents with infants and toddlers; the variation is linked to differences related to socioeconomic status (SES) factors, such as income and maternal education. Generally, higher SES mothers produce more speech than lower SES mothers; they produce more utterances, use more words, and speak in longer sentences than their lower SES counterparts (Hart & Risley, 1995; Lawrence & Shipley, 1996). These SES differences in parental language input can be quite profound; Hart and Risley (2003) estimate that by age 3, a child of parents on welfare has heard 30 million fewer words than a child of parents of middle to upper income. In addition to differences in the overall quantity of speech that parents expose their young children to, there are also substantial SES differences in the quality of parental language input to their young children. Higher SES mothers use a richer, more varied vocabulary
than lower SES mothers; they also provide more object labels and use more sophisticated words (Hoff-Ginsberg, 1998; Hoff, 2003; Lawrence & Shipley, 1996).

These quantitative and qualitative differences in parental language input are associated with differences in children’s language development (Hart & Risley, 1992). Hoff (2003) concluded that the quantity and quality (lexical richness and grammatical complexity) of maternal speech fully mediates the association between SES and child language skill (Hoff, 2003). SES differences in the speed and accuracy of speech processing are evident as early as 18 months and children from higher SES families acquire vocabulary at a faster rate in the second year (Fernald, Marchman, & Weisleder, 2013). Moreover, these SES discrepancies in early parental language input predict later differences in child IQ, language processing, language skill, and reading, contributing to a well-established income achievement gap by school entry (Fernald et al., 2013; Hart & Risley, 1992, 2003; Hoff, 2003; Hurtado, Marchman, & Fernald, 2007; Walker, Greenwood, Hart & Carta, 1994).

**SES and parent-child conversation.** There are significant associations between SES and how parents engage their young children in conversation. Higher SES mothers use more child-directed speech, elicit more talk from their children, produce more contingent replies to their child’s utterances, exhibit more listener responsiveness towards their young children, engage in more conversational turns with their toddlers, and sustain conversational topics with their children longer (Hoff-Ginsberg, 1991, 1998; Sohr-Preston et al., 2013). Very young children from higher SES groups, in turn, vocalize more and participate in conversation with their caregivers more than their lower-SES counterparts (Greenwood et al., 2011). Moreover, whereas higher SES parents seem to speak to their children more for the purpose of eliciting conversation, lower SES mothers more often speak in order to manage child behavior (Hoff, Laursen, & Tardif, 2002). Lower SES mothers use more behavior directives and more prohibitions than higher SES mothers (Hoff-Ginsberg, 1998; Hart & Risley, 1992; Lawrence & Shipley, 1996). In contrast, higher SES parents ask significantly more questions use more repetitions or elaborations in their conversations with their young children (Hart & Risley, 1992). These qualitative features of parent-child conversation are not trivial; over and above adult word count, parent-child conversational turns account for differences in child language ability (Greenwood et al., 2011; Zimmerman et al., 2009). Moreover, there is evidence to suggest that specific elements of parent-child conversations, such as number of turns taken, or parents’ elaboration of
children’s ideas, are associated with the speed of language development and to socioemotional capacities such as emotion understanding and self-regulation (Ensor & Hughes, 2008; Laible, 2004; Nelson, 1999).

Differences in parental language input as a function of SES exist even when comparing groups that do not include extremes of the socioeconomic spectrum (Hoff-Ginsberg, 1991; Hoff-Ginsberg, 1998). Even within more similar socioeconomic strata, there is wide variation in maternal talk (Rowe, Pan, & Ayoub, 2005; Weisleder & Fernald, 2013; Weiszman & Snow, 2001). For example, in a study of low-income families (average yearly income = $11,300), the number of words produced by mothers in a 10-minute segment ranged from 200 to over 1200. Moreover, within this low-income sample, more educated mothers talked more to their children and used a more diverse vocabulary (Rowe et al., 2005). However, another study found that, within a low-SES Spanish-speaking sample, verbal engagement (which ranged from fewer than 670 words to over 12,000 words within the course of a 10 hour day) was not associated with parent education (Weisleder & Fernald, 2013). What then, might account for these differences? The authors ruled out the possibility that amount of family talkativeness might contribute to this variation; parents’ child-directed speech was not correlated with the total amount of overheard speech in the home. These findings suggest that factors independent of SES (e.g. child or parent characteristics) also contribute to individual differences in parent-child discourse.

Possible explanations for SES differences in parent-language input and parent-child conversational engagement. It is important to note that, despite a large body of literature demonstrating SES differences in parental language input and parent-child discourse, we still have limited understanding of what drives this relationship (Rowe, 2008). One hypothesis (the family stress model of economic hardship) is that the stress and pressure created by lack of resources adversely impacts the quality of parenting and parent-child interactions. Another hypothesis (the family investment model) suggests parent education, occupational status and resources influence the extent to which families can invest (e.g. time, resources) in child development (see Conger & Donnellan, 2007 for review of both models).

Other hypotheses highlight the different values, socialization goals and beliefs about child development held by parents in different social classes or sociocultural backgrounds (e.g. Edwards et al., 2006; Harkness & Super, 1992; Kohn, 1963; Kusserow, 1999; Lareau, 2003). For example, seminal work by Kohn (1963) suggests that families from different social classes value
and try to foster different traits in their children because of their beliefs about what traits will make their child successful. Kohn’s work and research preceding it suggests that parents from lower income, working class families value obedience and conformity in their children, whereas families from middle class, higher income families value autonomy, self-direction, and self-control (e.g. Lareau, 2003; Kusserow, 1999). Sometimes referred to as parental ethnotheories (e.g. Harkness & Super, 1992), parents’ belief systems about a) the definition of child competence and b) how best to foster the development of child competence often vary widely across different cultural, demographic and ethnic groups. Parent socialization goals and parenting practices vary depending on what child characteristics and behaviors are valued. Thus, it is important to consider that different values and parenting goals, rather than parental deficits, may underlie SES differences in child language input.

Different socialization goals may relate to the manner and extent to which parents verbally interact with their children. For example, as noted above, lower SES parents use more directives and prohibitions than higher SES parents (Hoff-Ginsberg, 1998; Hart & Risley, 1992; Lawrence & Shipley, 1996), possibly because they value obedience as an important socialization goal. Directives and prohibitions contain fewer words and less diverse vocabulary than other types of utterances (Rowe, 2008), and directives in lower class families are infrequently accompanied by explanations; children are expected to comply. On the other hand, the values common in middle class families may result in greater language exposure in children. Lareau (2003) notes that, in middle class families, language is a “key mechanism of discipline” (p. 107). Directives are often posed as questions, giving children choices, and are often accompanied by reasoning and explanations (Laureu, 2003; Kusserow, 1999). Moreover, Lareau found that middle class parents invite and allow more discussion, bargaining, and negotiation with their children. This, in part, reflects findings that middle class families are more likely to value more egalitarian relationships between parents and their children, and value children’s assertion of autonomy (Laureu, 2003; Kusserow, 1999). In contrast, in many lower class families, negotiation is much less tolerated; parent-child discipline does not involve back and forth turn-taking and discussion. Adults speak, and children are expected to listen and comply (Lareau, 2003). Thus, valuing compliance versus independence and self-assertion may be one reason socioeconomic groups differ in the extent to which they talk to and engage in conversations with their children.
There are also sociocultural differences in values, beliefs and knowledge specifically related to language and communication. For example, cultures vary in the extent to which individuals value verbal interaction. Majority American culture, for example, values verbosity and views reticence as problematic, and value assertive reasoning and negotiation skills (Lareau, 2003). It is no wonder then, that many middle class parents encourage negotiation, explanation and reasoning in their verbal interactions with their children. In contrast, other cultures view reserve or verbal restraint as reflecting maturity and intelligence (van Kleeck, 1994).

Moreover, parents from different backgrounds vary in their beliefs about what facilitates child learning. Heath (1989), for example, makes the distinction between cultures that view children as “growing up” versus viewing children as “brought up” or raised. In cultures that view children as being raised, such as white, middle-class American culture, parents view descriptions and explanations of experience as integral to learning, and reinforce children’s information-seeking questions. In cultures that view children as “growing up”, children are seen as learning by observation of contextual cues, and teaching is done primarily by demonstration. This view is more common in American minority cultures, such as in rural African-American communities (for review, see van Kleeck, 1994). Thus, cultures vary in the extent to which verbal interactions are seen as fostering competent development. For example though Rowe (2008) found SES differences in the quantity and quality of child-directed speech, she found no SES differences in the quantity or quality of parents’ speech to the adult researcher. These findings again highlight the importance of considering that SES differences in child-directed speech may be rooted different knowledge or beliefs about the value of parent-child verbal interactions, rather than assuming that differences reflect in deficits in the parent.

Research on language development has shown that higher SES parents have more knowledge of child development (Bornstein, Haynes & Painter, 1998; Rowe, 2008), and Rowe (2008) found that knowledge of child development mediates the relation between SES and child-directed speech. Rowe concluded that middle-class parents may have more access to current empirically-supported information about child development (e.g. from educational resources, magazines, pediatricians). One must consider, however, that this empirical evidence is largely based upon white, middle-class norms; it is not known whether this research can be translated to other socioeconomic and cultural groups, who hold different values and beliefs about the extent to which speech and parent-child communication is important.
Thus, parents raising their children in different sociocultural contexts have different values and socialization goals that are tied to their beliefs about how to best prepare their child for success. These values and socialization goals often translate into differences in specific parenting practices; families from different socioeconomic and cultural groups may vary in the extent to which they value and encourage parent-child verbal interactions. The current study does not assess differences in parental belief systems or socialization goals, but considers these factors in interpretation of results.

**Associations and interactions among predictors of parenting**

To summarize, child positive and negative emotion expression, day-to-day parenting hassles, and family socioeconomic status are three candidate factors that likely contribute to parent-toddler conversational engagement. Each has been linked to variation in specific parenting behaviors, as well as to child language development, a likely correlate of parent-child conversation, but they have never been examined in concert. These influences do not act in isolation; they likely relate to one another and interact in complex ways to predict parenting behaviors. For example, though SES is robustly correlated with parental language input, there is still wide variation in the strength of this relation among families. Part of this variation may be related to child effects. Perhaps, for example, fewer SES differences are apparent during parent-child interactions occurring when children are happy, positive, and rewarding, but are more clear in more difficult parenting moments, such as when child negative emotion expression is frequent.

Moreover, evidence clearly supports the view that family, parent and child characteristics all contribute to parenting stress (Ayoub et al., 2011; Crnic & Low, 2002; Deater-Deckard, 1998). The family stress model of economic hardship suggests that factors such as economic resources, parental education, and parental occupational status predict economic stress; in turn, economic stress is assumed to influence children’s development thorough its impact on parents and parent-child interactions (Conger & Donnellan 2007; see also McLoyd, 1990). External influences might also alter parents’ perceptions of the parenting role (Crnic & Low, 2002). However, though parent stress is strongly associated with income in very low-income samples, stress may not be as closely tied to SES outside the context of extreme poverty (for review, see Hoff-Ginsberg, 1995). In some samples, indicators of SES are unrelated to stress, and stress might act as a moderator, rather than mediator, of the association between SES and parenting
For example, mothers’ education may act as a buffer against the negative impact of parenting stress. For lower-educated mothers, but not for mothers who have pursued post-high school education, parenting stress during early infancy predicts poorer child receptive language scores measured by age 3 (Bee et al., 1982).

We know little about the interplay of child emotion expression and parenting stress during the toddler period, when both negative emotion expression and parenting stress peak. During this stage, negative emotion expression is typical but nonetheless challenging. Child negative emotion likely contributes to day-to-day parenting hassles; parents who view their child as more difficult or more emotional report more stress (Noel et al., 2008; Saisto, Salmela-Aro, Nurmi, & Malmesmaki, 2008). Parenting stress may also interact with child emotion to predict parenting behaviors or child outcomes (Calkins et al, 2004; Moreno & Robinson 2005; Robinson & Acevedo, 2001). Consider the possibility that a parent stressed by daily hassles may nonetheless be as likely as a less stressed parent to engage conversation with a toddler who is emotionally positive and rewarding. On the other hand, a parent who is stressed may be less likely to engage in quality conversation at times when the toddler is emotionally negative, when interaction may be more frustrating or less rewarding.

Finally, child emotion expression, parent stress, and SES all may interact in concert to predict parent-child conversational engagement. Lower SES parents, known to speak less to their children, may be even less likely to do so when their child is expressing negative emotion, but particularly if parents themselves feel highly stress. Child positive emotion expression, on the other hand, may elicit parent verbal interactions, despite the compounding risks of low SES and high stress. The current thesis will examine this complex interplay of child-level, parent-level, and contextual factors in predicting parent-child discourse quality.

Fathers and Mothers as Socialization Agents

Children encounter many socialization agents throughout development, including parents, siblings, extended family, community members teachers, and peers. In early childhood, mothers are typically the primary caregivers and are commonly the focal parent in child development research. However, there is a growing body of work on the role that fathers play in their young children’s development. Fathers make significant contributions to children’s socioemotional development and cognitive abilities (for review, see Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008), even after accounting for maternal effects (e.g. Cabrera et al. 2007; Pancsofar
Although parents tend to behave similarly (for review, see Lewis & Lamb, 2003) it is also important to recognize that mothers and fathers may make unique contributions to parent-toddler conversations, and that different factors may influence mothers’ and fathers’ parenting. For example, it is conventional lore that fathers have more difficulty understanding why their young children get upset and generating sensitive responses to deal with them. Thus, it is important to consider that fathers’ conversations with children may be influenced by different child characteristics than mothers’. Therefore, rather than directly contrast mothers and fathers, the approach of this thesis is to test separate models of mothers’ and fathers’ conversational engagement with their toddlers. Thus, mean-level mother versus fathers differences were not the focus; rather the thesis attempts to model the predictors of each parent’s conversation with their toddlers. In discussing why separate models are appropriate, differences in mothers’ and fathers’ child-directed speech are reviewed, followed by a discussion of factors that account for variability in mothering and fathering.

**Parent language input and parent-child communication: mothers versus fathers.**

Many studies have found that mothers and fathers are comparable on indicators of parenting quality, such as sensitivity, although findings are somewhat mixed (Cabrera et al., 2007; for review Lewis & Lamb, 2003). Yet important differences exist in mothers and fathers. For example, mothers tend to use more socioemotional language in their conversations with their children (Leaper, Anderson, & Sanders, 1998) whereas fathers engage in more physical, rough and tumble play (Schoppe-Sullivan, Kotila, Jia, Lang, & Bower, 2013) and tend to be more cognitively demanding in their interactions with their young children (Masur & Gleason, 1980).

Evidence is mixed as to whether mothers and fathers differ in the amount that they talk to their young children. A number of studies have found that mothers tend to talk more to their children, producing more utterances, more words, more words and greater MLU (mean length utterance than do fathers (Hladik & Edwards, 1984; Leaper et al., 1998; Malone & Guy, 1982; McLaughlin, White, McDevitt, & Raskin, 1983; Pancsofar & Vernon-Feagans, 2006; Rondal, 1980). However, a number of studies find no differences between mothers and fathers in terms of total utterances, amount of word types, or MLU and furthermore report significant correlations between mothers’ and fathers’ scores (Fash & Madison, 1981; Leaper et al., 1998; Lewis et al.,
In sum, it may be reasonable to conclude that mothers and fathers may be more similar than different in their structural-linguistic language use with their young children, and the strong associations between mother and father language input suggest that children tend have either high or low language input from both parents (Barton & Tomasello, 1994; Hladik & Edwards, 1984; Lipscomb & Coon, 1983; Tamis-LeMonda et al., 2012).

There is more robust evidence to suggest that mothers and fathers differ in their functional use of speech, including the extent to which they are likely to engage their young children in conversation. Fathers may be less attuned to a young child’s developmental level than are mothers. Both mothers and fathers make modifications to their child-directed speech, increasing their lexical diversity, syntactic complexity and utterance length, and decreasing their use of imperatives, repetitions, and expansions in their speech as child language capacities increase (Fash & Madison, 1981; Rondal, 1980). Yet fathers are less likely than mothers to adjust their language input to their child’s communicative ability (Gleason, 1975; Mannle & Tomasello, 1987; McLaughlin et al., 1983; Pratt et al., 1992; Rondal, 1980). Fathers are also more likely to request clarification from their children, and are less helpful in response to children’s attempts to communicate (Austin & Braeger, 1990; Rowe, Coker, & Pan, 2004; Tamis-LeMonda et al., 2012; Tomasello, Conti-Ramsden, & Ewert, 1990). Related to fathers’ less developmentally sensitive speech towards their children, fathers have been found to be more cognitively and linguistically demanding than mothers in their speech towards their children (Bornstein, 2002; Lindsey, Cremeens, & Caldera, 2010; Masur & Gleason, 1980). Though this difference has been hypothesized to contribute to children’s development of more advanced language abilities (Masur & Gleason, 1980), fathers may be more challenging communicative partners than mothers, particularly at younger ages.

Mothers and fathers do seem to differ in the extent to which they are skilled conversational partners with their toddlers and preschoolers (for review, see Abkarian et al., 2003). Mothers are more likely to initiate conversation, and engage in more frequent and lengthier conversations with their children during structured free-play observations (Hladik & Edwards, 1984; Leaper et al., 1998; Lindsey, Cremeens, & Caldera, 2010). Moreover, mothers are more likely to respond to child bids, as well as elaborate on child-initiated conversation topics (Abkarian et al., 2003). In general, young children’s linguistic interactions with their
fathers don’t seem to proceed as smoothly as with mothers; father-child conversations involve more breakdowns and fewer repairs (Abkarian et al., 2003; Barton & Tomasello, 1994). Fathers engage in fewer and shorter conversational turns with their children than mothers and are less likely to maintain a conversation with their child. Fathers respond to their children less frequently, are less helpful in response to children’s attempts to communicate and are also less likely to acknowledge their child’s contribution to the conversation (Austin & Braeger, 1990; Hladik & Edwards, 1984; Lindsey, Cremeens, & Caldera, 2010; Pancsofar & Vernon-Faegans, 2006; for exceptions, see Black & Logan, 1995; Welkowitz, Bond, Feldman, & Tota, 1990). Fathers also more frequently have to ask a child to repeat what they have said, possibly because fathers are less able to understand their young children’s speech (Rowe, Coker, & Pan, 2004; Tamis-LeMonda et al., 2012; Tomasello, Conti-Ramsden, & Ewert, 1990; Weist & Stebbins, 1972). Barton and Tomasello (1994) concluded that mothers’ style of communication is characterized by attempts to involve the child in a conversation while father’s interactions with their children do less to encourage or support verbal participation. Thus, it is possible that mothers and fathers may be similar in the amount of speech directed towards their young children, but that mothers are more skilled at engaging their young children in conversation.

**Predictors of mothering and fathering.**

There is significant variability within two parent families in the quantity and quality of fathering (Parke, 1996), as well as in the quantity and quality of mothering. It is therefore critical to understand the determinants of mothering and fathering, particularly during developmental periods that are formative in cognitive, language, and emotional development. There is evidence to suggest that the nature and strength of certain predictors of parenting quantity and quality may be different for mothers and fathers. For example, though both mothers’ and fathers’ education make unique contributions to child outcomes (Panscofar & Vernon-Faegans, 2010; Tamis-LeMonda et al., 2004), it has been suggested that the fathering may be more susceptible to contextual factors such as socioeconomic status as well as family characteristics (NICHD, 2000; Cabrera et al., 2007; Doherty, Kouneski, & Erickson, 1998; Pelchat, Bisson, Bois, & Saucier, 2003).

Much of the research on predictors of fathering has focused on occupation, workplace characteristics, and work stress, rather than on SES per se. For example, job stress and perceptions of unsupportive workplace are related to fathers’ lower sensitivity, lower verbal
stimulation, and either detached or intrusive and negative father-child interactions (Atzaba-Poria & Pike, 2008; Goldberg, Clarke-Stewart, Rice & Dellis, 2002; Goodman, Crouter, Lanza, Cox, Vernon-Faegans, 2011). Yet job stress is unrelated to mothers’ use of discipline (Atzaba-Poria & Pike, 2008). Moreover, lower SES for fathers is related to more harsh discipline, less warmth, less nurturing, less sensitivity and less empathy towards their children (Atzaba-Poria & Pike, 2008; Paquette et al 2000). Though lower SES has been linked to lower sensitivity and warmth for mothers as well, it has been found to be more strongly related to fathers’ warmth than mothers’ warmth (Atzaba-Poria & Pike, 2008). Education specifically has also been linked to fathers’ parenting: fathers with higher education report feeling more competence in the parenting role and more attachment to their children than fathers with lower education (McBride, 1989).

For both mothers and fathers, lower education is related to parent report of less motivation for involvement, and more child-reported harsh discipline (Newland et al., 2013). It is important to note, however, that some studies show no relation between SES and quality of fathering; for example, SES is unrelated to father-child positivity, mutality, or fathers’ parenting style (Deater-Deckard, Atzaba-Poria & Pike, 2004; Goodman et al., 2011).

Parenting stress has been linked to individual differences in both mothering and fathering. For fathers, higher levels of stress are associated with fathers providing less emotional support, less empathy, less open communication and more physical discipline with their children (Paquette et al., 2000; Ponnet et al., 2013). Interestingly, mothers and fathers perceive similar levels of daily hassles during toddlerhood (Crnic & Booth, 1991); however, the implications for parenting behaviors, especially in the face of toddler negativity, appear to be different. Mothers perceiving higher levels of daily hassles are more likely to respond to toddler negative emotion with increased negativity, whereas the modal response for fathers perceiving higher levels of daily hassles is to disengage, that is, not respond (Acevedo, 1993). Thus, perceptions of minor parenting stressors may be relevant for the quality of mother-child interactions, whereas it may be more relevant to the frequency of father-child interactions.

Moreover, some have suggested that, since fathers’ involvement in caregiving has historically been viewed as more of a choice than mothers’ involvement (Brown et al., 2011), challenging child characteristics such as child difficult temperament have a stronger influence on fathering. This hypothesis has been somewhat supported by the literature (McBride, Schoppe, & Rane 2002; Mehall et al., 2009; Nelson & Simmerer, 1984) Yet overall, the link between
temperament and father involvement is modest, and evidence is mixed, with some findings finding no relation between temperament and fathering (e.g. Schoppe-Sullivan et al., 2013; Woodworth et al., 1996), some finding similar relations between temperament and parenting for mothers and fathers (Lindsey et al., 2010) and some finding stronger relationship between temperament and fathering than mothering (McBride et al. 2002; Nelson & Simmerer, 1984).

Given the weak relation between temperament and observed ratings of emotion expression (Kubicek & Emde, 2012; Cole et al., 2013), emotion expression may be an important factor to consider in the attempt to understand the child influences on mothering and fathering. Little is known about whether mothers and fathers’ child-directed speech or conversation quality are differentially influenced by positive or negative emotion expression. Parent self-reports from preschool age samples indicate that mothers respond in more positive, supportive ways to child negative emotion, whereas fathers endorse more nonsupportive (minimizing or punitive) reactions (Eisenberg, Fabes & Murphy, 1996; McElwain, Halberstadt, & Volling, 2007). During infancy, crying is more likely to predict fathers’ stress than mothers’ stress; however, the implications for language input are unknown (Wilkie & Ames, 1986).

Thus, given that the determinants of the frequency or quality of mothering and fathering are often different, the thesis assessed child-level (emotion expression), parent-level (stress, education) and family-level (income-to-needs) predictors of parent-toddler conversational engagement, assessing these relations separately for mothers and fathers.

Summary

In sum, toddlerhood is a period of development that presents unique challenges to parents because it is a period during which children express more negative emotion, their ability to communicate their intentions and needs with words is just emerging, and they have not yet internalized the rules of social conduct that their parents and communities will expect (Brownell & Kopp, 2007). This developmental period is formative in a child’s socialization and the ability to acquire skill at self-regulation of emotion is thought to derive both from language development as well as emotion socialization (Kopp, 1989). Yet, the specific verbal features of parenting that contribute to toddlers’ learning to regulate their own emotions, and the predictors of those parenting practices, remain to be documented. There is evidence that parental talk is important, based largely on observations of parent-child interaction during calm, structured laboratory tasks, such as book reading. Less is known about how parents communicate with their
toddlers during negative emotional displays, including the nature of discourse between parent and toddler. Though frequent, high-intensity negative emotional displays are typical at this age, toddlers vary in their negative and positive emotion expression (e.g. Kubicek & Emde, 2012). Engaging in conversation with a toddler who is more emotionally negative may be difficult and less rewarding to parents, leading to lower frequency of conversational engagement. This hypothesis, however, has not been directly tested using observational measures of both toddler emotion expression and parent-child conversation. Thus, a primary aim of the current thesis was to examine the extent to which toddler positive and negative emotion expressions relate to the extent to which parents engage with their toddlers in conversation.

Moreover, though the toddler period is stressful and challenging for parents, little is known about how individual differences in parents’ perceptions of day-to-day hassles may influence their conversation with their toddlers. Though higher levels of parenting hassles or stress are associated with toddlers having poorer language skills and slower language acquisition, the mechanisms linking these phenomena remain to be studied. Whether less frequent or lower quality parent-toddler verbal exchanges might help explain this link has not been examined.

Finally, parent-toddler interactions occur within the larger context of the family’s available resources. Though family SES is a well-established predictor of parental language input and of aspects of parent-child discourse, it is rarely examined in conjunction with other important influences on parenting, such as child emotion expression or parent stress. It is possible, for example, that a toddler’s frequent displays of negative emotion could exacerbate the adverse effect of lower SES and higher parent stress on parent-child verbal interactions. In contrast, toddler positive emotion expression may buffer these influences. Exploring the interplay of these factors can lead to a more nuanced understanding of what contributes to individual differences in parenting and will perhaps help identify potential risk and protective factors that contribute to lower income children’s toddler-age foundations of emotional development.

**The Current Study**

The thesis explored the interplay of toddler emotion expression, parenting stress (perceived intensity of daily hassles), and family socioeconomic status in predicting mother-toddler and father-toddler engagement in conversation. Specifically, the frequency at which
parents a) successfully initiate a conversational exchange with their toddler, b) attempt but fail to initiate conversation with their toddler, and c) respond to their toddler in ways that continue their conversations, as well as d) parents’ likelihood of elaborating on their toddler’s speech, was examined. Though child-level, parent-level, and family-level factors are likely somewhat interrelated (for example, parents whose toddler expresses frequent negative emotion are also likely to be stressed), interactions among these variables were expected. For example, in the current study, in which families are economically strained but above the poverty line, stress was expected to moderate, rather than mediate the association between SES and parent-child verbal interaction.

**Study Hypotheses**

Consistent with the extant literature, main effects of family income-to-needs ratio (INR) and parent education were expected. Parents in families with higher income, and parents with higher education were expected to engage in conversation with their toddlers more frequently.

The primary aim of the thesis was to explore relations of toddler emotion expression with parent-toddler conversational engagement. Main effects, as well as interactions with parent and family characteristics were expected. More frequent toddler negative emotion expression during home interactions was expected to relate to fewer successful parental conversation initiations, fewer parent conversational responses, lower likelihood of parent elaboration on toddler speech, and more frequent failed attempts to initiate conversations, particularly for parents who report perceived higher intensity of daily hassles and who are of lower SES.

In contrast, positive toddler emotion expression was expected to elicit or facilitate parent-child conversational engagement, as indexed by parents’ more frequent successful conversation initiations, less frequent failed conversation initiations, more frequent conversational responses, and greater likelihood of elaboration on toddler speech. Moreover, positive emotion expression was expected to buffer adverse effects of lower SES or higher perceived intensity of daily hassles on parent-toddler conversational engagement.
Chapter 2. METHODS

The data used to test study hypotheses are from the Development of Toddlers Study (D.O.T.S). The study was conducted to examine the emergence of emotion regulation capacities over the course of the toddler and preschool years, the contributions of child language development to the development of emotion regulation, the role of parenting in the integration of language and emotion regulation skills, and the role of parenting stress in predicting specific parenting qualities (Cole, Crnic, Nelson, & Blair, 2000). The families were assessed semi-annually from age 18 months to age 48 months. Lab visits were conducted at 18, 24, 36 and 48 months, and home visits were conducted at 18, 30, 36 and 48 months. Analyses in the current study are focused on data collected from the 18-month home visits.

Participants

Families were recruited from rural and semi-rural economically strained homes. Families were considered eligible for the study if their household income from all sources was above the U.S. government-defined poverty threshold for the year of study entry and below the national median income for the family’s size. The sample was constrained in this way in order to achieve variation in family income-to-needs but within a range that avoided confounds that are more typical of households that qualify as impoverished or that benefit from the advantages of the middle and upper classes. The investigators used U.S. Census Bureau data to target recruitment efforts that had both a high density of families with young children and a high density of families within the desired income range.

A total of 120 families meeting the study criteria were recruited when the target child was 18 months. Total annual income (M=$40,572, SD=14,387) in the sample ranged from $15,000-$70,000. Families were primarily two-parent households; only two families (1.7%) reported at 18 months that the target child’s father figure was not involved in a caregiving role. Most (93.3 %) of the children were identified as White, and 6.7% were identified as biracial by their mothers. Many mothers (42.5%) in the sample had completed college; 22.5% had taken college courses but had not completed college, 15% had received vocational training, 17.5% had completed high score and 2.5% had not completed high school. For fathers, 30.9% had completed college, 24.2% had taken college courses, 9.2% had received vocational training, 30% had completed high school, and 4.2% had not completed high school.
At the time of recruitment at 18 months, mothers were on average 31.03 years (SD=5.64) and fathers were on average 32.64 (SD=6.23) years of age. Participants were seen at each time point within 2 weeks of their half full birthday. Target children were on average 18.44 months (SD=.57) at the 18-month visit. The average number of children in each household was 1.83 (SD=.85), with the largest family having 5 children and many families (42.2%) having only one child. Participants were primarily first or only (43.3%) and second-born (40%) children.

**Procedures**

The 18-month home visit was scheduled at a time when both parents were expected to be home. The parents were asked to behave as they would typically, even though a research assistant was conducting live observation of the child and the child’s interactions with the parents. The observations at the 18-month visit were 60 minutes. The observations were live but the observer also audio-recorded family conversations, following the child’s activity. In addition, the observer made ratings of various parental behaviors, which included their reactions to child emotion expressions. Parents were given a packet of questionnaires, which included a measure of parents’ perceptions of the intensity of minor stressors (Parenting Daily Hassles, see below). Demographic information was collected by the project manager over the phone at the time of enrollment in the study. Finally, child language ability was assessed at the first lab visit, which usually occurred within a week of the home visit.

**Measures**

Variables that are proposed for use in the thesis were selected from the 18-month home visit, 18-month questionnaires, and 18-month demographic information interview. Specifically, parent-toddler conversational engagement and child emotion expressions are taken from the home visit data. Mothers’ and fathers’ perceptions of daily hassles (both child/family hassles and general hassles) are taken from the 18-month questionnaires. Family SES variables (education and income to needs) are taken from the 18-month demographic information interview, and child language skill is taken from a questionnaire the mother completed at the 18-month lab visit.

**Predictors.**

*Toddler Emotion Expression.* During the 18-month home observation, the observer was instructed to watch the target child for 10 minutes at a time and then, during the following 5 minutes, record various types of information, including each of the child emotion episodes that were observed. This process was repeated six times. In regard to emotion episodes, the observer
noted each time a clear emotion expression was displayed by the 18-month-old, noting with a few words the circumstances (the latter was for determining inter-observer reliability only). These expressions were classified by the live observer as positive, negative, or mixed. They were trained to use nonverbal (facial, vocal, gestural, postural) cues to identify emotion expressions and were allowed to use the situational cues that they necessarily also observed. Once an emotion episode was identified, the observer circled all of the parental responses on the coding sheet. For the purposes of this thesis, only the child emotion expression data are used. The combined total number of negative and mixed emotion expressions (Toddler Negative Emotion Expression) and the total number of positive emotional events (Toddler Positive Emotion Expression) comprise the variables that will be used to test the thesis hypotheses.

**Parent Stress:** Mothers and fathers completed the Parenting Daily Hassles questionnaire (PDH; Crnic & Greenberg, 1990), a 45-item scale that assesses the frequency of various minor daily stressors and the degree to which a parent perceives it as stressful. Parents were asked to report on the frequency with which they experienced each hassle, which included hassles associated with child and family matters (e.g. *How often are plans changed due to child needs?*) and hassles associated with other aspects of daily life (e.g. *How often are there too many things to do?*). Parents then rated how much of a hassle each was perceived to be on a 5-point Likert scale, ranging from 1 (no hassles) to 5 (big hassle). Previous analyses using this instrument demonstrate that parental perceptions of hassles are more predictive of parenting than the occurrence or frequency of hassles. The measure has adequate reliability for mothers’ child and family hassles (α=.88) and general life hassles (α=.91) as well as fathers’ child and family hassles (α=.88) and general life hassles (α=.59). Moreover, the measure has been shown to contribute unique variance to parenting behaviors over and above other types of stressors, such as parents’ stressful life events (Crnic et al., 2005; Crnic & Greenberg, 1999). A Total Hassles composite score was created for each parent by adding the mean of each scale (perceived Child and Family Hassles and perceived General Life hassles). Possible composite scores ranged from 2-10.

**Family Socioeconomic Status (SES).** Demographic information for age 18 months was collected from the family when the project manager interviewed the mother during the period of enrollment. Mothers reported the highest level of education achieved for each parent using the following categories: some high school, completion of high school, some vocational/trade
school, completion of vocational/trade school, some college, completion of college, or an advanced degree. For the purposes of multiple regression analyses, level of education was converted into years of education to make education a continuous variable. Parents indicating they had attended some high school were designated as having completed 10 years of education; parents completing high school were designated as having completed 12 years of education. Some vocational school was indicated with 13 years of education, whereas completing vocational school was indicated as 14 years of education. Some college was indicated as 15 years of education, and completing college was indicated as 16. Graduate degree was indicated at 18 years of education.

In addition, mothers described the family’s annual household income including all sources, such as mother’s income, father’s income, other family member’s income, school funding or veteran’s income, and child-support/alimony. Mothers also reported on the number of adults and children living in the home. These income data were then used with U.S. Government information to determine each family’s income-to-needs ratio (INR), which was calculated by dividing the household income by the national poverty threshold adjusted for the size and composition of the family.

Control Variables

**Child Language Ability.** Given that child language ability inherently contributes to parent-child conversation, an index of toddler language ability was included as a control variable. Child language ability was assessed at 18 months using a parent-report questionnaire, the MacArthur Communicative Development Inventory—Words and Gestures (MCDI; Fenson et al., 1993). This particular version of the MCDI is normed to age 16 months. Because the standardization sample for the MCDI—Words and Sentences represented an advantaged sample, the earlier version of the MCDI was used for this lower income sample. As a result, only raw, rather than standard scores, were calculated. Preliminary analyses of the MCDI scores for this sample of lower income children indicated that the children, as a group, performed below their age level (Feldman, 2013). Two scores are derived from the MCDI—Words and Gesture: total number of words understood (receptive language) and total number of words used (expressive language). Only toddlers’ expressive language score, referred to henceforth as expressive vocabulary, was used for analyses.

**Child Gender.** Child gender is associated with child language ability (Leaper & Smith,
2004) and is known to predict differences in parent-child conversations (Leaper et al., 1998). Therefore, bivariate relations between gender and parent-toddler conversation variables were assessed, and child gender was used as a control variable in regression analyses if significant bivariate relations were found. Boys are coded as “1” and girls are coded as “2.”

**Outcome Measures**

The data on parent-toddler conversational engagement are derived from verbatim transcriptions of the home visit using the CHAT program for transcription (MacWhinney, 2000). For other study aims, two 10-minute observation epochs were transcribed for each participant to calculate MLU and word count, variables that are not used in the present thesis. For children who did not produce 50 utterances in these two epochs, additional epochs were transcribed. To select the two epochs, the graduate staff and investigators (Cole and Nelson) decided to transcribe the epoch that had the most child emotion expressions and the epoch that had the least emotion expressions. The valence of child emotion expression was not considered in epoch selection.

**Parent-Child Conversational Engagement.** The Connectedness Coding system (Brown, Donnelan-McCall & Dunn, 1996; Ensor & Hughes, 2008) was used to assess the extent to which parents and toddlers engaged in conversation during the home observation. The original version (Ensor & Hughes, 2008) was modified by adding codes given the young age and limited verbal abilities of the 18-month-olds as well as by adding codes to include other aspects of parent speech known to support language development, such as elaboration on child speech (e.g. Barnes et al. 1983; Cross 1977, 1978). Only conversation between the target child and caregivers were coded. Conversations between adults or with other children were not coded. Mothers’ and fathers’ speech towards target child was coded separately. According to this system, a conversational turn is defined as the utterance of one speaker bounded by another speaker’s utterance, or by significant silence. Each turn was assigned one of eight codes, from which four outcome variables were derived.

1. **Connected:** A conversational turn is considered *Connected* if the speaker’s utterance is semantically related to the previous speaker’s conversational turn. These connected turns could be (but were not necessarily) further classified as *Connected-Repetition* (repetition of the previous utterance) and *Connected-Elaboration* (using the previous speakers words, but expanding on the previous utterance).
2. **Initiation**: A conversational turn is considered an *Initiation* when the speaker initiates a new topic and is successful in eliciting a semantically related (connected) response from the subsequent speaker. An initiation is preceded by either silence or by an unrelated conversational turn.

3. **Failed**: A conversational turn is considered *Failed* when the speaker’s utterance is directed towards another speaker, but fails to elicit a semantically-related (connected) response.

4. **Floorholding**: A conversational turn is considered *Floorholding* when it is semantically related to a previous utterance made by the same speaker.

5. **Conflict**: A conversational turn is considered *Conflict* when a speaker’s utterance includes a prohibition, threat, or insult. Tone is not considered.

6. **Gibberish**: When a child attempts to speak or use words, but it is unintelligible, the turn is coded as *Gibberish*. This quality code is only used to code child utterances. It was added by the DOTS investigators for the 18-month data because of the limits of child language ability, and was then used to code subsequent ages.

7. **Parental Attempts to Understand**: A conversational turn is considered a *Parental Attempt to Understand* when a parent’s utterance was used to try to determine what the child was attempting to say (only used to code parent utterances). Like connected turns, parental attempts to understand can be (but are not necessarily) further categorized as *Parent Attempts to Understand-Repetition* and *Parental Attempts to Understand-Elaboration*. This code was also added by the DOTS investigators due to the challenges of coding parent-child discourse at 18 months.

8. **Unclear**: Speaker’s utterance was either inaudible or coders were unable to determine who was speaking or who the statement was directed towards.

For each parent, four target variables of interest were derived from the coding system and, for the sake of clarity, were renamed to reflect study aims and facilitate ease of comprehension. Parents’ *Successful Conversation Initiations* reflected the frequency of conversational turns that were coded as initiations, whereas parents’ *Failed Conversation Initiations* reflected the frequency of conversational turns that were coded as failed. A composite score which included the frequency of all types of connected turns (connected, connected-repetition, and connected-elaboration) was calculated for each parent, and labeled as *Conversational Responses*. Finally, because elaborations were infrequent, a composite score was
calculated to reflect parents total Elaborations, which included turns coded as connected-elaboration as well as turns coded as attempts to understand-elaboration.

**Data Analytic Plan**

**Data preparation.** Prior to conducting the main analyses, preliminary steps were taken to prepare the data. First, the data were examined for errors and outliers and all cases with missing data were cross-checked to be sure that they were missing. Next, the distributions of all variables were examined. Given the skewed distribution of the outcome variables (successful conversation initiations, failed conversation initiations, conversational responses, and elaborations), data transformations were conducted. For successful initiations, failed initiations, and conversational responses, the data were square-root transformed to achieve a normal distribution. This was not possible for elaborations given the high number of parents who did not elaborate (see Table 2). Therefore, mother and father elaborations were recoded into a dichotomous categorical variable (parent did or did not elaborate).

**Data analysis.** A series of three step-wise hierarchical regressions for each parent were conducted to assess the degree to which child emotion expression, parent stress, family SES, and their interactions predicted variance in three criterion variables: (1) parental successful conversation initiations (2) parental failed conversation initiations turns and (3) parental conversational responses. For the fourth criterion variable, elaborations, logistic regression analyses were conducted using the dichotomous variable (did or did not elaborate). Each of the four models was run separately for mothers and fathers; thus, a total of eight models are presented. Each model controlled for child expressive vocabulary (Step 1) and assessed the main effects of child emotion expression, parent stress, and family SES on the criterion variable (Step 2) and two-way interactions among the predictors (Step 3). Nonsignificant interactions were trimmed from the models; marginally significant interactions were probed and retained only if follow-up analyses probing the interaction revealed significant simple slopes. Interactions were probed by analyzing simple slopes at one standard deviation above and below the mean of hypothesized moderator (e.g. Aiken & West, 1992; Holmbeck, 2002).
Chapter 3. RESULTS

Descriptive Statistics

Twenty-one cases were excluded from analyses because sufficient data on parent-toddler conversational engagement was not available, due to audio and related technical problems (e.g. batteries ran out, recording was masked by background noise) associated with the digital audio recorder or staff use of it. Of the 99 families remaining, 6 additional families were excluded because insufficient data on child language ability was available. Of the 93 families with useable data, all had mothers present at the visit, and 86 (92.5%) had fathers present; one of these fathers was excluded because of missing data for daily hassles. The descriptive statistics for the final sample (N=93 for mothers; N=85 for fathers) are presented in Table 1.

Table 1. Descriptive Statistics of Predictors

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Control:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MCDI Child Productive Vocabulary</td>
<td>93</td>
<td>80.39</td>
<td>75.56</td>
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<td>Predictors:</td>
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<tr>
<td>1. Income-to-Needs Ratio</td>
<td>93</td>
<td>2.38</td>
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<tr>
<td>2. Years of Education</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Mother</td>
<td>93</td>
<td>14.77</td>
<td>1.81</td>
<td>10-18</td>
</tr>
<tr>
<td>Father</td>
<td>85</td>
<td>14.27</td>
<td>1.86</td>
<td>10-18</td>
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<td>3. Total Hassles</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>93</td>
<td>4.42</td>
<td>1.20</td>
<td>2.08-7.39</td>
</tr>
<tr>
<td>Father</td>
<td>85</td>
<td>3.88</td>
<td>0.94</td>
<td>1.15-6.66</td>
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<tr>
<td>4. Child Positive Emotion Expression</td>
<td>93</td>
<td>16.05</td>
<td>7.06</td>
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</tr>
<tr>
<td>5. Child Negative Emotion Expression</td>
<td>93</td>
<td>11.24</td>
<td>6.20</td>
<td>1-32</td>
</tr>
</tbody>
</table>

In general, mothers and fathers engaged in conversation with their toddlers at different frequencies. Paired comparisons of parents who were both present at the home visit reveal that the mothers in our sample generally tend to talk to their toddlers more than fathers, including more successful conversation initiations, more failed conversation initiations, more conversational responses, and more elaborations (Table 2). The relative rank of types of conversational turns, however, was similar for mothers and fathers: on average, mothers and
fathers made failed attempts to initiate conversations most frequently, followed by conversational responses, followed by successful initiations, and last, elaborations.

Table 2.
**Descriptive Statistics of Parents' Conversational Engagement**

<table>
<thead>
<tr>
<th></th>
<th>Mothers (N=93)</th>
<th>Fathers (N=85)</th>
<th>t value$^a$</th>
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<tbody>
<tr>
<td>Successful Conversation Initiations</td>
<td>M 7.10 SD 8.93 Range 0-69</td>
<td>M 2.98 SD 4.29 Range 0-25</td>
<td>3.55**</td>
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<tr>
<td>Failed Conversation Initiations</td>
<td>23.33 SD 20.49 Range 0-102</td>
<td>10.79 SD 10.91 Range 0-39</td>
<td>5.12***</td>
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<tr>
<td>Conversational Responses</td>
<td>15.34 SD 17.55 Range 0-106</td>
<td>5.94 SD 8.92 Range 0-53</td>
<td>4.18***</td>
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<td>Elaborations</td>
<td>2.29 SD 4.97 Range 0-42</td>
<td>0.95 SD 2.52 Range 0-16</td>
<td>2.01*</td>
</tr>
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</table>

*Note.* $^a$t value reflects paired comparisons between mothers and fathers within same family (N=85)

Pearson correlations on the transformed outcome variables and the predictors are shown in Table 3. Child expressive vocabulary size, measured by MCDI Word Production, was significantly related to both mothers’ and fathers’ education level, though the relations are small in magnitude. Child expressive vocabulary size was inversely related to mothers’, but not fathers’ perceived hassles, and was also inversely related to observed toddler negative emotion expression. Finally, child productive vocabulary was strongly related to indicators of mother-toddler conversation engagement (with the exception of mothers’ failed initiations), and showed weaker (but generally significant) relationships with aspects of father-toddler conversational engagement. Child productive vocabulary was also significantly associated with child gender, with females having higher scores than males.

Family income-to-needs had a modest correlation with parent education. Mothers’ and fathers’ perceived total hassles were interrelated with each other but unrelated to SES factors (family INR or parent education). The frequency of toddler positive emotion expression was significantly related to family INR, and approached an inverse relation with fathers’ perceived hassles. Child negative emotion expression was unrelated to family INR and to maternal education, but approached relations with paternal education and with mother’s perceived hassles.
Table 3
Intercorrelations of model variables

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Correlations with child gender use Spearman's rho

Square-root transformed
In all but one correlation, child gender was unrelated to parent-toddler conversation variables (range: $r_s=.02-.09$, all $p$’s ns) and therefore was not included in models. The exception was that fathers’ elaborations were correlated with child gender ($r_s=.19$, $p < .05$) with fathers elaborating more with girls; thus, child gender was examined in follow-up analyses for this model.

**Mother-Toddler Conversational Engagement**

**Successful conversation initiations.** The models predicting mothers’ successful conversation initiations are presented first (Table 4). After controlling for child expressive vocabulary size in Step 1, both Step 2 and Step 3 contributed unique and significant variance. In Step 2, $F_{change}(5, 84)=1.41$, $p=.23$, of five predictors, only maternal education was significant; as expected, mothers with higher education successfully initiate more conversations with their toddlers than mothers with lower educational achievement.

**Table 4.**

Hierarchical regression model predicting mothers’ successful conversation initiations

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*Note. $^1p<.10$ $^*p<.05$ $^**p<.01$ $^***p<.001$ Model 1 not displayed.*
In Step 3, one significant interaction (maternal hassles by toddler negative emotion expression) was retained, contributing significant unique variance, \( F_{\text{change}}(1, 83)=4.03, p<.05. \) To understand the interaction, the simple slopes representing the statistical prediction of maternal initiations by maternal hassles were assessed at one standard deviation above and below the mean for toddler negative emotion expression (Figure 1). This interaction analysis revealed the following: At higher levels of toddler negative emotion expression, maternal perceived hassles are not related to mothers’ initiations (\( \beta = .14, t(83)=1.17, p>.10 \)). At lower levels of toddler negative emotion expression, however, maternal hassles are inversely and strongly related to mothers’ successful initiations (\( \beta = -.61; t(83)=-5.08, p<.001 \)).

*Figure 1.* Interaction between maternal hassles and toddler negative emotion expression predicting mothers’ successful conversation initiations.

*Note.* Error bars reflect the standard errors of the simple slopes.

Figure 1 shows that at higher levels of toddler negative emotion expression, mothers initiate at moderate frequency, regardless of the degree to which they feel hassled. For mothers
of toddlers who express negative emotion at a lower frequency, mothers who report feeling more hassled make the fewest successful initiations, whereas mothers who perceive lower levels of hassles make successful conversation initiations most frequently. The figure also shows that higher frequency of negative emotion expression is associated with fewer successful initiations for mothers perceiving lower levels of hassles, whereas higher frequency of negative emotion expression is associated with more successful initiations for mothers perceiving higher levels of hassles. The overall model, $F(7, 83)=8.06, p<.001$, accounted for 41% of the variance in the frequency of mothers’ successful conversation initiations.

**Failed conversation initiations.** For mothers’ failed conversation initiations, no significant interactions were retained; thus, only Step 2 of the hierarchical regression model is presented (Table 5). After controlling for child expressive vocabulary in Step 1, Step 2 contributed unique and significant variance, $F_{\text{change}}(5, 84)=2.36, p<.05$. Mothers’ failed turns were significantly related to maternal education and (inversely) to maternal perceived hassles. Mothers with more years of education and mothers who feel less hassled make more attempts to communicate with their toddlers even when toddlers fail to respond. The overall model, $F(6, 84)=2.12, p<.05$ accounted for 16% of the variance in failed conversation initiations.

<table>
<thead>
<tr>
<th>Table 5</th>
<th>Hierarchical regression model predicting mothers’ failed conversation initiations</th>
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*Note. $p<.10$  * $p<.05$  ** $p<.01$  *** $p<.001$  
No significant interactions retained in Step 3. Only Model 2 displayed.
Conversational responses. After controlling for child expressive vocabulary in Step 1 of the hierarchical regression model for mothers’ conversation responses, Step 2 did not contribute unique and significant variance to the model, $F_{\text{change}}(5, 84)=1.23, p=.30$. However, one of the five predictors in Step 2 accounted for significant variance in mothers’ conversational responses, over and above the effect of child productive language ability. Specifically, more highly educated mothers, regardless of toddler expressive vocabulary size, more frequently responded to their toddlers (see Table 6). The overall model, $F(6, 84)=10.15, p<.001$, accounted for 42% of the variance in the frequency of mothers’ conversational responses.

### Table 6
Hierarchical regression model predicting mothers’ conversational responses

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$R^2$ = .42, $F(6, 84)=10.15^{***}$

*Note.* $p<.10$, $p<.05$, $p<.01$, $p<.001$

No significant interactions retained in Step 3. Only Model 2 displayed.

Elaborations. Almost half (46.5%) of the mothers did not elaborate on their toddler’s preceding utterance at any time during the coded speech samples. Of the 53.5% who did elaborate at least once, the frequency of elaborations ranged from 1-42, with most mothers elaborating only 1-7 times. Because this resulted in a skewed distribution that could not be adjusted through transformation, a dichotomous variable was created and a logistic regression model was used for analyses (Table 7). After controlling for child expressive vocabulary size in Step 1, Step 2 contributed unique and significant variance to the model, $\chi^2(5)=13.19, p<.05$. The results show that only maternal education is related to the likelihood that mothers elaborate on their toddlers’ speech: for every one year increase in education level, a mother is 1.63 times more
likely to elaborate. Step 3 was omitted in the final model as there were no significant interactions. The overall model, $\chi^2(6) = 32.53, p < .001$, correctly classified 68.3% of mothers who did not elaborate, and 76.0% of those who did not.

Table 7
Logistic regression model predicting mothers’ elaborations

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Omnibus Test of Model Coefficients

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*Note. *p*<*.10 *p*<*.05 **p*<*.01 ***p*<*.001

No significant interactions retained in Step 3. Only Model 2 displayed.

Father-Toddler Conversational Engagement

Successful conversation initiations. After controlling for child expressive vocabulary size in Step 1, as seen in Table 8, both Step 2 and Step 3 in the hierarchical regression model predicting fathers’ successful conversation initiations were significant. In Step 2, family INR and toddler positive emotion expression accounted for significant variance in fathers’ successful initiations, $F_{\text{change}}(5, 78) = 4.38, p < .01$. Fathers from families with higher INR, and fathers whose toddlers expressed higher frequency of positive emotion successfully initiated conversations with their toddlers more frequently. Moreover, Step 3, which included the marginally significant interaction of INR and child positive emotion expression, contributed marginally significant unique variance to the model, $F_{\text{change}}(1, 77) = 3.79, p < .10$. Appreciating that the interaction was not significant, but out of interest to understand potential relations requiring further research, follow-up analyses used simple slopes to represent statistical prediction of fathers’ initiations by INR at one standard deviation above and below the mean for child positive emotion expression.
INR is significantly related to fathers’ initiations at both higher and lower levels of toddler positive emotion expression, however, the relation is stronger at higher levels of positive emotion ($\beta=.48$, $t(77)=6.85, p<.001$) than at lower levels ($\beta=.18$, $t(77)=2.57, p<.05$). Thus, higher family INR is associated with greater frequency of father initiations, particularly when toddlers express a high frequency of positive emotion (Figure 2). Step 3 also included two marginally significant main effects: paternal education is inversely related to the frequency of fathers’ successful initiations, whereas there is a positive association between fathers’ perceived hassles and the frequency of successful initiations. The overall model, $F(7,77)=4.05, p<.001$, accounted for 27% of the variance in fathers’ initiations.

Table 8.
 Hierarchical regression model predicting fathers’ successful conversation initiations

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Note: *p<.10 *p<.05 **p<.01 ***p<.001
Model 1 not displayed.
Failed conversations initiations. After controlling for child expressive vocabulary size in Step 1, Step 2 contributed unique and significant variance to the model predicting fathers’ failed conversation initiations, $F_{\text{change}}(5, 78)=2.77, p<.05$. Only child positive emotion expression accounted for significant variance in fathers failed turns: fathers made more unsuccessful attempts to initiate a conversation with their toddlers when their toddlers expressed more positive emotion. As there were no significant interactions in Step 3, only Step 2 is presented (Table 9). The overall model, $F(6, 78)=2.53, p<.05$, accounted for 16% of the variance in fathers’ failed conversation initiations.

Conversational responses. For fathers’ conversational responses to their toddlers’ speech, after controlling for child expressive vocabulary size, Step 2 accounted for unique and significant variance in the model, $F_{\text{change}}(5, 78)=3.82, p<.01$ (see Table 10). Higher frequency toddler positive emotion expression was associated with more frequent conversational responses by fathers. Unexpectedly, father education had a significant inverse association with the
frequency of fathers’ conversational responses. This effect may be moderated by family INR, although Step 3 did not contribute significant unique variance to the model $F_{\text{change}}(1, 77) = 2.96, p < .10$. 

Table 10. 
Hierarchical regression model predicting fathers’ conversational responses

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<td>.13</td>
<td>.14</td>
<td>.15</td>
<td>.10</td>
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<tr>
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<td>.37</td>
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<tr>
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<td>.02</td>
<td>-.09</td>
<td>-.01</td>
<td>.02</td>
<td>-.07</td>
</tr>
<tr>
<td></td>
<td><strong>INR X Education</strong></td>
<td></td>
<td></td>
<td></td>
<td>.15</td>
<td>.09</td>
<td>.17</td>
</tr>
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</table>

$R^2 = .23$, $F = 3.80**$, $F_{\text{Change}} = 2.96^t$

Note. $^t p<.10$, $^p<.05$, $^{**} p<.01$

Model 1 not displayed.
Because the interaction of paternal education and family INR approached significance, it was probed. For fathers with higher levels of education, INR relates to fathers’ responses to toddler speech in the expected direction: fathers in families with higher INR respond more frequently to their toddlers ($\beta = .54; t(77) = 3.60, p < .001$). At lower levels of education, however, INR is not related to the frequency of fathers’ connected turns ($\beta = -.06; t(77) = .30, p > .10$). Interestingly, Figure 3 shows that more highly educated fathers whose families are low in INR take the least amount of connected turns with their toddlers, compared to fathers with low education at the same level of INR, fathers with low education at high levels of INR, and to highly educated fathers in higher INR families. The overall model, $F(7, 77) = 3.76, p < .01$, accounted for 26% of the variance in fathers’ conversational responses to their toddlers.

Figure 3. Interaction between family INR and paternal education predicting fathers’ conversational responses.

Note. Error bars reflect the standard errors of the simple slopes.

Elaborations. Of the 90 fathers with usable data, a large majority (73.3%) did not elaborate on their toddler’s previous utterance. Of the remaining 24 fathers, 12 fathers elaborated once, and the remaining fathers elaborated 3-16 times. Thus, a dichotomous variable was created
and a logistic regression model was used for analyses. Given that the bivariate correlation of child gender and fathers’ elaborations, child gender was entered as a covariate in Step 1 along with child expressive vocabulary size. Step 2 contributed marginally significant unique variance to the model, $\chi^2(5)=9.72, p<.10$. Father education was significantly related to the likelihood of elaborating ($e^B=.70$) and toddler positive emotion expression was marginally related to fathers’ likelihood of elaborating ($e^B=1.08$). In Step 3, one significant interaction (INR by Hassles) was retained, and the step contributed unique and significant variance to the model, $\chi^2(1)=4.94, p<.05$. In the final model (Table 11), father’s education level was significantly related to fathers’ likelihood of elaborating. Unexpectedly, a one unit increase in fathers’ education level was associated with decreased likelihood of fathers elaborating ($e^B=.70$). Toddler positive emotion expression was again related to increased likelihood of fathers elaborating, although the effect remained marginally significant ($e^B=1.08$). The significant interaction of INR and Hassles was

Table 11. Logistic regression model predicting fathers’ elaborations

<table>
<thead>
<tr>
<th></th>
<th>$B$</th>
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<th>Wald’s $\chi^2$</th>
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<th>$e^B$ (odds ratio)</th>
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<td><strong>Step 2</strong></td>
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</tr>
<tr>
<td>Model</td>
<td>23.69**</td>
<td>8</td>
</tr>
</tbody>
</table>

Note. *p<.10  **p<.05  ***p<.01

Only Model 3 displayed.

63
probed by calculating odds ratios for the statistical prediction of elaborations by INR at one standard deviation above and below the mean of hassles. These analyses reveal that at lower levels of hassles, for every one unit increase in INR, fathers’ likelihood of elaborating increases by 3.39 times. However, at high levels of hassles, increases in INR are associated with decreased likelihood fathers’ likelihood of elaborating ($e^{B}=.57$). The final model, $\chi^2(8)=23.69$, $p<.01$, correctly classified 90.2% of the fathers who did not elaborate; however, it correctly classified only 45.8% of the fathers who did elaborate.
Chapter 4. DISCUSSION

Little is known about how a child’s emotions, indexed by emotion expressions, relate to parents’ engagement with the child in conversation, particularly during stages of development when language is emerging. The thesis investigated the degree to which toddler emotion expression—both positive and negative—account for variability in parent-toddler conversational engagement, including potential interactions between emotion expression and known correlates of parental language input (SES and parent stress). Parents from families with more income to meet their needs, with higher education, and whose toddlers who express more positive emotion expression were expected to engage in more frequent parent-toddler conversation, reflected in higher frequency of parents’ successful conversation initiations, conversational responses, and elaborations. On the other hand, parents who feel more hassled by minor daily life stressors and whose toddlers express more negative emotion were expected to have less successful conversations, indicated by lower frequency of successful initiations, conversational responses and elaborations, and greater frequency of failed conversation initiations. Conversations are thought to be an important aspect of language input and socialization of emotion in early childhood (Dunn, 1992; Greenwood et al., 2011; Thompson, 2006; Zimmerman et al., 2009) and yet the family level, parent level and child level influences on conversations in families remain to be investigated, including in diverse samples such as the rural, economically strained families who participated in this study. The study addressed these hypotheses separately for mothers and fathers, by assessing toddler emotion expression and parent-toddler conversational engagement during naturalistic home observations when toddlers were 18-months-old, a point in development when expressive language is emerging and toddlers frequently express emotion, both positive and negative.

Three central themes characterize the results. First, even when accounting for toddler expressive vocabulary and known predictors of parent-child verbal interactions, toddlers’ positive and negative emotion expressions contribute to aspects of parent-toddler conversational engagement. Second, the results support previous literature linking family socioeconomic status to the quantity and quality of parent-child verbal interactions, yet child characteristics (emotion expression) and parent characteristics (parent stress) appear to moderate or attenuate the contribution of SES factors for some aspects of conversational engagement. Finally, examination
of separate predictive models for mothers and fathers suggests that there are different contributors to their conversational engagement.

In addition to discussing these findings, strengths and limitations of the study design are discussed followed by suggestions for future directions in research integrating language and socioemotional development. Future directions include the need for assessment of bidirectional effects and temporal relations, the utility of moving beyond dyadic assessment of conversation quality to family context, the need for more developmentally sensitive measurement of parent-child conversation and the necessity for culturally sensitive interpretation of results.

**Parent Toddler Conversational Engagement: The Role of Toddler Emotion Expression**

Though a growing literature suggests a relation between early childhood temperament, (in particular, emotionality) and child language ability, little is known about the mechanisms explaining this link. One hypothesis is that child emotionality affects child language development via the influence of child emotion expressions on parent-child interactions. However, only one study has used concurrent behavioral observations of both child emotion expression and parental language input (Slomkowski et al., 1992). One aim of the current thesis was to advance our understanding of these issues through a first step—relating observations of toddlers’ positive and negative emotion expression to assessment of parent-toddler conversational engagement (the frequency of parents’ successful conversation initiations, responses, elaborations, and failed attempts to initiate conversation) within the same interaction. In line with other researchers proposing this hypothesis (e.g. Kubicek et al., 2001; Moreno & Robinson, 2005; Slomkowski et al., 1992), it was expected that toddler positive emotion expression would be related to higher quality parent-toddler conversation, whereas toddler negative emotion expression would be associated with lower quality parent-toddler conversation.

**Toddler negative emotion expression.** Higher frequency of toddler negative emotion expression was expected to relate to lower frequency of parent-toddler conversational engagement, reflected in fewer parental successful conversation initiations, more parental failed conversation initiations, fewer parental conversational responses, and decreased likelihood of parental elaborations. Given previous research suggesting that fathers are affected by difficult child characteristics but mothers may be less so, (Brown et al., 2011; McBride, Schoppe, & Rane 2002; Mehall et al., 2009; Nelson & Simmerer, 1984), it was notable that toddler negative emotion expression was unrelated to any aspect of father-toddler conversational engagement.
However, consistent with the study hypotheses, toddler negative emotion expression was associated with one aspect of mother-toddler conversational engagement, successful conversation initiations by mother, though the direction of the relation depended upon mothers’ perceived hassles. This emerged even when accounting for variance explained by child expressive vocabulary, socioeconomic factors, maternal stress, and toddler positive emotion expression.

Though there were no significant main effects of toddler negative emotion expression on the frequency of mothers’ successful conversation initiations, there was a significant interaction of mothers’ hassles and the frequency of toddler negative emotion expression. Although negative emotion expression is typical during toddlerhood, it is demanding on parents. In the present sample, higher levels of toddler negative emotion expression were related to mothers reporting feeling more hassled (at the bivariate level), consistent with the literature linking high parenting stress to difficult child characteristics (Noel et al., 2008; Saisto, Salmela-Aro, Nurmi, & Malmesmaki, 2008). Moreover, the statistical interaction of maternal hassles and toddler negative emotion expression suggests that, for mothers reporting lower perceived hassles, higher frequency of toddler negative emotion expression is related to fewer successful conversation initiations. However, this pattern of relations was not found for more hassled mothers. Though mothers perceiving higher levels of daily hassles made fewer successful conversation initiation overall, they appeared more likely to successfully initiate conversations if their toddlers expressed negative emotion more frequently.

Thus, though toddler negative emotion expression is significantly related to many aspects of mother-toddler conversational engagement at the bivariate level, once controlling for child expressive vocabulary and accounting for variance associated with SES factors and toddler positive emotion expression, toddler negative emotion is related to only one aspect of mother-toddler conversational engagement: mothers’ successful conversation initiations. Moreover, this relation depends upon mothers’ perceived hassles: the frequency of toddler negative emotion expression is different for mothers who perceive themselves to be highly hassled by minor stressors in daily life, including daily stressors in the parenting domain. It is worth remembering that mothers’ hassles scores are based on their perceptions of being hassled by daily challenges and not the frequency with which they experience these challenges. Previous work using the measure has also used parents perceptions of intensity of daily hassles, rather than the frequency,
to relate to individual differences in parenting (e.g. Crnic et al., 2005; Crnic & Greenberg, 1990). Thus, though parenting in toddlerhood is challenging for many parents and parenting stress (including perceptions of hassles) appears to peak during the toddler period (Crnic & Booth, 1991; Mulsow, Caldera, Pursley, Reifman, & Huston, 2002), individual differences in mothers’ perceived intensity of daily stressors accounts for differences in the way that toddler negative emotion expression relates to the frequency of mothers’ successful conversation initiations.

**Toddler positive emotion expression.** Toddler emotion expression was expected to contribute to more conversational engagement between parents and toddlers, reflected in more frequent parental successful conversation initiations, less frequent parental failed initiations, more frequent parental conversational responses, and increased likelihood of parental elaborations. This prediction was supported in the models for fathers but not in any models for mothers.

Toddler positive emotion expression accounted for variance in multiple aspects of father-toddler conversational engagement, over and above variance accounted for by child expressive vocabulary, family income to needs ratio, paternal education, fathers’ perceived hassles and toddler negative emotion expression. Specifically, toddler positive emotion expression accounted more frequent successful initiations, more failed initiations, more conversational responses; and was related at a trend level to fathers’ increased likelihood of elaborating on their toddlers’ speech. In fact, in all father models except fathers’ elaborations, toddler positive emotion accounted for the most variance in father-toddler conversation engagement. Moreover, the relation of toddler positive emotion expression and fathers’ successful conversation initiations was strengthened for fathers in higher families with higher INR. These findings support the hypothesis that toddler positive emotion expression may serve to elicit or reinforce verbal interactions with caregivers. The findings may be interpreted in terms of fathers’ general verbal engagement with emotionally positive toddlers, rather than being specific to certain aspects of father-toddler conversation. That is, fathers whose toddler express higher levels of positive emotion not only successfully initiate conversations and respond to their toddlers more frequently; they also make more failed attempts to initiate conversations with their toddlers, suggesting that these fathers are generally directing more speech to their toddlers than fathers of toddlers expressing lower levels of positive emotion. Especially given the surprising finding that toddler negative emotion expression is unrelated to fathers’ verbal engagement with their
toddler, the results suggest that future research on predictors of fathering might expand focus to positive child characteristics that might elicit or enhance father-child interactions, rather than a more narrow focus on challenging child characteristics.

Summary and interpretation. The results highlight the complexity of relations between emotion expression and parent-toddler conversation quality. First, the valence of toddler emotion expressions may have different implications for mothers and fathers, with toddler negative emotion expression relating to one aspect of mother-toddler conversational engagement, and with toddler positive emotion expression relating to multiple aspects of father-toddler conversation quality. Second, the strength and direction of the relation of toddler emotion expression to parent-toddler conversation quality may depend upon socioeconomic factors and parent characteristics. In the case of fathers, the relation between positive emotion expression and fathers’ successful conversation initiations is stronger at higher levels of INR. In the case of mothers, the direction of effect of toddler negative emotion expression may differ depending on the extent to which mothers perceive themselves to be hassled. For mothers who perceive themselves to be highly hassled, higher frequency of toddler negative emotion expression is related to more frequent successful conversation initiations, whereas for mothers with lower perceived hassles the reverse appears to be true. One interpretation is that, for toddlers of highly hassled mothers, negation emotion expression may serve a protective function, eliciting maternal verbal engagement, whereas for toddlers of more less hassled mothers, negative emotion expression may act as a risk factor, deterring maternal verbal engagement.

Yet we cannot draw conclusions about the quality of these interactions, in terms of sensitivity or warmth, for example, from the current data. There are findings to suggest that parents interact more frequently with infants with difficult temperaments (Plack, 1997; Volling & Belsky, 1991); however, the quality of these interactions might be poorer. Parents’ interactions with young children who are high in negative affectivity have been found to be less positive, less supportive and more controlling (Grych & Clark, 1999; Kiff, Lengua, & Zalewski, 2012; van de Akker, Dekovic, Prinzie, & Asscher, 2010). Moreover, parenting stress is related to lower sensitivity, more reactivity and use of discipline, and lower quality parent-child interactions (Anthony et al., 2005; Calkins et al., 2004; Crnic et al., 2005; Guajardo et al., 2009). It is possible that more hassled mothers, who across the sample made fewer successful initiations on average than mothers perceiving lower intensity of hassles, initiate more with toddlers who
express higher levels of negative emotion because the topics they initiate are related to conflict, discipline, or managing behavior. This possibility is supported by previous research finding that mothers who perceive higher intensity of daily hassles are more likely to respond to toddler negative emotion expressed with increased negativity themselves (Acevedo, 1993). On the other hand, mothers who perceive lower intensity of daily hassles, who on average successfully initiate more frequently, may be better able to appropriately ignore their toddlers if they are expressing higher levels of negative emotion expression. Alternatively, less hassled mothers may be more likely to follow the child’s lead in conversation with a toddler who is highly negative, responding to rather than initiating conversation. It is important to note that in our economically strained sample, parents nonetheless did not perceive themselves to be highly hassled by minor daily stressors; though possible hassle scores ranged from 2-10, the sample mean for mothers’ hassles was only 4.42. Nonetheless, individual differences in mothers’ perceptions of hassles accounted for variation the relation between toddler negative emotion expression and mothers’ successful initiations.

Overall, and contrary to predictions, once accounting for child expressive vocabulary, select SES and parent factors, toddler negative emotion expression is related to few aspects of parent-toddler conversational engagement. One possible explanation is that, though the sample is economically strained, it is an otherwise lower risk sample of families, whose children are not at high risk for behavior or socioemotional problems. For example, the study did not oversample for difficult child temperament, which may have resulted in more children with more intense episodes negative emotion expression. Moreover, during toddlerhood, negative emotion expression is developmentally typical, frequent, and expected (Thompson & Goodvin, 2007). Thus, at this age, in a lower risk sample, negative emotion expression may not be a salient risk factor for lower parent-child conversational engagement. It is possible that at subsequent developmental stages, such as the preschool years, when children are expected to have developed better emotion regulation capacities, high frequency of negative emotion expression may be more of a risk factor. As children acquire more language skills, communicating emotionally through nonverbal means, particularly when the message is emotionally negative, is less acceptable; preschool age children are frequently instructed to “use your words” (e.g. Cole et al., 2011; Domitrovich, Cortes & Greenberg, 2007). It may be that the relation of negative emotion expression to parent-child conversation is more pronounced during the preschool years, when
many children have achieved greater skill in expressing their needs verbally, and reliance on emotion signals for communication is less accepted.

It should be noted that a toddler’s observed emotion expression and a toddler’s temperamental trait of emotionality are not equivalent; in fact, as noted previously, children’s observed emotion expressions (at least during laboratory tasks) are often weakly associated with maternal ratings of temperament (Kubicek & Emde, 2012; (Tan et al., 2013). However, it must be considered that toddlers’ traits of negative or positive emotionality, and parents’ history with their toddlers, may play a role in the relation between toddler emotion expression and parent-toddler conversation. How parents respond to a toddler’s emotion expression is likely influenced in part by their perceptions of their child’s temperament (Tan et al., 2013). For example, a toddler who is high in temperamental emotional reactivity may not receive as much attention/verbal engagement from parents when expressing higher levels of negative emotion, whereas a less reactive toddler might elicit more interaction from parents if he or she expresses high frequency of negative emotion. Thus, the extent to which parents view emotion expression as typical (or not) for their child may contribute to the extent to which they engage in conversation with that child. Future work might integrate measurement of both parent-rated emotionality as well as observer rating of toddler emotion expression into research on predictors of parenting.

Parent-Toddler Conversational Engagement: The Role of Socioeconomic Status

The thesis adds to the extensive literature suggesting that family socioeconomic status is a robust predictor of parental language input, parent-child conversation, and child language development (e.g. Fernald et al., 2013; Hart & Risley, 1992, 2003; Hoff, 2003; Hoff-Ginsberg, 1998; Hurtado, Marchman, & Fernald, 2007; Rowe, Pan, & Ayoub, 2005; Sohr-Preston et al., 2013; Walker, Greenwood, Hart & Carta, 1994). Moreover, the findings add to the literature treating socioeconomic factors as separate predictors, which has been recommended as best practice (Diemer et al., 2013; Ensminger & Fothergill, 2003). Most often our knowledge about SES differences in parent language input and parent-child communication come from studies of samples with a wide range of SES and that conduct group comparisons based on a criterion such as social class (e.g. Fernald et al., 2013; Hart & Risley, 1995; Hoff, 2003; Lawrence & Shipley, 1996), creating an SES composite score (e.g. Walker et al., 1994), or, to a lesser extent, treating one SES factor, such as education, as a proxy for SES (e.g. Hurtado et al., 2007). Fewer studies
(e.g. Pancsofar & Vernon-Faegans, 2010; Sohr-Preston et al., 2012; Tamis-LeMonda, 2004) treat family income and parent education separately in order to assess unique variance accounted for by each.

To understand the role of SES factors in the present findings, the discussion first contextualizes the results by describing the demographic characteristics of the participants, highlighting the importance of treating income and education as separate predictors in the models. Parental education in our sample was significantly, but modestly, related to family INR. Informal information provided to the investigators by the families helped to identify multiple reasons for lower or higher income in the participating families. For example, there were some families in which the father completed high school but no additional education. In some of these cases, the father may have worked with his family in a business and later assumed a managerial role. College education may not have been seen as necessary to achieve a satisfactory level of income. In some families, mothers completed a college degree, but chose to raise their children on a full-time basis and to postpone working outside of the home; of the mothers in our sample who were unemployed, 41.3% had a college degree. These families therefore had a single wage-earner but experienced their strained economic situations as personal choices. Other families with the same household income had parents who had not completed college and who both earned income to support the family. Thus, two families with the same INR could have different levels of education and employment, which may translate to differences in parenting. Thus, it was appropriate for INR and parent education to be treated separately in the models. Moreover, the results confirm that combining the two would have masked the complexity in relations between socioeconomic status and parent-toddler conversational engagement.

For mothers, main effects of maternal education in all models suggest that mothers with higher educational attainment make more (failed) attempts to initiate conversations with their toddlers, are more frequently successful at initiating conversations, more frequently respond to their toddlers, and are more likely elaborate on what their toddler says. These findings are consistent with the literature linking maternal education to parent language input (e.g. Rowe, 2008; Rowe et al., 2005). The findings, taken in the context of the existing literature, suggest that education is generally related to more maternal child-directed speech, and may not relate specifically to the extent to which mothers engage their toddlers in conversation. These robust findings are of particular note given that child expressive vocabulary, a significant correlate of
both maternal education and multiple aspects of mother-toddler conversational engagement, was controlled for in the models. That is, regardless of toddler language ability, mothers with higher education spoke more to their toddlers, even when the toddler did not respond to the topic of the conversation, and moreover were more frequently successful at initiating conversations with their toddlers, more frequently responded to and more frequently elaborated on their toddlers’ speech.

In our sample, family INR is unrelated to aspects of the mothers’ conversation efforts with her toddler. Given the restricted income range of the sample, which eliminates confounds related to poverty or advantage, these findings are consistent with Hoff-Ginsberg’s (1995) assertion that, outside of extreme poverty, parent education is the most robust predictor of parenting behaviors. Moreover, contrary to expectations, neither education nor income interacted with parent characteristics or child characteristics for mothers. That is, for example, higher frequency of toddler negative emotion expression did not exacerbate effects of lower education on mother-toddler engagement or attenuate effects of higher education. This again highlights the robust relation between maternal education and parent-toddler verbal interactions in the sample, which does not appear susceptible to risk factors such as maternal stress or difficult child characteristics.

Whereas education appears to be a meaningful factor for mothers’ conversations with their toddlers, family INR is the key factor for father-toddler conversations. Fathers in higher income families (higher INR) successfully initiated more conversations and responded more frequently to their toddlers, although the relation of INR and conversational responses was marginal. Unexpectedly, fathers’ education was inversely related to the frequency of fathers’ successful conversation initiations and conversational responses, and was associated with lower likelihood of elaborating on toddler speech. For fathers’ conversational responses, the inverse relation of paternal education was clarified by an interaction of INR and paternal education: highly educated fathers who are nonetheless low in INR responded to their toddlers least, even when compared to fathers with low education at a similar level of INR.

For fathers, parent and child characteristics did interact with SES factors to account for variance in aspects of father-toddler conversational engagement. For example, higher frequency of toddler positive emotion expression strengthened the relation of family INR with fathers’ successful initiations. Fathers with from higher INR families more frequently initiated
conversations with their toddlers successfully, but this was especially true for fathers whose toddlers expressed higher frequency of positive emotion. Moreover, the relation of family INR to fathers’ likelihood of elaborating on their toddlers’ speech was moderated by fathers’ perceived hassles: for fathers who perceived lower levels of hassles, higher INR was associated with greater likelihood of elaborating on toddler speech. However, for fathers who perceived themselves to be more hassled, higher INR is associated with less likelihood of elaborating on toddler speech. Perhaps, in this demographic group, fathers who perceive daily demands, including the hassles associated with family life, to be more negative, may feel less obligated to be involved with their toddler if they are contributing to a relatively higher INR. They may view their primary contribution to the family to be financial. Future research incorporating information about type of employment and job stress might help clarify this relation.

**Summary and interpretation.** In sum, the results support the study predictions and past research linking SES factors to parent-child verbal interactions. For mothers, education emerged as a robust correlate of all aspects of mother-toddler conversational engagement, even when accounting for toddlers’ expressive language ability. The relation of SES factors to father-toddler verbal interactions was more complex. Family INR was associated with many aspects of father-toddler conversational engagement, yet interacted with child characteristics (positive emotion) and parent characteristics (hassles, education). Moreover, surprisingly, father education was inversely related to aspects of father-toddler conversational engagement, including the frequency of fathers’ successful initiations, the frequency of conversational responses, and the likelihood of elaborating on their toddler’s speech. This was especially true for fathers with higher levels of education but lower levels in INR; this group responded infrequently to their toddlers. One possible explanation for this unexpected finding may be that fathers’ financial contribution to their family is linked with their psychological well-being, including their self-esteem, sense of self-efficacy, and level of distress (Schindler, 2010) as well as to the quality of their relationships and interactions with their children (reviewed in Doherty et al., 1998). It may be that, for fathers with higher academic attainment (e.g. fathers who completed college) who nonetheless provide their family with lower income, psychological well-being and parent-child interactions may be especially affected. Another potential factor is that missing data for fathers’ conversational engagement is nonrandom. Previous analyses in the sample have shown that fathers who were not present at the visit (they were either not home or left the vicinity of the observation, and thus
were given missing scores) were more likely to have a high school education or below. Thus, the lower end of the distribution for education was truncated in analyses, perhaps contributing to the inverse relation.

As noted in the introduction, numerous explanations might account for the robust SES differences in child-directed speech, including differences in resources, stress (Conger & Donnellan, 2007), socialization goals, values (e.g. Lareau, 2003; Kohn, 1963; Kusserow, 1999; van Kleeck, 1994), and knowledge or beliefs about child development (Rowe, 2008). The relative absence of INR as a contributing factor in the models for mothers despite educational differences, may reflect differences in socialization goals, parenting values, and knowledge or beliefs about child development, rather than strong effects of lack of resources or stress. Indeed, mothers’ perceived hassles were unrelated to INR or to education in our sample. It may be that college-educated mothers in our sample, even if relatively low in INR (perhaps because of a choice not to work), share values and socialization goals similar to middle class or higher income mothers. As has been found in research on practices and values of middle class parents (e.g. Lareau, 2003; Kusserow, 1999), these mothers may value language as an important mechanism of socialization, and thus may provide more explanations and descriptions, as well as engage in more verbal turn-taking with their toddler.

For fathers, family INR, rather than paternal education, contributed to the frequency of fathers’ conversational engagement with their toddlers. Interestingly, follow-up analyses revealed that family INR was unrelated at the bivariate level to observers’ ratings of fathers’ opportunity to interact ($r=.14$, $p=.20$), meaning that income differences did not relate to the amount that fathers made themselves available to interact with their toddlers. Rather, when in the presence of their toddlers, fathers in higher INR engaged in verbal interactions more frequently with their toddlers than lower INR fathers. Thus, these differences in father-toddler conversation quality may be in part linked to different values or beliefs about the extent to which parent-child verbal interaction is important. For example, higher income fathers may value verbal interactions with their children to a greater extent than lower income fathers do, consistent with literature on sociodemographic differences in parenting values (Kusserow, 1999; Lareau, 2003).

**Parent-Toddler Conversational Engagement: The Role of Parent Gender**

Though the purpose of the current thesis was not to compare mothers and fathers, an understanding that predictors of mothering and fathering can be different motivated examining
relations of SES factors, parenting hassles, and toddler emotion with parent-toddler conversation quality separately for mothers and fathers. Consistent with previous literature on differences in mothers-child and father-child conversation quality (Abkarian et al., 2003), mothers engaged in all aspects of parent-toddler conversation (successful conversation initiations, failed conversation initiations and elaborations) significantly more frequently than fathers. These findings would be consistent with Abkarian and colleagues’ (2003) conclusion that fathers are less skilled conversational partners with their young children than are mothers. However, it is important to note that frequency is not equivalent to capability. One important consideration is that during these naturalistic home observations, mothers and fathers were free to interact with their children as they chose; that is, parents were asked to go about their day as they normally would, and were not required to interact with their toddler in a semi-structured activity, such as parent-child free play. Clarke-Stewart (1978) encourages caution in interpreting mother-father differences in parenting: fathers who demonstrate the ability to engage in high quality, sensitive parenting during semi-structured observations may nonetheless engage in these behaviors less frequently than mothers. Thus, it cannot be assumed from the results that fathers’ comparatively lower frequency of conversational engagement with their toddlers reflects fathers’ lower parenting skill. It is also of note that mothers’ conversational engagement is strongly related to child productive vocabulary abilities, whereas for fathers, child language abilities play less of a role. This is consistent with literature suggesting that fathers are less attuned to their child’s developmental abilities than are mothers, and are less likely to adjust their speech based on their child’s abilities (Gleason, 1975; Mannle & Tomasello, 1987; McLaughlin et al., 1983; Pratt et al., 1992; Rondal, 1980). It also implies, however, that the fathers in our sample are skillful conversational partners with their young toddlers, even though some of the toddlers in our sample had limited expressive language abilities.

For the models testing the main hypotheses in the thesis, the results also show different patterns of prediction for mothers and fathers. Generally, education and toddler negative emotion expression (to a lesser extent) tended to account for significant variance in mothers’ engagement in conversation with their toddlers, whereas INR and toddler positive emotion were significant contributors to fathers’ conversational engagement.

For fathers, positive emotion expression was a consistent, robust contributor to the extent to which fathers verbally engaged with their toddlers. It is possible that fathers, who are typically
less involved in caregiving activities early in their children’s development (NICHD, 2000), are
drawn into parenting interactions when their toddlers are expressing positive emotion. This is
consistent with evidence that the greatest proportion of caregiving activities for fathers is play
(Kotelchuck, 1976). But it is also noteworthy that the prediction that negative emotion would
dampen conversational engagement was not found fathers. This finding is somewhat surprising,
given popular views that fathers have more difficulty generating sensitive responses to young
children’s negative emotion expression. Yet studies of the relation between fathering and
difficult child characteristics have been mixed, with some studies finding that emotionality is
unrelated to fathers’ sensitivity or parenting skill during the toddler period (NICHD, 2000;
Woodworth et al., 1996). It is again important to note that more frequent engagement in
conversation with a toddler does not necessarily equate to more sensitive, supportive parenting.
Future examination of predictors of mother-toddler and father-toddler conversation might
incorporate assessment of content of conversation and sensitivity of fathers’ and mothers’ back
and forth verbal exchanges with their toddlers. It is possible that toddler negative emotion
expression is relevant to these more qualitative aspects of parent-toddler conversations, rather
than to the frequency of conversations.

On the other hand, toddler positive emotion expression was unrelated to mothers’
conversational engagement with their toddlers, and toddler negative emotion expression was
only related to the frequency of mothers’ successful initiations, though it related differently for
mothers who perceived higher versus lower hassles. These findings are consistent with the view
that that mothers’ involvement in caregiving is less of a choice than fathers’ involvement (Brown
et al., 2011). Though it was expected that the frequency of toddler emotion expression (positive
and negative) would be related to more aspects of mother-toddler conversational engagement,
given the relatively low level of risk in the sample, it is perhaps not surprising that these
hypotheses were not supported. In fact, it is encouraging that mothers’ parenting (at least in
terms of their verbal interactions) is not susceptible to child emotion expressions during a
developmental period in which emotions are frequent and intense. Research on more at-risk
samples (e.g. oversampling for families below the poverty line, parent psychopathology, or child
difficult temperament) might reveal more robust relations between toddler emotion expressions
and the extent to which mothers engage with their toddlers in conversations.
Different SES factors also contributed mothers’ and fathers’ engagement with their toddlers in conversation, with education relating to mothers’ and income (INR) relating to fathers’ conversational engagement. This finding again highlights to importance of treating SES factors as separate predictors, rather than creating SES composites (Diemer et al., 2013; Ensminger & Fothergill, 2003). Only 39.4% of the mothers included in analyses worked fulltime, whereas 92.2% of fathers did. It is possible that because of fathers’ status as the sole breadwinner in many families, family income was more strongly related to fathers’ parenting than to mothers’ parenting. This would be consistent with literature suggesting that characteristics of fathers’ workplace, such as the level of autonomy and the level of job stress is related to parents’ socialization goals (Kohn, 1963) and parenting quality, and moreover, that parenting quality is more susceptible to job stress for fathers than for mothers (Atzaba-Poria & Pike, 2008; Goldberg, Clarke-Stewart, Rice & Dellis, 2002; Goodman, Crouter, Lanza, Cox, Vernon-Faegans, 2011). As was noted above, many of the mothers in our sample were college educated, yet chose to stay at home. Thus, it is not surprising that maternal education was a stronger predictor of mother-toddler conversation quality than family INR, in a sample of economically strained, but not impoverished families. As noted previously, maternal education is related to mothers’ knowledge about child development, and knowledge about child development has been found to mediate the relation between maternal education and child-directed speech (Rowe, 2008). It may be that for mothers in our sample, engagement in conversational engagement was driven by mothers’ beliefs about child development and the amount of value they place on verbal interactions, and that these differences in beliefs and values are more rooted in education level than in income level.

Contributions, Limitations and Future Directions

The thesis makes contributions to our current understanding of parent-child communication in toddlerhood, a period of rapid development of language skills and high frequency of emotion expression. Little is known about the interplay of child emotion expression and known correlates of parent language input (income-to-needs, parent education, stress) during the toddler period. The thesis, drawing from ecologically valid assessments of parent-child interactions and toddler emotion expression, demonstrates that emotion expression is an important factor to consider in the understanding predictors of parent-child communication, particularly for fathers. Moreover, the results suggest that a full understanding of the relations of
SES to parent-language input and parent-child communication must consider factors such as parent stress and child emotion expression. Naturalistic home observations, from which measures of both parent-toddler conversation quality and toddler emotion expression were derived, allowed for the assessment of the how observed toddler emotions relate to parent-child conversational engagement, rather than relying on parent report of toddler emotion, such as in ratings of emotionality. Moreover, the thesis draws on parallel data collected from mothers and fathers in a naturalistic setting, which is relatively rare in the research on parenting (Brown et al., 2011).

Yet it is important to highlight that the models account for a small proportion of the variance in parent-child conversation quality (16-42% for mothers and 16-27% for fathers). Though naturalistic home observations allow researchers to see how factors such as socioeconomic status, stress, and child emotion expression to operate to influence typical, daily parent-child interactions, they also allow for a great deal of unaccounted variance in the data. Countless other factors might account for variation in parent-child interactions during home visits. For example, the time of day and the type of caregiving activity engaged in may relate to the frequency of toddler positive and negative emotion expression as well as to which parent is most involved in the activity. Further exploration of other factors (e.g. presence of sibling, time of day, type of caregiving activity engaged in), and their relation to toddler emotion expression and parent-child conversation quality, is warranted.

**Temporal relations and bidirectional effects.** Interpretations of the findings are hindered by the fact that temporal relations between toddler emotion expression and parent and toddler speech could not be assessed. The frequency of toddler emotion expression was observed over the course of an hour-long naturalistic home observation, whereas parent-child conversational engagement was coded using 20 minutes of transcribed speech samples from the visit. A future direction is to conduct studies that more closely link measurements of toddler emotion and parent-toddler conversation in time, which would increase our knowledge of how emotion elicits conversation or diminishes conversation. Yet it is also possible that, over the course of the hour-long visit, the frequency of toddler emotion expressions in previous interactions might influence the extent to which parents verbally engage the toddler in the concurrent one. For example, a parents’ engagement in conversation with a toddler who has been crying for the past twenty minutes, but who has calmed down, may be different from a parent’s
verbal engagement with a toddler who is currently calm and has been calm throughout the past twenty minutes. Further research is warranted to assess what type of information can be gained by more closely linking our measures of toddler emotion and parent and toddler speech.

Relatedly, despite significant relations between toddler emotion expression and aspects of parent-toddler conversational engagement, the direction of effect cannot be assessed. Because video data was not collected, and coders used both vocal and nonverbal cues to rate toddler emotion expression, the temporal sequencing of toddler emotion expressions and mother, father and toddler verbalizations cannot be evaluated. This limits the ability to draw causal conclusions about the results, because emotions are both eliciting and elicited. Parents may be drawn into interactions by toddler emotion, but parent-child interactions also provoke emotions in toddlers. In fact, it is the salient, emotionally-charged nature of parent-child conversations that makes them a target of study in research on early socioemotional development (Dunn, 1992; Thompson, 2006). One interpretation of the results is that emotion expressions influence verbal interactions: for fathers, for example, the results seem to suggest that toddler positive emotion expression draws fathers into verbal exchanges with their toddlers. Yet fathers may also elicit more positive emotion expression from toddlers. Indeed, there is evidence to suggest that toddlers are more responsive to play initiated by fathers than by mothers- they are rated as more cooperative, interested and involved in play with fathers (Clarke-Stewart, 1978) and smile, vocalize and look towards fathers more in structured laboratory settings with both mother and father present (Lamb, 1976). This may be in part because fathers tend to choose play that is social and physical, such as rough-and-tumble play whereas mothers tend to choose play activities that are nonsocial and intellectual (Clarke-Stewart, 1978; Schoppe-Sullivan, Kotila, Jia, Lang, & Bower, 2013). It is possible that the caregiving activities that fathers choose to become involved in tend to elicit high levels of positive emotion from toddlers. Moreover, fathers tend to reward their children more during play, are better able to engage their children during play, and also express greater enjoyment in play than mothers (Clarke-Stewart, 1978). Thus, though the results suggest that toddler positive emotion expression is a strong predictor of fathers’ verbal engagement, it must also be considered that fathers’ engagement predicts toddler positive emotion.

For mothers’ conversation initiations, greater frequency of toddler negative emotion expression is related to more successful initiations for some mothers (more highly hassled mothers), and less successful initiations for others (mothers who perceive lower levels of
hassles). Numerous interpretations are possible. Some mothers may a) intentionally ignore or b) have more trouble verbally engaging a toddler who expresses frequent negative emotion. Another interpretation, however, is that verbal interactions (or lack thereof) influence toddler emotion expression. For example, a toddler whose mother infrequently engages in conversation with him may become distressed or use negative emotion expression to elicit interaction. In another scenario, a toddler playing with something she is not supposed to may only become distressed when her mother intervenes, perhaps with language such as “No, don’t touch that”. The verbal exchange is initiated by the mother and elicits toddler negative emotion.

Thus, it is easy to imagine that within everyday family interactions, the relations between emotion expressions and parent-child conversations are bidirectional. More longitudinal work is needed to further explore these relations across development and more directly test direction of effect. Moreover, examining the temporal relations between emotion expression and parent and toddler speech will also help clarify bidirectional effects. There have been calls for a more dynamic approach to understanding parent-child interactions and early socioemotional development in children (Teti & Cole, 2011). Second-by-second coding of both emotion expression and parent and toddler verbalizations would allow for the examination of temporal sequences of emotion and language in parent-toddler exchanges. In what context does toddler emotion elicit or deter parent verbal engagement, and when does parent verbal engagement stimulate or reduce toddler emotion expression? To what extent do these relations change across development, and to what extent do factors such as SES and parent stress play a role in these temporal relations? These questions point to next steps in research.

Moving beyond the level of the dyad. Few studies collect parallel data for mothers and fathers within the same family (Brown, McBride, & Shin, 2011). Even fewer studies assess mothers’ and fathers’ parenting within the same interaction, instead often assessing mother-child and father-child interactions in two separate semi-structured free play activities (e.g. Hladik & Edwards, 1984; Leaper et al., 1998). The current study addressed this gap by using naturalistic observations of families in their homes, during which mothers and fathers are free to interact with their child as they normally do so, rather than being asked to interact with their child. This type of design may allow for more variation in the amount and quality mothers’ and fathers’ parenting, and might also be more sensitive to the influence of contextual factors (e.g. minor daily stressors) than designs that include semi-structured tasks.
Yet there are also limitations to this approach. To the greatest extent possible, home observations were conducted when all members of the family were home. Therefore, fathers were in the home (91%) of the visits. Yet there was wide variability in the extent to which fathers became involved in caregiving duties during the visits. Sometimes parents took turns, and interactions were primarily dyadic; for example, in one family a father interacted with his toddler alone until his spouse had put dinner in the oven, and then the parents switched roles. Other times, mothers and fathers parented together, and parent-child interactions were triadic. In families with more than one child, some parents would split caregiving duties between siblings, for example, with mother interacting with the target child and the father interacting with the older sibling. Other times, one parent was responsible for all siblings, and in still other instances, the whole family interacted together. Thus, there was wide variation in the participant composition of interactions from which parent-toddler conversational engagement was assessed. Yet the coding system used to assess conversational engagement (Connectedness; Ensor & Hughes, 2008) does not allow for distinction between dyadic and triadic conversations. For example, the coding system does not distinguish between toddler speech that is directed at mother versus father. Moreover, when both parents are present at the visit, it is unclear from the aggregated data whether mothers and fathers took turns interacting (dyadic), or whether mothers and fathers parented and engaged in conversation with their toddler together (triadic). This is not trivial, given previous research that suggests that both mothers’ and fathers’ parenting is influenced by the presence of the other. For example, many studies have shown that both mothers and fathers to their children speak less when the other is present (Lamb, 1976, Stoneman & Brody, 1981); however, mothers speak more to their children than do fathers in triadic interactions (Lindsey & Caldera, 2006; Stoneman & Brody, 1981). Stoneman & Brody (1981) concluded that though fathers are competent conversational partners with their toddlers, they may defer to mothers when they are present. Interestingly, mothers’ and fathers’ conversation quality was unrelated at the bivariate level in the current study. This is surprising, given generally strong relations in the literature between mother and father language input (Barton & Tomasello, 1994; Hladik & Edwards, 1984; Lipscomb & Coon, 1983; Tamis-LeMonda et al., 2012). One explanation is that for some families, for whom parent-turn taking was more common, mother and father conversation quality was inversely related, whereas in families in which parents more frequently parented together during the visit, mothers’ and fathers’
conversation quality may have been positively related. At the group level, this may have cancelled out significant relations.

It is also important to consider the possibility that parent characteristics, such as education or stress, may influence their spouses’ conversation quality. In the study sample, significant bivariate relations were found between paternal education and aspects of mother-toddler conversation quality. Moreover, fathers’ perceived hassles were inversely related to mother-toddler conversation quality. Due to concerns about statistical power and multicollinearity, fathers’ education and hassles were not included in mother models, and vice versa. However, future work might examine these relations further. It may be, for example that the relations of income, education, hassles and toddler emotion expression with father-toddler conversation quality is moderated by maternal education. Given that SES differences in parenting have multiple causes, including differences in values and beliefs and child development, it is likely that spouses of different social class or educational background influence one another’s parenting based on their own parenting values and socialization goals.

**Expanding the definition of conversational engagement.** Assessing the frequency of elements of conversational engagement (e.g. initiations, responses) is just one way to assess parent-child conversational exchanges. One additional approach might be to calculate proportion scores for conversational partners, that is, to assess the proportion of parents’ (and children’s) attempts to communicate that are successful. Other research has assessed the extent to which parent-toddler conversations are maintained, that is, by assessing the average number of conversational turns per conversation topic, or the number of conversations in which the number of turns exceeds three (see, e.g. Dunn & Cutting, 1999; Slomkowski & Dunn, 1996; Tomasello & Todd, 1983). The extent to which parents engage in multiple turns on a single topic has been linked to child language acquisition (Zimmerman et al., 2009), but the implications for socioemotional development are unknown. It is possible that toddler emotion expression may be more relevant to extent to which parents can maintain back and forth exchanges with their toddler on a single topic, rather than the frequency of their initiations and responses. Extensions of the current study might incorporate assessment of parents’ ability to *maintain* conversations in the context of toddler positive and negative emotion expression.

Another possible limitation involves the coding system (Connectedness; Ensor & Hughes, 2008) employed to assess parent-child conversational engagement. It was originally
developed for older toddlers and preschoolers and did not take into account the challenges many younger toddlers would have in responding to or maintaining conversation. The original coding system may have assumed that children have adequate expressive and receptive language skills to engage in verbal back-and-forth exchanges. Child expressive vocabulary size was controlled in the models to assess the unique effects of candidate factors on parent-toddler conversation quality, over and above child language skill. Yet because the coding system is contingent upon child language ability (e.g. a parent is only given credit for a conversational response if it follows toddler speech), accounting for child productive language ability may be too stringent a control for a sample in which some toddlers had very limited expressive abilities. Thus, the original coding system may inappropriate for early toddlerhood, during which expressive language is just emerging and there is a wide range in the extent to which toddlers are speaking. Even with the revision that allowed for children’s attempts at words (gibberish) to be included in assessing parent-child conversational engagement, the results highlight that establishing conversations with 18-month olds is difficult. On average, only 20-25% of mothers’ and fathers’ attempts to initiate conversation were successful. Despite this fact, parents and toddlers are communicating, but much of this communication may be nonverbal. Thus, future work with this age group might consider other methods of assessing parent-toddler conversational engagement that are more sensitive to toddler developmental capacities.

Given that communication is multi-modal, particularly during stages of emerging verbal abilities, future work on parent-child conversational engagement during the toddler period might incorporate other, nonverbal forms of communication into assessment of parent-toddler “conversations”. For example, joint attentions skills are important precursors to language acquisition. Joint attention, defined as “the practice of sharing attention (usually visual) by following the focus of another person’s attention or by drawing their attention to one’s own focus of attention” (Farrant & Zubricki, 2011, p. 344), is known to support early language acquisition, particularly vocabulary development, in the first and second year of life (e.g. Farrant & Zubrick, 2011; Morales et al., 2000b; Tomasello & Farrar, 1986). It is a good candidate outcome because it is inherently dyadic, and has also been associated with socioeconomic status, (Arriaga, Fenson, Cronan & Pethick, 1998; Dollaghan et al., 1999) and child temperament (Morales et al. 2000a; Noel et al., 2008; Slomkowski et al., 1992; Todd & Dixon, 2010). For example, negative affectivity is associated with less frequent gaze following (Todd & Dixon,
Another type of nonverbal communication, the use of gestures, is common during the toddler period, and both toddlers’ (e.g. Iverson & Goldin-Meadow, 2005; Özçalışkan & Dimitrova, 2013; Vallaton, 2011) and parents’ (for review, see Özçalışkan & Dimitrova, 2013) use of gestures is known to contribute to toddler language acquisition. Toddlers use gestures to direct attention and share information (Liskowski et al., 2004; Lizckowski, Carpenter, Striano, & Tomasello, 2006), and also produce gesture-plus-word “sentences” (Iverson & Goldin-Meadow, 2005). Moreover, gestures facilitate toddlers’ engagement in mother-child interactions (Vallotton & Ayoub, 2009) and enable the achievement of complex speech acts between young children and adults (Marcos, Ryckebusch, & Rabain-Jamin, 2003), even when children have limited verbal abilities. Vallotton (2011) concluded that gestures enable preverbal children to produce “sentences and conversations before speech” (p. 105), and supports parent-child communicative turn-taking without sole reliance on verbal turns. Moreover, like joint attention, children’s use and interpretation of gesture varies as a function of social class (Michael & Willis, 1968; Rowe & Goldin-Meadow, 2009). It is unknown whether toddler use of gestures is related to temperament or to toddler emotion expression.

Thus, joint attention and gestures are important aspects of parent-toddler communication. Though the decision was made to collect only audio and live-coded data from the home visits, in order to be minimally intrusive, future work might utilize video data in order to incorporate information about gestures and joint attention into assessment of parent-child communication quality. It may be that, in the period of rapid language acquisition and the transition from prelinguistic to verbal communication, both verbal and nonverbal signals are critical components of parent-child conversation. Thus, assessing joint attention and gestures, along with verbal turn-taking would provide a richer picture of how toddler emotion expressions, in the context of parent stress and family socioeconomic status, contribute to parent-child conversation quality.

Implications. The relations of the contextual, parent, and child characteristics with parent-toddler conversation quality have potential implications for a) child emotional development and b) child language development. Parent-child conversation, particularly conversation that occurs in the context of child emotion expression, may help children integrate emerging language in the service of emotion regulation (Cole et al., 2011). Moreover, the quality of parent-child conversation has been shown to support socioemotional capacities (e.g. Ensor &
Hughes, 2008; Fivush et al., 2006; Laible, 2004), and engagement in conversation has been shown to support language acquisition (Greenwood et al., 2011; Zimmerman et al., 2009). However, two points must be made. First, our sample is made up of economically strained, rural and semi-rural, predominantly Caucasian families. We cannot assume that these relations would be found in groups of different cultural and sociodemographic background. Second, the implications of these findings should be considered with caution. The assumption that parent-child conversation is “good” for child outcomes, though supported by empirical literature, may be a culturally biased assumption. Van Kleeck (1994) warns, for example, that parent-training interventions that teach parents to act as conversational partners may be culturally biased. Many interventions encourage parents to talk to their child frequently, accommodate their speech to the child’s level, respond quickly to children’s attempts to communicate, encourage and reward child speech, follow the child’s lead in interactions and attempt balance in turn-taking. These suggestions, though supported empirically, make assumptions about what is “good” for children without considering that these suggestions may not align with, and in fact may directly contradict, some families’ values and beliefs about child development, parent-child interactions, and the importance of language. In rural African American communities, for example, many adults hold the belief that children should only speak when spoken to, and children are not seen as appropriate conversation partners (Heath, 1989; Ward, 1971). In lower income urban communities, immediate compliance, rather than back and forth negotiation, is expected from children because directives are issued to keep children safe in a dangerous environment (Kusserow, 1999). Language in many lower income families is often used to manage behavior, rather than encourage parent-child communication (Kusserow, 1999; Lareau, 2003).

Moreover, though parents in intervention programs are encouraged to adjust and simplify their child-directed speech, make attempts to understand unintelligible child speech, and follow the child’s lead in terms of conversation topic, this may contradict some groups’ views of healthy parent-child relationships. Many middle class American families value more egalitarian parent-child relationships, however, parental authority is highly valued in many lower income and minority cultures (Kusserow, 1999; Lareau, 2003). Encouraging accommodation to children’s desires and interests in verbal interactions may appear to these parents to undermine parental authority and parent socialization goals. Thus, though the results point to possible risk and protective factors associated with more or less parent conversational engagement with their
toddlers, the potential implications of these relations should not be overstated. Future research should explore a) whether similar relations are found in families other demographic and sociocultural backgrounds and b) whether these relations have similar or unique implications across groups.

Conclusions.

Though parent-child conversation is assumed to have implications for child socioemotional (Dunn, 1992; Thompson, 2006) and language (Greenwood et al., 2011; Zimmerman et al., 2009) development, little is known about the extent to which child characteristics, specifically child emotional characteristics, influence these conversations. The thesis took a first step in addressing this gap in our knowledge by examining the role of child emotion expressions during a period of development (toddlerhood) in which emotion expression is frequent and parenting is challenging. The relations were assessed in the context of other important predictors of parenting (socioeconomic status and parents perceived daily hassles), to assess unique effects of toddler emotion expression as well as the interplay of these child, parent, and family characteristics. The results suggest that once accounting for child language ability, socioeconomic status and parents’ perceptions of hassles, toddler negative emotion plays a relatively minor role in mother-toddler conversational engagement and is unrelated to fathers’ engagement in conversation with their toddlers. Yet toddler positive emotion expression seems to play a critical role in the extent to which fathers and toddlers and engage in conversations. Future directions include extending this work in order to assess developmental changes in the relation between emotion expression and parent-child communication, as well examining the temporal relations among child and parent emotion and speech.
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