
Kristin Rispoli

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PARENT-CHILD INTERACTION IN THE FORMATION OF EMOTIONAL AND SOCIAL COMPETENCE: THE IMPACT OF INDIVIDUAL DIFFERENCES AND CULTURAL VARIABILITY

A Dissertation
Submitted to the School of Education

Duquesne University

In partial fulfillment of the requirements for
the degree of Doctor of Philosophy

By
Kristin M. Rispoli

August 2011
ABSTRACT

PARENT-CHILD INTERACTION IN THE FORMATION OF EMOTIONAL AND SOCIAL COMPETENCE: THE IMPACT OF INDIVIDUAL DIFFERENCES AND CULTURAL VARIABILITY

By
Kristin M. Rispoli, M.S.Ed.

August 2011

Dissertation supervised by Kara E. McGoey, Ph.D.

The capacity to regulate one’s emotions and engage in prosocial behavior is vital to personal development, from infancy through adolescence. Substantial research suggests that early difficulties with emotion regulation often place children on a developmental trajectory leading to some degree of functional impairment and poor social skills. However, little is known about how interactions between parents and their children, as well as individual child and parent characteristics, impact early social and emotional development. The current study aimed to address this gap, and sought to extend the current knowledge base by also investigating how these processes vary across cultures. The study used data from the Early Childhood Longitudinal Study, Birth Cohort (N = 5055) to examine a model of the mechanisms through which child characteristics
and parent behaviors throughout the early childhood period impact children’s
development of social skills upon kindergarten entry. Results of sequential equation
model analysis provided some support for the hypothesized model, wherein lower levels
of child and parent negativity and higher levels of attachment security and parent emotion
support were related to higher levels of social skills as rated by parents at kindergarten
entry. Additional analyses highlighted differences in the way these factors function to
impact social skills development across White (n = 1900), Black/African-American (n =
800), Hispanic (n = 300), and Asian groups (n = 600). Findings suggest that some factors,
such as parent negativity, was significantly related to lower levels of social competence
in Black/African-Americans, but had little impact on social skills development in the
other groups studied. Furthermore, results indicated a positive relationship between child
negativity in preschool and social competence at kindergarten entry for Asians. The
importance of these and other results are discussed in light of extant literature,
implications that may have affected results, and directions for future research.
DEDICATION

This dissertation is dedicated to my parents, Nancy and Dru, who throughout the years have supported me both personally and professionally in all of life’s challenges. I am forever grateful for their love, and for encouraging me to strive for my goals while thoughtfully pursuing my professional calling. The qualities they have cultivated in me have undoubtedly carried me to where I am today. This dissertation is also dedicated to my husband, Carl Rispoli, who by a series of coincidental events, entered my life at the beginning of my graduate work, and has nevertheless remained there throughout these challenging five years. Carl is the force by which I can conquer any hurdle. I am forever indebted to him, and confident I would not have reached this point with an ounce of sanity had it not been for the love, support, and humor he provides.
ACKNOWLEDGEMENT

Graduate study at large, and dissertation in particular, is an odd beast. It requires that one make the most of the resources and supports available. I am thankful for having chosen a program where such resources and supports were prevalent in both the faculty and the academic environment the program has created. When I began my endeavor into the world of School Psychology and pursuit of my doctorate five years ago, I was far from the person I am today. I have grown as a clinician, a researcher, and a human being in ways that I never thought possible throughout my tenure as a doctoral student. Having arrived at this point, I feel it is most necessary to acknowledge, and more importantly thank, those who have bestowed their wisdom and guided me along the way.

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yet. Had it not been for the camaraderie and support offered by these colleagues at
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while managing the daily demands of internship. I look forward to post-internship life
with great excitement, but know there will always be a piece of me that misses what we
have shared together.

They say it takes a village to raise a child. True, of course, but I believe that
saying also rings true for graduate students. The individuals listed above are my village.
And what a great one it is. I would not have reached this last, significant milestone without these fantastic mentors, models, confidants, and friends.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>iv</td>
</tr>
<tr>
<td>Dedication</td>
<td>vi</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>vii</td>
</tr>
<tr>
<td>List of Tables</td>
<td>xv</td>
</tr>
<tr>
<td>List of Figures</td>
<td>xvi</td>
</tr>
<tr>
<td><strong>CHAPTER I: INTRODUCTION</strong></td>
<td>1</td>
</tr>
<tr>
<td>Significance of the Problem</td>
<td>2</td>
</tr>
<tr>
<td>Temperament</td>
<td>3</td>
</tr>
<tr>
<td>Attachment Theory</td>
<td>5</td>
</tr>
<tr>
<td>Parent Socialization</td>
<td>6</td>
</tr>
<tr>
<td>Biological and Social Influences</td>
<td>7</td>
</tr>
<tr>
<td>Research Questions and Hypotheses</td>
<td>14</td>
</tr>
<tr>
<td>Research Question #1</td>
<td>14</td>
</tr>
<tr>
<td>Hypothesis #1</td>
<td>14</td>
</tr>
<tr>
<td>Research Question #2</td>
<td>16</td>
</tr>
<tr>
<td>Hypothesis #2</td>
<td>16</td>
</tr>
<tr>
<td><strong>CHAPTER II: LITERATURE REVIEW</strong></td>
<td>17</td>
</tr>
<tr>
<td>Historical Background</td>
<td>17</td>
</tr>
<tr>
<td>Emotion Regulation</td>
<td>19</td>
</tr>
<tr>
<td>Temperament</td>
<td>33</td>
</tr>
<tr>
<td>Attachment Theory</td>
<td>45</td>
</tr>
</tbody>
</table>
Parent Socialization ........................................................................................................... 49
Social Competence ........................................................................................................... 54
Emotion Regulation and Social Competence .................................................................. 55
Parenting and Socioemotional Functioning .................................................................. 63
Model Support .................................................................................................................. 67
Proposed Study ................................................................................................................ 87
CHAPTER III: METHOD ................................................................................................. 89
Sample and Participant Selection .................................................................................. 89
  Participants ....................................................................................................................... 83
  Sampling Process ............................................................................................................ 84
  Weights ........................................................................................................................... 85
Assessments and Measures ............................................................................................. 87
  Parent Responsiveness and Clarity ................................................................................ 87
  Attachment Style ............................................................................................................ 89
  Parent and Child Emotion-Related Behavior ................................................................. 91
  Social Skills ..................................................................................................................... 95
Data Preparation ............................................................................................................... 97
Research Questions and Hypotheses ............................................................................... 98
  Research Question #1 .................................................................................................. 98
  Hypothesis #1 ............................................................................................................... 98
  Research Question #2 ................................................................................................ 100
  Hypothesis #2 ............................................................................................................. 100
Statistical Model .............................................................................................................. 101
CHAPTER IV: RESULTS

Descriptive Statistics

Preliminary Statistical Analysis

Confirmatory Factor Analysis

Missing Data

Normality

Sampling Weights

Correlation Analysis

Statistical Analyses to Examine Research Questions

Research Question #1

Hypothesis #1

Results for Research Question #1

Alternative Models

Equivalent Models

Research Question #2

Hypothesis #2

Results for Research Question #2

White, non-Hispanic
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Overall Unit Response Rates for all ECLS-B Data Collection Phases</td>
<td>87</td>
</tr>
<tr>
<td>2</td>
<td>Descriptive Statistics by Overall Sample and Race/Ethnicity</td>
<td>106</td>
</tr>
<tr>
<td>3</td>
<td>Path Coefficients for Social Skills Items</td>
<td>110</td>
</tr>
<tr>
<td>4</td>
<td>Bivariate Correlations for Study Variables</td>
<td>112</td>
</tr>
<tr>
<td>5</td>
<td>Path Estimates for Overall Model</td>
<td>118</td>
</tr>
<tr>
<td>6</td>
<td>Standardized Path Estimates for Models by Racial/Ethnic Groups</td>
<td>123</td>
</tr>
<tr>
<td>7</td>
<td>Unstandardized Path Estimates for Model by Racial/Ethnic Groups</td>
<td>124</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conceptual Model</td>
<td>157</td>
</tr>
<tr>
<td>2</td>
<td>Structural Model</td>
<td>158</td>
</tr>
<tr>
<td>3</td>
<td>Final model</td>
<td>159</td>
</tr>
<tr>
<td>4</td>
<td>Alternative model</td>
<td>160</td>
</tr>
<tr>
<td>5</td>
<td>Equivalent model</td>
<td>161</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

The development of self-regulation is a central task of early childhood. Regulation allows children to grow from dependent infants to increasingly self-reliant children. As children acquire self regulatory abilities over processes such as arousal, attention, cognition, and emotion, they are able to maintain self control and function adequately in their personal, social, and academic pursuits (Shonkoff & Phillips, 2000; Hinnant & O’Brien, 2007; Calkins & Fox, 2002). Emotion regulation (ER) has been identified as a component of self regulation that is particularly essential in supporting children’s social competence, as well as academic achievement (Raver, Garner, & Smith-Donald, 2007). This construct largely reflects the child’s ability to increase, maintain, or decrease the intensity of both positive and negative emotional experience (Kopp 1989; Thompson & Goodvin, 2007).

Deficits in ER have been linked to deficient functioning in several domains, including conduct problems, oppositional behavior, deficient social functioning, aggression, and anxiety (Cole, Teti, & Zahn-Waxler, 2003; Denham, Blair, Schmidt, & DeMulder, 2002; Fantuzzo, Bulotsky-Shearer, Fusco, & McWayne, 2005; Miller, et al., 2006; Spinrad et al., 2006). Additionally, research spanning the past decade has associated deficits in ER with numerous disorders of childhood, including Autism Spectrum Disorders, Attention-Deficit/Hyperactivity Disorder, Bipolar Disorder, Borderline Personality Disorder, Conduct Disorder, Depressive Disorders, and Generalized Anxiety Disorder (Macklem, 2008). In recent years, the focus on ER has increased alongside identification of increased rates of emotional disorders in children,
and increased efforts have been made to understand how ER impacts development throughout the lifespan (Cole, Martin, & Dennis, 2004).

Experts in the field of child psychology contend that ER is an essential skill needed for the acquisition of appropriate social skills (Fabes, Gaertner, & Popp, 2006). Emotion regulation and social competence in early childhood are believed to be strongly related to fewer difficulties with functioning later in life, such as conduct problems, aggression, and violence (Denham et al., 2002). Research suggests that preschoolers who have difficulty regulating emotions display higher rates of aggression and poorer social skills than children who display adequate emotion regulation (Miller, Fine, Gouley, Seifer, Dickstein, & Shields, 2006; Shields & Cicchetti, 2001).

Calkins and Fox (2002) argue that early deficits in self regulation may play a large role in the development of social isolation and aggression in childhood. A growing body of research suggests that self regulation of emotions may be vital in supporting normative development and the gradual decline over time of externalizing problems exhibited in early childhood (Hill, et al., 2006). Research has also demonstrated a relationship between early emotional lability, especially unregulated anger, and later deficits in social competence (Denham, Blair, Schmidt, & DeMulder, 2002; Spinrad, et al., 2006).

**Significance of the Problem**

The research linking social and emotional skills to later functioning highlights the importance of achieving these competencies. As demonstrated in the child development literature, development of emotional and social skills begins in infancy and continues throughout adolescence (Siegler, DeLoache, & Eisenberg, 2006). When development
does not proceed in a normative manner, difficulties with emotional and social abilities often place the child on a developmental trajectory leading to a risk of functional impairment (Shirk & Russell, 1996). Research studying parent-child interactions during the early stages of development has demonstrated relationships between various parent behaviors and social and emotional competencies in children (e.g., Booth-LaForce & Oxford, 2008; NICHD, 2004; Spinrad et al., 2007). However, results of these studies largely demonstrate concurrent relationships between these factors at a single point in the child’s development. To better understand how parent behaviors serve to promote or impede the child’s development of adequate social and emotional skills, there is a need to examine the longitudinal impact of parent behaviors on socioemotional functioning at various time points.

As previously stated, the child’s growing capabilities in regulating his or her emotions and interacting appropriately with others are largely influenced through parents’ behaviors, as well as the child’s reaction to these behaviors and resulting patterns of behavior. Theories of temperament, attachment, and parental socialization together provide a conceptual framework for how various factors interact within the parent-child dyad to influence the development of emotional and social skills.

**Temperament**

A child’s innate tendencies and behavioral style are reflected in the concept of temperament. Mary Rothbart, who has pioneered a large body of research on this concept, defines temperament as individual differences in emotional reactivity and self-regulatory abilities, which are based on unique, constitutional differences (Rothbart, 1986). Temperament appears to be somewhat stable over time, although phenotypic
presentations may vary with the child’s growing maturity and varied experiences (Rothbart, 1986; Saudino, 2005). Research has demonstrated that temperament plays a role in how children respond to and process affective stimuli. Temperamentally-based emotional and cognitive processes, in turn, influence the child’s social interactions with others (Peréz-Edgar & Fox, 2007). In fact, in multiple studies, temperamental tendencies toward emotionality in infants has been demonstrated to predict later issues with internalizing and externalizing problems, mood disorders, conduct problems, and difficulties with attention (Saudino, 2005).

The aspect of temperament that is believed to reflect the child’s ability to voluntarily control processes of attention, cognition, and behavior is effortful control (EC; Rothbart & Bates, 2006). Effortful control is of particular importance to both ER and social competence, as research suggests that EC predicts ER abilities in social contexts (Eisenberg, Smith, Sadowsky, & Sprinrad, 2004). This construct is highly related to ER because it provides one with the ability to voluntarily produce socially-appropriate responses to emotional stimuli, and inhibit inappropriate responses. EC also is enacted when an individual avoids unpleasant stimuli by turning his or her attention away from the source of distress (Eisenberg, Champion, & Ma, 2004).

**Parental Sensitivity**

Theories related to the influence of temperament on caregiver behavior are also important in understanding the development of emotional regulation and social abilities. Parental sensitivity is purportedly influenced by the child’s temperamental tendencies. This concept is described by van der Boom (1997) to include the parent’s quick and reliable response that suits the needs of the child. Research regarding maternal sensitivity
has linked this concept to higher levels of EC, fewer externalizing problems and greater social abilities in children (Spinrad et al., 2007). Some research suggests that this concept may also partly explain differences in outcomes for at-risk populations, as maternal sensitivity may play a larger role in shaping later development in children considered at-risk for poor emotional, social, or academic outcomes. For instance, the higher quality maternal interaction behaviors have been shown to predict later achievement only in children from low-income or minority backgrounds (Gregory & Rimm-Kaufmann, 2008).

**Attachment Theory**

Attachment, conceptualized as the child’s patterns of relating to others based on his or her relationship with the primary caregiver, is at least partly impacted by parental sensitivity (Bowlby 1978). According to attachment theorists, the pattern that emerges from a child’s early interactions with his or her primary caregiver has bearing on his or her developing abilities in regulating emotional arousal and forming additional relationships with others. Mary Ainsworth, in her formative research on attachment, supported the notion that consistent responding from parents to their child’s needs and support for their child’s expression and modulation of emotion leads to the development of a secure attachment style. Securely attached children, she explained, regard parents as a reliable source of support, and trust that their parents will consistently meet their needs (Ainsworth, 1979).

Bowlby (1978) explained that attachment with the primary caregiver leads the child to form an internal model that is representative of all intimate relationships with others, based on the initial relationship with the primary caregiver. Calkins (2004) proposes that the development of a secure attachment style and subsequently healthy
internal model plays a role in the child’s developing ER skills. When the securely
attached child encounters affective stimuli, he or she believes that the parent will assist
with the management of an emotional response, and thus turns to the parent for
regulatory support. In this research, Calkins also demonstrated the marriage of
developing ER abilities and social skills; securely attached infants sought interaction with
a primary caregiver and used techniques such as social referencing to manage emotional
responses.

**Parent Socialization**

Similar to, yet theoretically distinct from, attachment, parental socialization lacks
a common definition, and has been broadly conceptualized in studies to include parental
control of children’s emotions and behavior, expressed negative or positive affect, and
parents’ efforts to support their children’s understanding, regulation, and expression of
emotions (Belsky, Fish, & Isabella, 1991; Hastings et al., 2008; Larsson, Viding, Rijskijk,
& Plomin, 2008). Research regarding parental socialization and emotion supports the
notion that parental attitudes and behaviors toward emotion do influence the child’s
knowledge of and behavior related to emotions (Berlin & Cassidy, 2003; Cole, Martin, &
Dennis, 2004, Eisenberg et al., 2001). When parents engage in behaviors such as
matching emotion, discussing felt emotions with children, and assisting their children in
avoiding emotionally provocative stimuli, children are observed to be more socially
competent (Garner, 2006). Conversely, when mothers react negatively to the distress
expressed by their children, research demonstrates that children are more likely to later
experience difficulties with externalizing behaviors (Cole et al, 2003).
Although the relationship between parental behaviors related to emotion have been linked to adequate social and emotional functioning, it appears that some of these behaviors are necessary, yet insufficient, to ensure positive emotional and social outcomes. An indirect relationship has been noted in the literature between parental matching of emotion and children’s ER skills. Other factors, such as parental warmth, have been shown to directly influence emotional outcomes for children (Eisenberg et al., 2001).

**Biological and Social Influences**

Recent research illustrates the intersection of temperament, attachment, and parent socialization in shaping the child’s developing capacities for self-regulation of emotion and social competence. Although no study has examined all of these factors together, a body of research suggests that both biological and social factors interact to support or infringe upon the child’s developing ability to regulate his or her emotions and develop positive social relationships.

**Emotion Regulation and Social Competence**

Emotional regulation and social competence are two factors commonly associated with conduct problems beginning in the preschool years. Research suggests that preschoolers who have difficulty regulating emotions display higher rates of aggression and poorer social skills than children who display adequate emotion regulation (Miller, Fine, Gouley, Seifer, Dickstein, & Shields, 2006; Shields & Cicchetti, 2001).

Research such as that conducted by Fantuzzo and colleagues (2005) provides evidence for the relationship between ER and social functioning in the early childhood years. The researchers sought to determine the impact of emotional and behavioral
problems on preschool Head Start children’s \((N=210)\) broad social functioning. Of the measures included in social functioning was a measure of ER, as researchers hypothesized that problematic social behavior early in the preschool year would be predictive of more labile and negative emotion later in the year, and that a relationship would exist between withdrawn behavior early in the year and fewer efforts to regulate emotions later in the year.

Hierarchical setwise regression models confirmed these hypotheses. Ratings of inattention/hyperactivity and oppositional behavior in the beginning of the year predicted more emotional lability and negativity at the end of the year. Furthermore, child ratings of withdrawn/low energy behavior were predictive of lower ratings of ER, and likewise, child shyness ratings early in the year were shown to predict less ER later in the year. These results broadly demonstrate how early difficulties with behavior, including defiance and inattention, may impact a child’s ability to regulate his or her emotions over time (Fantuzzo et al., 2005).

Miller and colleagues (2006) derived similar results, linking skills in ER with appropriate behavior and positive social skills in the classroom environment. The relationship between teacher-reported ER skills and emotion, behavior, and social skills displayed in the classroom was studied in a sample of 60 children attending a Head Start preschool program. Results of regression analysis indicated relations between negative ER and higher levels of aggression and anxiety, as well as poorer social skills. Alternatively, positive ER was related to lower levels of anxiety and better social skills. Findings from this research also demonstrated a modifying effect of ER on the relationship between negative emotional expression and social skills, suggesting that
management of negative emotion, rather than the display of negative emotion, facilitates positive social interactions.

**Attachment, Parent Socialization, and Socioemotional Competence**

Few studies have examined both attachment and parent socialization behaviors separately, in relation to social competence. Berlin and Cassidy (2003) investigated such relationships through observations of 76 preschool children interacting with their mothers during a frustrating task. The researchers compared group differences in emotion regulation and mothers’ reports of emotion-related socialization behaviors based on the children’s attachment style as rated at 15 and 18 months of age. The relationships between attachment style and self-reported maternal control of children’s emotion expression, as well as that of maternal control and children’s ER during a frustrating task were explored. Results indicated that children who were identified as having an avoidant attachment style had mothers who reported higher control of their emotional expression, while children with an ambivalent attachment style had mothers who reported less control of their emotional expression. However, no relationship was found between attachment style and ER.

Attachment was found to play a role in shaping social and emotional behaviors in research by Leibowitz, Ramos-Marcuse, & Arsenio (2002). The findings of this research support relationships between attachment, parent behaviors related to emotion, and social competence in the preschool years. The researchers studied preschool children’s narratives when presented with images meant to elicit attachment-related behavior. Measures of attachment were derived from narratives, in addition to measures of
emotional communication between the children and their parents collected using observations of parent-child conversations.

Correlational analyses using data collected from 44 preschoolers and their parents indicated that parents of children who created more logical and detailed narratives about the attachment scenarios were more likely to have parents who provided more scaffolding regarding emotional experience and expression. Parents who displayed higher rates of negativity when discussing emotions were also less likely to use scaffolding to support their child’s expression and understanding of emotion. Additionally, a negative relationship was found between attachment-related responses in preschool children and negativity exhibited by children during discussion of emotion-focused situations. Specifically, children who produced more coherent responses during their descriptions of attachment-provoking situations were less likely to display severe negativity while discussing emotions with their mother or father (Leibowitz et al., 2002).

Similar results were noted in a study by Eisenberg and colleagues (2001). The researchers proposed a model explaining the influence of parenting behaviors on children’s ER and subsequent behavior. Using data from 141 elementary school children, the researchers proposed a model regarding the longitudinal and subsequent relationships between measures of parental socialization of emotions, parental warmth, child behavioral problems, and emotion regulation. The model supported positive relationships between parental warmth and parental expression of positive emotion, as well as between parental warmth and parental efforts to communicate with their children about emotionally provoking situations, and to link children’s emotional experience to stimuli. Model analyses revealed a direct, significant negative relationship between parental
warmth and problematic externalizing behavior, as well as an indirect, significant negative relationship between parental warmth and externalizing behavior, mediated by lack of parental linking and unregulated emotional expression in children. Notably, this study did not include analysis of attachment style.

Temperament, Parent Socialization, and Socioemotional Competence

Elements of temperament, namely, emotionality and self-regulation, have been shown to interact with parent socialization of emotion to impact children’s emotional and social behaviors. For instance, a study by Belsky, Fish, and Isabella (1991) investigated changes in infant emotionality from three to nine months of age, including possible effects based on parental characteristics and parent-child interaction. Data was derived from a large-scale, longitudinal study of infants and families. Both self-report and observation measures were included in the analysis. Discriminant function analysis indicated that reports of parental personality prior to the infant’s birth, as well as quality of marital relations, could be used to accurately classify 77.1% of infants who initially demonstrated low emotionality at 3 months into either a low or high-emotionality group at 9 months. Similarly, results revealed that 78.4% of infants who initially demonstrated high emotionality at 3 months could be correctly identified as low or high in emotionality at 9 months. Additional analyses indicated that amongst infants who initially displayed high emotionality and later demonstrated low emotionality, higher than expected occurrences of mutual and complementary responsiveness, as well as sensitive interactions were observed in parent-child interactions. Furthermore, discordant, dysfluent, and insensitive interactions occurred within this group at less than expected rates.
Self-regulatory abilities, rather than negativity, were studied in research by Booth-LaForce and Oxford (2008). The researchers tested a model using a large-scale database that included longitudinal data on children and their families from when children were one month old until they were enrolled in the sixth grade. The model examined the relationships between a demographic factor (i.e., maternal education, family income-needs ratio, father in home, and child gender), temperament, attachment, parent sensitivity, and inhibitory control to childhood social withdrawal. Results of SEM analysis indicated that the demographic factor was negatively related to insensitive parenting and dysregulated temperament at six months. When children were 24 months, these variables combined were negatively related to attachment security. Subsequently, a negative relationship was observed between secure attachment and insensitive parenting at 54 months. Insensitive parenting was in turn found to significantly differentiate children who had increasing, versus decreasing, social withdrawal over time. Although not direct, these results provide evidence for the influence of early attachment relationships in later social behavior.

Other research has demonstrated relationships between the aspect of temperament believed to be strongly related to ER, effortful control, and maternal sensitivity. In a 2007 study by Spinrad and others, maternal responses to children’s expression of negative emotion were studied and measured in relation to child measures of effortful control and emotional functioning in very young children. Higher levels of effortful control were observed in children whose mothers adequately responded to their children’s expressed negative emotions, using warm reactions and modeling appropriate methods of coping with negative emotions. In contrast, difficulties coping with negative emotions and higher
rates of negativity were observed in children of mothers who disciplined their children for expressing negative emotions.

This research will attempt to increase understanding within the literature regarding the parent-child processes that influence the development of ER and social competence, including potential cultural differences in the way these mechanisms influence the development of emotional and social skills, in order to better inform interventions and policies aimed at increasing social and emotional competence among young children considered at-risk. Although several studies have supported the notion that temperament, attachment style, and parent socialization all have a role in influencing emotional and social functioning in children, no one study has examined these factors together, to examine their interrelations as well as longitudinal impact on childhood socioemotional competence.

Furthermore, while much is understood regarding generalities in the importance of parent and child characteristics, as well as their interaction, on socioemotional outcomes, few studies have examined cultural differences in these factors. The extant literature is largely weakened by its reliance on the use of large samples of families from middle to high-socioeconomic backgrounds, as well as lack of cultural variability within samples. Therefore this study will attempt to address two main gaps in the literature: (a). integration of various biological and social factors in the development of emotion regulation and social skills in preschool; and (b) increased understanding of how the influences of temperament, attachment, parent socialization, and child behaviors on socioemotional functioning vary among individuals of differing backgrounds. The following research questions will be explored:
Research Questions and Hypotheses

Research Question #1

How do early parent responsiveness, child temperament, attachment style, parent socialization regarding emotions, and parent negativity influence the development of prosocial behavior upon kindergarten entry?

Hypothesis #1

Early parent responsiveness. Parent responsiveness and clarity at nine months is expected to be positively related to attachment style at two years, such that parents who display high levels of responsiveness and clarity will be more likely to have children with secure attachment styles at two years. It is also predicted that parent responsiveness and clarity will be positively related to social competence at kindergarten entry, in that higher levels of parent responsiveness and clarity at nine months will be associated with greater social competence in children when they enter kindergarten.

Child temperament. It is hypothesized that parent responsiveness and clarity at nine months will be negatively related to child negativity at two years. Parents who are high in responsiveness and clarity will be more likely to have children who display low levels of negativity at two years. Furthermore, a negative relationship is anticipated between child negativity at two years and prosocial behavior at kindergarten entry. Higher levels of negative behaviors when children are two will be related to lower levels of prosocial behavior. Furthermore, it is believed that child negativity at two years will be negatively related to attachment at two years. Children who display more negativity at age two will be more likely to demonstrate an insecure attachment style at two years. Additionally, it is hypothesized that preschool child negativity and preschool parent
emotion support will be negatively related. Parents of highly negative children will be less likely to offer emotion support than parents of children who display fewer negative behaviors. Finally, a negative relationship is expected between preschool child negativity and prosocial behavior at kindergarten entry. Preschoolers who display high levels of negative behaviors will be less likely to demonstrate prosocial behavior upon kindergarten entry.

**Attachment style.** It is predicted that two-year attachment will be negatively related to child negativity in preschool. Preschoolers who display higher levels of negative behaviors will be more likely to have demonstrated an insecure attachment style at two years. Additionally, it is hypothesized that attachment style at two years will be positively related to preschool parent emotion support. Parents of securely attached children will be likely to display higher levels of emotion support when the child reaches preschool age.

**Parent socialization regarding emotions.** It is hypothesized that preschool parent emotion support will be positively related to prosocial behavior at kindergarten entry. Parents who provide high levels of emotion support to their preschool children will have children who display higher levels of prosocial behavior at kindergarten entry.

**Parent negativity.** Parent negative regard when children are two years old will positively predict child negativity in preschool. Greater levels of negative regard will be associated with more expressed negativity in the preschool years. Additionally, a negative relationship will be observed between parent negative regard at two years and parent emotion support in preschool. Parents who display higher levels of negative affect when children are two will be less likely to provide emotion support during the preschool
years. Finally, a direct, negative relationship will emerge between parent negative regard at age two and prosocial behavior upon kindergarten entry. Parents who display negativity toward their two-year-old children will be less likely to have children who demonstrate prosocial behavior at kindergarten entry.

**Research Question #2**

Are there differences in the manner in which early parent responsiveness, child temperament, attachment style, parent socialization regarding emotions, and parent negativity influence the development of prosocial behavior upon kindergarten entry for children of differing racial/ethnic backgrounds?

**Hypothesis #2**

Research question 2 is exploratory in nature, given limited evidence to suggest if and how the relationships between the study variables differ by racial and ethnic groups. It is predicted that the relationships between early parent responsiveness, child temperament, attachment style, parent socialization regarding emotions, and parent negativity will differentially influence the development of prosocial behavior for children identified as White, Black/African-America, Hispanic, or Asian.
CHAPTER II
LITERATURE REVIEW

Historical Background

In recent years, increased emphasis on the social and emotional development of today’s youth has resulted from increased concern over maladaptive and harmful behavior displayed by children in multiple contexts, including the school, home, and community. As a result of this increased concern, programs to prevent violence and promote social and emotional development have become one of the major foci of intervention programs implemented in schools today (Biggs, Vernberg, Twemlow, Fonagy, & Dill, 2008). Research suggests that systemic, evidenced based prevention programs implemented in the school setting lead to reduced rates of aggression in school-aged youth (Payton, et al., 2008; Swearer, Espelage, Love, & Kingsbury, 2008). However, empirical investigation surrounding the development of prosocial behavior in very young children is limited. Furthermore, studies that have been conducted are largely restricted by limitations in design and methodology, and are often limited in scope (Arnold, Brown, Meagher, Baker, Dobbs, & Doctoroff, 2006).

A strong need for addressing early behavior problems is suggested by a large body of literature which demonstrates that early problems with destructive, aggressive, and oppositional behaviors predispose children to more severe problems later in life, including violence toward others as well as victimization (Shields & Cicchetti, 2001). Studies have shown that for a substantial portion of children from community samples, externalizing behavior in the preschool years continues well into the elementary school years at rates that are considered clinically significant (Hill, Degnan, Calkins, & Keane,
However, missing from many of these studies are descriptions of the mechanisms that either lead to or prevent the occurrence of difficulties with conduct and interpersonal relationships that often are characteristic of youth who experience mental illness and/or engage in aggression and violence.

Emotional regulation (ER) and social competence (SC) are two factors commonly associated with conduct problems beginning in the preschool years. Research suggests that preschoolers who have difficulty regulating emotions display higher rates of aggression and poorer social skills than children who display adequate emotion regulation (Miller, Fine, Gouley, Seifer, Dickstein, & Shields, 2006; Shields & Cicchetti, 2001). Furthermore, preschool children who engage in disruptive play with peers evidence problematic behaviors in the classroom, such as temper tantrums or oppositional behaviors (Coolahan, Fantuzzo, Mendez, & McDermott, 2000).

Calkins and Fox (2002) argue that early deficits in self-regulation may play a large role in the development of social isolation and aggression in childhood. A growing body of research suggests that self-regulation of emotions may be vital in supporting normative development and the gradual decline over time of externalizing problems exhibited in early childhood (Hill, et al., 2006). Research has also demonstrated a relationship between early emotional lability, especially unregulated anger, and later deficits in SC (Denham, Blair, Schmidt, & DeMulder, 2002; Spinrad, et al., 2006).

If ER and SC are predictive of fewer behavioral problems and increased social functioning, it is plausible that addressing deficits in these areas early (i.e., during the preschool years) could interrupt a developmental trajectory likely to lead to violent behavior. To better inform the use of interventions designed to address both ER and SC,
it is necessary to sharpen our understanding of the inter- and intrapersonal processes that influence their development (Denham, 2002).

**Emotion Regulation**

Emotion regulation has been identified as a component of self regulation that is particularly essential in supporting children’s SC, as well as academic achievement (Raver, Garner, & Smith-Donald, 2007). This construct largely reflects the child’s ability to increase, maintain, or decrease the intensity of both positive and negative emotional experience (Kopp 1989; Thompson & Goodvin, 2007).

Macklem (2008) outlines healthy and unhealthy strategies for regulating emotions. Amongst unhealthy strategies are suppressing negative thoughts, which research has shown leads children to experience negative emotions more frequently; rumination, which has been shown to increase negative thoughts over time and increases in negative emotions; avoidance, which is believed to lead to rumination; negative self-thinking, which may lead to the development of mood disorders, such as anxiety and depression. In contrast, several healthy ER strategies are identified, including engagement in enjoyable activities, reappraising the situation in a positive way, and using mental distraction techniques.

Additional research on ER attempts to better understand the mechanisms that comprise this construct. The processes that are employed in ER include the experience of emotion, thoughts about emotion, physiological processes, and behaviors related to emotion (Siegler, DeLoache, & Eisenberg, 2006). One way in which the physiological and behavioral responses related to emotion have been conceptualized is through the innate characteristics of children, or temperament (Eisenberg & Spinrad, 2004).
Temperament theories hold that infants are predisposed to react with varying levels of intensity to environmental stimuli, leading to high or low levels of emotional expression. As they grow older, children employ temperamental processes that assist them in gaining voluntary control over their emotional expression, thus enacting emotion regulation (Calkins & Fox, 2002). Emotion regulation is also believed to be developed within the parent-child relationship, such as through attachment-related behaviors and parent socialization of emotion-related behaviors. Children with secure attachment styles, as well as those who experience high levels of parental responsiveness and low levels of parental negativity during infancy and toddlerhood, are often shown to exhibit effective ER (Berlin & Cassidy, 2004; Cassidy, 1994; Hastings et al., 2008; Rubin, Burgess, Dwyer, & Hastings, 2003).

Deficits in ER have been linked to deficient functioning in several domains, including conduct problems, oppositional behavior, deficient social functioning, aggression, and anxiety (Cole, Teti, & Zahn-Waxler, 2003; Denham, Blair, Schmidt, & DeMulder, 2002; Fantuzzo, Bulotsky-Shearer, Fusco, & McWayne, 2005; Miller, et al., 2006; Spinrad et al., 2006). Additionally, research spanning the past decade has associated deficits in ER with numerous disorders of childhood, including Autism Spectrum Disorders, Attention-Deficit/Hyperactivity Disorder, Bipolar Disorder, Borderline Personality Disorder, Conduct Disorder, Depressive Disorders, and Generalized Anxiety Disorder (Macklem, 2008). In recent years, the focus on ER has increased alongside identification of increased rates of emotional disorders in children, and increased efforts have been made to understand how ER impacts development throughout the lifespan (Cole, Martin, & Dennis, 2004).
Research suggests that parental responsiveness and socialization efforts play a large role in facilitating adequate ER skills in children. For instance, studies investigating ER and the mother-child relationship suggest that adequate ER is fostered when children form secure attachments to their primary caregiver (Berlin & Cassidy, 2003; Garner, 2006; Eisenberg, et al., 2001). Maternal sensitivity, a construct believed to play a role in ensuring the environment is appropriately suited to a child’s unique temperament, has also been implicated in the development of ER in children (Cole, Teti, & Zahn-Waxler, 2003; Spinrad, et al., 2007).

Interventions that foster social and emotional development can serve to rectify deficits in the development of positive socioemotional functioning. Parent training programs have been widely used by researchers to foster skills related to ER. Webster-Stratton and Taylor (2001) identified several aspects of effective interventions for programs targeting the development of prosocial behavior. Characteristics identified included focusing on strengthening skills, providing intervention in early stages of development, and supporting collaboration between teachers, parents, and children. Decreases in conduct problems, defiance, and delinquency are amongst the positive outcomes noted as a result of such interventions.

**Development of ER**

Much like the development of other aspects of self regulation, emotional regulation develops through the child’s interactions with his or her caregivers. The development of emotional understanding and skills in regulating emotion are also influenced by the cultural context in which children are raised, highlighting the complex
way in which abnormal emotional development may occur and influence a child’s later
negative outcomes.

As children increase their understanding of emotions, they must also learn to
to control their emotions. This ability includes inhibiting inappropriate expressions of
emotions, both positive and negative, and knowing what emotions to engage in particular
situations to ensure successful social interactions (Shonkoff & Phillips, 2000). Emotions
provide the impetus for an individual to act in response to a stimulus, and ER allows the
individual to engage in the response that is best for the given situation. Emotions can
regulate or can be regulating; those that regulate lead to changes in behavior. Regulation
of emotions can serve to regulate systems within the individual, or interactions between
individuals. Changes that may be observed in emotion due to regulation include changes
in intensity, duration, and valence (Cole et al., 2004).

ER begins to develop in infancy and continues to increase in sophistication through the
preschool years.

**Infancy.** At about four months of age, infants establish regulation of basic life
processes (i.e., sleeping, waking, and feeding) and the development of regulatory ability
begins to occur in the emotional realm. These abilities are very limited in the first six
months, and infants are largely dependent on caregivers for the regulation of emotion.
Infants use crying to express their negative emotions, and to signal to caregivers their
need for ER (Shonkoff & Phillips, 2000). In response, caregivers engage in behaviors
such as touch or providing affection to soothe negative emotions such as fear, distress, or
frustration.
For most infants, the amount of crying peaks at six to eight weeks, and begins to decline thereafter. By 12 to 16 weeks, most infants engage in less crying and are easier to soothe (Shonkoff & Phillips, 2000). This reduction in crying behavior is accompanied by caregivers’ increasing use of vocalizations and physical calming behaviors to distract the infant from the distressing stimulus (Siegler et al., 2006). Research supports the notion that caregiver response influences infant’s crying behavior over time. Infants who have caregivers that respond consistently to their cries and are able to identify their need have an easier transition from crying to more nonverbal forms of communicating needs. Alternatively, infants whose caregivers are inconsistent in their response to cries tend to remain fussy over time (Shonkoff & Phillips, 2000).

Child temperament, or biologically based individual differences in response to environmental changes and techniques used to modulate responses, is believed to influence the early development of ER (Rothbart & Bates, 2006). In fact, research on temperament has provided evidence that ER occurs in these young ages (Cole et al., 2004). Work by Rothbart, Ziaie, and O’Boyle (1992) provided evidence to support the claim that different temperaments lead to different ways of regulating emotion. In their investigation of reactions to negative stimuli in a group of 59 infants, the researchers found that infants who showed more distress were less likely to disengage their attention from the stimulus to reduce distress. Conversely, infants who displayed more positive emotions in response to stimuli were more likely to use disengagement of attention as a regulatory strategy.

Additional research conducted by van Bakel and Riksen-Walraven (2004) examined the relationship between temperament and cortisol reactivity in infants.
Reactions of infants to the presence of a stranger and a robot were used to test the prediction that highly anger-prone infants would evidence higher levels of cortisol reactivity (i.e., stress response) than less anger-prone infants. Results of the study, which involved 85 infants, revealed that cortisol reactivity in infants was correlated significantly and positively to anger proneness and cognitive competence in infants. These results support the notion that infants who are susceptible to anger reactions and high in intelligence are hypervigilant to potential danger in unfamiliar contexts, and likely to adjust to stressful events through a physiological stress response. This may lead to poor ER, as higher levels of cortisol have been found in young children who have difficulty regulating their behaviors.

As suggested by this research, infants do have some ability to modulate emotions at a very young age. During the first year of life, infants develop behavioral tactics for managing emotions, such as seeking help or distraction to reduce fear, or approaching situations that elicit pleasure (Calkins & Fox, 2002). Very early regulatory behaviors are reflexive, and include head turning, moving the hand to the mouth, and sucking. Developments in the visual system and motor control by three months result in infants’ ability to turn away from negative stimuli or distract themselves by reaching for objects (Kopp, 1989). By six months, these abilities become more intentional and adaptive. These attempts at ER often include gaze aversion, in which the infant intentionally looks away from the distressing stimulus. At this age, infants may also engage in self-soothing behavior such as looking specifically at people or objects who elicit neutral or positive emotions. Infants may also touch their own bodies or clothing in order to self-soothe (Siegler et al., 2006).
Interaction between infants and their primary caregivers is an important context through which the development of ER occurs. Children adopt patterns of regulating their emotions by internalizing the patterns of their interactions with their caregivers. (Denham et al., 2002). Studies of infant and mother interaction have demonstrated that synchronous responding to each other’s emotions between mother and infant leads to a positive relationship and the infant’s ability to successfully regulate his or her emotions (Cole et al., 2004). Indeed, research by Field (1994) demonstrated that mothers interpret their infant’s emotional indications, respond with the needed amount and type of stimulation to modify the infant’s arousal level, and reciprocate and reinforce the infant’s reactions. In the mother infant dyad, infants were also shown to regulate their own and their mother’s emotions. Infants responded to their mother’s bids for interaction and stimulation, responded to or withdrew from this stimulation, and reacted to their mother’s emotions.

As infants increase their ability to respond to emotion from three to nine months, they begin to realize the power caregivers have in helping them manage their emotional response. Social interaction between infants and caregivers allows infants to rudimentarily discriminate between emotional states. As they link caregiver response to changing emotional states, infants begin to connect their own actions to caregiver actions, and subsequent control of aversive emotional arousal. For example, at five months infants begin to cry while seeking eye contact, signaling to the caregiver their desire for attention. It is at this time that infants are able to express differing cries, indicating their need for food, stimulation, or relief from pain. This serves as another indication of
infants’ awareness that caregivers can assist them in managing their emotions (Kopp, 1989).

Near the end of the first year of life, development in motor skills, socialization, cognition, and emotion all improve infants’ ability to regulate emotion. Growing cognitive abilities enable infants to anticipate, plan, and understand intention in relation to actions made with the body. Infants can reach and grasp for objects or people, or move themselves, in an effort to regulate emotions. They increase in their ability to use their own bodies for self-soothing, such as rocking or chewing on fingers in times of distress. Observations of infants at this age reveal that they also become engrossed in object play as a way of relieving emotional distress (Kopp, 1989).

Maturing social behaviors around 12 months, along with the integration of cognition and emotion, also increase the infant’s capacity for ER. At this age, infants have increased abilities to communicate their needs, and if those needs have not been met, to caregivers both verbally and nonverbally. Their behavior reflects their increasing awareness of the ways in which caregivers can provide assistance. For instance, infants signal to their caregivers when they are wary of a stranger by seeking out the caregiver. Signals are also used to indicate the need for help, exemplified by the child who holds out a container he or she cannot open while making eye contact with his/her mother and whimpering (Kopp, 1989). This example also illustrates the integration of increasingly sophisticated social, emotional, cognitive, and motor systems, and their collaborative role in achieving ER.

By 9 to 12 months, children are also more aware of adults’ expectations and in turn attempt to regulate themselves to meet these expectations (Siegler et al., 2006).
Social referencing begins to emerge at this time, and serves as another mechanism through which ER is achieved. Using social referencing, the infant seeks guidance from a social partner to determine what behavior is appropriate for an ambiguous or threatening situation (Kopp, 1989; Siegler et al., 2006).

**Toddlerhood.** The second and third years of a child’s life are rich with developments that aid in increasing ER (Kopp, 1989). One basic development is increased abilities in locomotion. With refined motor behavior such as crawling and walking, toddlers are better able to physically remove themselves from an aversive stimulus to control their emotional response. Furthermore, toddlers begin to develop the capacity to regulate their motor behavior, such as walking instead of running (Siegler et al., 2006).

Development of emotional regulation in the toddler years is also partly influenced by the growth of several neurological systems. These include the hypothalamic-pituitary-adrenocortical (HPAC) axis and parasympathetic system. Both mature to increase the individual’s capacity to control arousal and reduce emotional lability. During this period of development, the prefrontal cortex also matures, increasing the toddler’s abilities to process and respond to emotion using attention, reflection, inhibition of impulsive behaviors, and working memory (Thompson & Goodvin, 2007).

These changes may be moderated by or moderate the development of ER in the context of the mother child relationship. Changes observed in the expression of emotion and behavior have been associated with changes in physiology in both mother and child (Field, 1994). Research concerned with the interaction of inherent physiological factors and the caregiving environment on the development of regulation has linked unfavorable
parenting (i.e., negative climate, harsh discipline, insensitive response) practices to physiological responses that lead to poor ER. Alternatively, sensitive, warm responding from caregivers may support physiological responses that lead to ER. Additional longitudinal research is needed to support this link (Calkins & Fox, 2002).

One aspect of temperament, negative reactivity, is believed to be largely influential in the toddler’s developing capacity for ER (Thompson & Goodvin, 2007). Generally, research has suggested that toddlers who exhibit increased levels of negative emotion when distressed are less adept at regulating their emotions. For instance, research by Fox (1994) found that toddlers considered more prone to fearful reactions were found to also be more inhibited when presented with fear-inducing stimuli. Observations revealed that inhibition of responses led to difficulty with regulating fear. Similar research suggests that children who are more easily frustrated also have difficulty with regulating their emotions, and tend to react with disruptive behaviors rather than controlled responses (Cole et al., 2004).

It is possible that temperamental characteristics, caregiver behavior, and environmental influences may reciprocally influence one another in the toddler’s development of ER. One component of temperament that has been implicated in this interaction is effortful control (EC). Rothbart and Bates (2006) define EC as the ability to overcome a dominant response in order to engage a non-dominant response, to identify errors, and plan. In other words, EC is a cognitive component of temperament that facilitates the modulation of emotion responses by allowing the child to inhibit responses that may be inappropriate and engage in expressions fit for the situation.
Spinrad and colleagues (2007) demonstrated that EC and subsequent ER develop through the child’s interactions with his or her caregivers. By studying 230 toddlers and observing their interactions with their mothers, researchers found that children who were initially high in EC exhibited fewer problems with behavior and separation anxiety, and had more competent social behavior. However, the research also suggested a moderating effect for maternal behavior. Despite initial differences in EC, supportive behavior from mothers facilitated the development of effective ER strategies and decreased negative arousal a year later. Supportive behavior exhibited by mothers included modeling and providing consistent, warm responses to the child’s needs. Unsupportive behaviors observed by the researchers, including punishing the child in response to negative emotion, led to difficulties with ER.

The parent-child relationship is highly influential in shaping ER in the toddler years. Parental response and modeling of emotional response in distressing situations influences the toddler’s capacity to modulate their own emotion. Research suggests that supportive and sensitive responding by parents leads to adequate ER skills in children. This is accomplished when parents intervene to help the child manage emotion and demonstrate to the child that adults can assist in the management of overwhelming emotion. A positive home environment also enables toddlers to develop positive management of emotion (Thompson & Goodvin, 2007).

The emergence of language is a key development in the toddler period, and is also linked to developments in ER. From around 18 to 30 months, the toddler’s growing ability to conceptualize and talk with others about emotion increases along with better understanding of emotions, including emotional subjectivity and the causes and
consequences of emotion (Kopp, 1989; Thompson & Goodvin, 2007). Using language, toddlers can perceive others’ emotions and communicate their own. These enhanced abilities in turn influence the development of ER (Thompson & Goodvin, 2007).

In addition to understanding that others have emotion, toddlers begin to understand that these emotions are in reference to something. They also come to understand that certain contexts influence emotion, and that emotions are connected to other states such as desire or perception. Awareness of this linkage allows toddlers to understand that changing their perception by ignoring, escaping, or thinking differently about emotionally provocative stimuli can alter their emotional response. With increasing knowledge of the link between emotions and desire, toddlers may actually inhibit their regulatory abilities to get what they want (Thompson & Goodvin, 2007).

Developments in self awareness also increase toddlers’ emotional regulatory abilities. At this stage of development, toddlers begin to perceive themselves as both a separate object and an agent of change (Thompson & Goodvin, 2007). Additionally, they begin to perceive causes of distress, and are able to remember sequences of events leading to distress. When faced with barriers to desirable objects, toddlers will seek help from the caregiver in addition to expressing distress, showcasing their understanding of causes of emotional turmoil. Evidence that this understanding continues to evolve during the toddler years has been provided through studies that show 24 month old children are quicker to seek help from a caregiver than children who are 18 months old (Kopp, 1989).

With increasing awareness of cause and effect, toddlers begin to understand the advantages and disadvantages related to particular emotional displays, in addition to the expectations of others regarding ER (Kopp, 1989). With increased self awareness,
toddlers begin to develop a conscience, and understand that they are attended to and evaluated by others (Thompson & Goodvin, 2007). Now more aware of others’ perceptions, toddlers are motivated to modulate their emotions and please those who are important to them (Thompson & Goodvin, 2007). This motivation is also influenced by the emergence of feelings of shame, guilt, and embarrassment (Siegler et al., 2006).

Developing ER is also seen through the play behavior of toddlers. Toddlers may play on their own when upset, a more sophisticated form of ER than simply avoiding the distressing stimuli (Siegler et al., 2006). They may also seek out objects with which they are able to manage their distress, such as a favorite stuffed animal or blanket. These objects, known as transitional objects, are used repeatedly by the toddler to calm him or herself when facing distressing situations. This technique is most used around the age of 18 months, but can continue into the preschool years in some children (Kopp, 1989).

Preschool. As children enter the preschool age, ER becomes more specified to the demands of a given situation. Preschool children abide by culturally determined rules that dictate where and when certain emotional displays are appropriate. In following these rules, preschoolers begin to understand that their emotional experience is separate from their behavioral expression of emotion. With this understanding, preschoolers can exaggerate, suppress, substitute, and neutralize expression to accomplish specific goals in a given situation (Zeman, Cassano, Perry-Parrish, & Stegall, 2006).

Along with greater understanding, preschoolers also have a larger number of possible behavioral responses from which they can choose when reacting emotionally (Zeman et al., 2006). Most notably, preschoolers’ growing language ability influences the way in which they regulate emotion. For instance, when given the direction to clean up, a
younger child may throw a temper tantrum to protest. A preschooler, in contrast, may protest verbally and attempt to negotiate a longer play session (Siegler et al., 2006).

As a child progresses through the preschool years, temperament is again believed to impact the development of ER. As in toddlerhood, the temperamental characteristic known as EC has been linked to ER at this age. Research by Spinrad and colleagues (2006) examined this construct in 214 preschoolers and young children. Initial measures of EC were related to resiliency, including the ability to adapt emotional responses to a given situation, and popularity ratings two years later. Results indicated that high levels of EC predicted higher resiliency in children, which subsequently predicted higher levels of popularity as rated by adults.

Notably, the Spinrad (2006) study implicates one important element of the preschooler’s daily life that is reciprocally influenced by and influential in the development of ER: peer relationships. Preschoolers must learn to manage their emotions in the context of peer interaction, which includes conflict resolution and problem solving skills. Preschoolers internalize the skills acquired in their interactions with caregivers in regard to managing emotions and apply them in interactions with others. Security of attachment can be observed in preschoolers’ interactions with peers, as they have internalized this model of interaction from their experience with their primary caregiver. Research supports the notion that preschoolers who are securely attached show more adaptive ER techniques than insecure children (Denham et al., 2002).

**Childhood.** Older children’s increasing cognitive capacities allow them to make use of more refined strategies for regulating emotion. Rather than physically remove themselves from situations that evoke negative emotions, older children may re-evaluate
the situation in a more positive manner, or deny the impact of negative stimuli (Siegler et al., 2006). They are also increasingly aware that their own emotional reaction to a situation may differ from the reaction of others. This awareness may influence a child’s choice to modify their expression of emotion (Zeman et al., 2006).

Much like the years from infancy to preschool, temperament is believed to play a role in the development of ER in childhood. Simonds, Keiras, Rueda, and Rothbart (2007) investigated the relationship between measures of EC and ER in children. This research used the observed reactions of 49 children aged 7 to 10 years to an unwanted gift as a measure of ER as well as laboratory ratings of EC to study the relationship between these two constructs. Results indicated a positive relationship between observed EC and ER during presentation of the gift, supporting the notion that temperamental qualities continue to influence ER well into childhood.

However, results found in a recent study suggest that the relationship between EC and ER may not be the same for younger children. This study investigated EC in a group of 54 children aged 4 to 7 years. Researchers studied the ability of participants to regulate their emotional response when told they had to wait for a desired object or outcome. Results indicated that higher EC was associated with maladaptive ER response (e.g., higher levels of anger and sadness). Further analysis revealed that this relationship was influenced by higher levels of attention focusing, suggesting that children who display more EC may fixate their focus on negative stimuli, thus decreasing their ability to regulate negative emotion (Santucci et al., 2008). These results suggest that while EC may enhance ER in older children, high levels of EC may actually impeded young children’s ability to deter their attention from aversive stimuli.
In addition to the child’s internal capacities, external influences also continue to impact the development of ER in childhood. Societal norms become increasingly influential in the later years of childhood. Older children also show increased adherence to culturally defined rules regarding emotional expression. Children’s expression of emotion is therefore influenced by their adherence to both societal and cultural norms. Additionally, children begin to engage in emotional expression that is perceived as gender appropriate. For instance, girls are more likely to inhibit emotional expressions while boys tend to externalize their emotional displays (Zeman et al., 2006).

**Adolescence.** While the greatest advances in ER ability are seen in childhood, ER continues to mature into adolescence. As regions of the brain responsible for sophisticated processes mature, notably the prefrontal cortex, adolescents become increasingly adept in using cognition, emotion, and behavior in tandem to set and accomplish goals. Furthermore, much of the external influences that shape regulation in childhood are internalized in adolescence, and adolescents begin to set goals to advance their own personal development. Thus, regulation becomes more intentional, accurate, and efficient (Gestsdottir & Lerner, 2008).

Increased abilities in ER during adolescence can also be observed in the specificity of emotional expression. Adolescents engage in differentiated emotional expression based on factors such as motivation or context. They are also more aware of others’ evaluations, and are more heavily influenced by feelings such as shame and pride. Thus, the type or intensity of emotional display is especially influenced by the adolescent’s social partner; that which is expressed in front of a supportive friend may vary from what is expressed to the discerning school principal (Zeman et al., 2006).
As is evident in research outlining the development of ER, this construct develops most profoundly in the child’s early years, in infancy, toddlerhood, and the preschool years. During these periods, ER is largely influenced by the separate but related constructs of temperament, attachment, and maternal socialization of emotion (Berlin & Cassidy, 2003; Calkins & Fox, 2002; Cole et al., 2004; Cole et al., 2003; Denham et al., 2002; Feng et al., 2008; Garner, 2006; Spinrad et al., 2007).

**Temperament**

Rothbart (1986) defines temperament as the constitutionally-based, individual differences in reactivity and self-regulation. In her definition, Rothbart explains that these differences represent the biological makeup of individuality, influenced by heredity, maturation, and experience. Within what she defines as the two main constructs of temperament, reactivity and self-regulation, Rothbart identifies several domains. These domains are representative of the behavioral manifestations of temperament commonly addressed in current research on the topic. Included in reactivity is motor movement, vocal production, smiles and laughter, demonstration of fear and frustration, and soothability. Self-regulation is presented by Rothbart to include the ability to enhance or inhibit reactivity, approach or avoidance of stimuli, ability to regulate attention, and ability to self-soothe. Although alterations in terminology and categorization have occurred throughout the literature regarding temperament (Henderson & Wachs, 2007), these constructs and behaviors have ultimately remained throughout years of research in this area.

Early work examining the stability of temperament throughout childhood produced mixed results. Rothbart (1986) studied the stability of temperamental
dimensions in the first year of life. Evidence was provided for the stability of positive reactivity from three to nine months. Distress reactions, on the other hand, were not found to be stable over this time period. Rothbart purported that differences in the development of distress reactions could be due in part to individual differences in attention control, which may in turn influence the development of self-regulation and decreased fear reactions. Despite some evidence for the stability of temperamental characteristics, Rothbart concluded that temperament undergoes several changes in the first year of life in conjunction with the frequent and numerous maturational changes that are experienced by the developing infant.

Recent research has also evidenced varying presentation of the behavioral manifestations of temperament over time, expanding knowledge of the subject by including research into its genetic origins. Saudino (2005) investigated temperamental stability by analyzing reports of temperament conducted by observers. Ratings of temperamental constructs, including activity, affect/extraversion, task orientation, shyness, and behavioral inhibition at 14, 20, 24, and 36 months in over 200 twin pairs showed modest age-to-age stability correlations. While substantial change was observed in the phenotypic presentation of these characteristics, genetic influences were credited for mediating the continuity that was observed.

Research by Saudino (2005) also highlighted the influence of non-shared environmental influences on temperament. Results of this meta-analysis indicated that genetic differences are responsible for approximately 20 to 60% of variability in temperament. Support for genetic influence on temperament has been found in twin studies, with larger correlations between temperament styles found in monozygotic
versus dyzygotic twins. However, these results have not been supported by adoption studies, which provide little evidence for genetic influence in temperament.

Although opinions and empirical support vary surrounding the origins of temperament and its continuity over time, researchers in this area largely associate temperament with biologically-based individual differences that appear early in life, and are manifest as behavioral tendencies (Saudino, 2005). Given the role of the brain in controlling behavior, and thus producing the behavioral tendencies attributed to temperament, it is not surprising that a growing body of research has examined how underlying, neurological processes are related to and implicated in temperament. By identifying and understanding these processes, researchers have begun to better define how reactive and regulatory dispositions associated with temperament play a role in emotion and behavior. This connection is essential for defining the biological basis for individual differences related to emotions and behaviors, as well as explaining the reasons for which similar environmental and contextual factors may result in different individual experiences amongst children.

**Temperament and Emotion**

The associations between attention, behavioral inhibition, and self-regulation have led to a greater understanding of the influence of temperament in emotional functioning. Temperament and these underlying processes are highly connected to emotional control and expression. Young children have been shown through developmental research regarding temperament to display differing patterns of processing affective stimuli. These processing differences, related to temperament, are believed to manifest early in development, last throughout childhood, and affect more sophisticated processes...
responsible for socioemotional operations. Furthermore, temperamental reactivity and regulation are believed to play a role in altering the balance in functioning between emotional and cognitive processes (Peréz-Edgar & Fox, 2007).

Research that has specifically examined the underlying processes implicated in temperament has linked these processes to temperamental dimensions in the context of emotional regulation. From this research it can be seen that these processes interact with temperamental differences and affect the child’s reaction to emotional stimuli. This interaction has been presented in research by Peréz-Edgar and Fox (2007) as a dynamic relationship which is determined based upon the characteristics of the individual and a given task. These researchers studied attention and inhibition toward emotional stimuli in elementary school children. Results revealed that children with higher soothability and attention control experienced less difficulties associated with behavior and emotions. Children high in self-regulation were able to selectively attend to or direct their attention away from highly emotional stimuli in order to maintain composure. Thus, greater abilities in selective attention may be the root of higher levels of self-regulation.

Difficult or negative temperament has also been associated with later development of deficiencies in emotional processing and the surfacing of psychopathology. Early work in temperament suggested that proneness to fear, frustration, discomfort, and sadness could result in negative affect formation and, consequently, the emergence of affective disorders (Rothbart, 1986). Recent research into the origins of emotional disturbance has provided additional evidence of its relationship to temperament. Several studies have linked emotionality in infancy and childhood to predict internalizing and externalizing behaviors, total behavior problems, anxiety and
depression, attention problems, delinquency, and aggressiveness in later childhood (Saudino, 2005).

The relationship between underlying processes related to temperament and the development of psychopathic disorders has yet to be studied extensively, although efforts are being made by researchers to better define this relationship. Bjørnebekk (2007) contributed to this body of research by examining temperamental attributes in adolescents responsible for the development of antisocial behavior. The author proposed that the effect of temperamental differences on cognition and behavior may help explain lack of response to socialization efforts by parents utilizing discipline techniques. Results from this research indicate that adolescents with higher approach drives, a temperamental construct indicative of high motivation toward goal achievement, may be more likely to develop a lifestyle characterized by impulsivity and self-deprecation. Approach drive was also related to emotional aggression and suspiciousness.

Considering these results, it is possible that adolescents with strong drive motivation toward obtaining goals may be less responsive to disciplinary consequences. Furthermore, these drive tendencies are assumed to moderate the effect of environmental influences, such as parenting, on reducing problematic behavior. In conjunction with these factors, strong approach tendencies have been shown to manifest as hyperactive behavior, and may increase adolescents’ negative interpersonal interactions. This could, in turn, lead to generalized distrust in the intentions of others, and increased emotional aggression (Bjørnebekk, 2007).

The display of difficult temperament has been shown to change over time, as negative affect in infancy is characterized by motor movements but in middle childhood
manifests as withdrawn or flaccid behavior. Changes such as these may be attributed to the development of more advanced cognitive processes that regulate emotional response (Peréz-Edgar & Fox, 2007). Thus, the refinement experienced through cognitive development in children affects the way in which underlying processes of attention, behavioral inhibition, and self-regulation impact temperament may change over time. Research is needed to better define how developmental changes affect the influence of these processes and temperament in emotional functioning. Initial research regarding temperament and cognitive development has begun to explain this relationship, and, additionally, illustrated how temperamental differences may implicate cognition and academic achievement.

Calkins and Fox (2002) cite evidence that links patterns of temperamental emotional reactivity to later ER that facilitates or impedes the child’s successful social functioning. Drawing on evidence from several studies, the researchers suggest that children who are shown to evidence behavioral inhibition (regarded as a construct of temperament) are rated by their mothers to evidence both internalizing and externalizing behavior problems in early childhood and later tendency to withdraw from social situations. However, caregiver behaviors have been shown to mediate this relationship and support the child’s acquisition of effective ER skills, thereby leading to more appropriate fewer externalizing and internalizing issues.

Theory regarding ER purports that ER abilities largely are achieved through the voluntary control of attention, cognition, and behavior (Cole, Martin, & Dennis, 2004; Eisenberg & Spinrad, 2004). As previously described, a child’s dispositional ability to
engage in the voluntary control of these constructs is typically believed to evolve from the temperamental dimension of EC. Eisenberg and Spinrad (2004) argue that the individual’s engagement in voluntary efforts to control attention and behavior, including both the voluntary inhibition and enactment of both, even when attention to or behavior in a given situation is not preferred, are key elements of ER. Furthermore, they propose, ER does not involve other, reactive components of temperament, including impulsivity and involuntary inhibition.

Effortful control has been theorized to include processes of attention, inhibitory control, low intensity pleasure, and perceptual sensitivity. According to Eisenberg, Smith, Sadovsky, and Spinrad (2004), this construct is highly influenced by attention, and predictive of ER in social situations. Effortful control is considered important in emotional expression as it allows for the voluntary production of appropriate responses and inhibition of inappropriate responses. Also involved in this notion of EC is the ability to shift attention away from stimuli that invoke an undesirable response. Thus, as explained by Eisenberg, Champion, and Ma (2004), self-regulation of behavioral response is accomplished through EC, which is dependent on abilities in attention and behavioral inhibition.

Results derived by Simonds et al. (2007) provide support for a positive relationship between executive attention/EC and ER. These findings were derived from a behavioral measure of executive control and emotional expression: namely, smiling. The same results were not found between temperament rating scales measuring EC and smiling, suggesting that the two approaches to measurement (questionnaire and behavioral observation) may be related to different aspects of EC.
EC and ER

Differences in EC have been observed to occur in children with and without difficulties related to ER. Research examined effortful regulation of negative emotions, problem behaviors, impulsivity, and inhibition in 193 school-aged children. Children were grouped according to behavior (externalizing/co-morbid, internalizing, and control) and measures were taken at intake and two years later. All measures were examined to determine group differences. Findings revealed that children in the externalizing/co-morbid group exhibited less regulatory control and inhibition than control children at both measurement time points. In contrast, children with internalizing symptoms displayed similar amounts of EC as control children, and less impulsivity. Thus, EC may be related to regulatory abilities in children who evidence externalizing problem behavior.

Spinrad and colleagues (2006) provide additional evidence for the role of EC in the overall functioning of the child. The researchers studied links between EC and impulsivity to resiliency, appropriate social interaction, and popularity as rated by adults in a study of children considered at-risk for behavior problems. Conceptually, EC and impulsivity were grouped by the researchers as indicative of “emotion-related regulation” (p. 498). Data was collected from observations of children completing tasks designed to elicit EC, as well as data derived from parent report questionnaires, in a sample of approximately 200 school-age children. The longitudinal study involved two time points: first when children ranged in age from four and one half to eight years, and again two years later.
Using a longitudinal mediation model, the researchers examined relationships between the four constructs at Time 1 and Time 2. The model, which fit the data well, indicated a significant path between EC at Time 1 and resiliency at Time 2, suggesting that amongst children at-risk for behavior problems, EC may promote resiliency in the later childhood years. Results of the model were less clear in terms of impulsivity. A significant, negative path resulted between impulsivity at Time 1 and parent report of popularity at Time 2. Thus, children who display impulsive behavior early in their lives may eventually be regarded unfavorably by their peers. This lends support to the notion that children who are able to control their impulses will have more positive outcomes. However, as researchers note, popularity ratings in this study were based on parent report, and thus may have reflected positive bias (Spinrad, et al., 2006).

**Maternal Sensitivity**

van der Boom (1997) suggests that sensitive parenting includes “promptness, consistency, and appropriateness” on behalf of parental behaviors (p. 593). Sensitive parenting is observed within, and not apart from, the context of parent-child interactions. When parents are sensitive, they make efforts to establish seamless exchanges between themselves and the child, in a way that supports future interactions.

Research links maternal sensitivity to positive child outcomes. Spinrad and colleagues (2007) include maternal sensitivity as part of a larger construct of maternal support. Their findings suggest that conceptualized this way, maternal supportiveness is related to children’s EC, which in turn is negatively correlated with externalizing problems and distress from maternal separation, and positively related to SC.
A recent study by Gregory and Rimm-Kaufman (2008) examined how the quality of mother-child relationships in kindergarten, including both sensitive and positive responding, related to children’s academic achievement and high school completion. Participants included a socially and ethnically diverse sample of 142 children enrolled in a public school system. Children’s interactions with their mothers were coded when the children were in kindergarten to determine the quality of mother-child interactions. Academic achievement (i.e., high school GPA, standardized math and reading scores) and successful graduation from high school served as outcome measures. Results indicated that quality of mother-child interaction had a significant effect on if the child graduated from high school, such that a one unit increase in the quality of interaction rating in kindergarten for a child resulted in the child being 3.54 times more likely to graduate from high school. These results were evident regardless of mother’s education, child gender, race/ethnicity, or child IQ.

Additional findings from this research suggest that quality mother-child interactions may have a more powerful impact on children considered “at-risk” in terms of minority or socioeconomic status (SES). Results indicated that quality of maternal interaction was predictive of high school GPA only for low SES children and/or African American children, regardless of children’s IQ, gender, or maternal education (Gregory & Rimm-Kaufman, 2008).

In the realm of emotional expression and regulation, maternal sensitivity has been implicated to support the child’s ER capabilities. It has been proposed that in infancy, sensitive mothers accurately interpret their infant’s signs of emotion and respond with the needed degree of stimulation to assist the infant in regulating his or her emotional arousal
to an optimal level. In turn, infants learn to regulate maternal efforts to modulate their emotions, by welcoming or rejecting the stimulation provided by mothers, and responsively reacting to mothers’ emotions (Cole et al., 2004; Kopp, 1989). Similarly, Gregory and Rimm-Kaufman (2008) propose that the relationship between quality mother-child interactions and positive child outcomes can be explained in part by the child’s development of ER skills in the home, facilitated by quality maternal interactions, and his or her eventual ability to apply these skills within the context of the school.

**Attachment Theory**

According to a pioneering attachment theorist, John Bowlby, attachment is born from the human need to form intense, intimate bonds with significant individuals (Bowlby, 1978). The formation of attachment in children was first explained by Bowlby (1969), who believed that the bond between an infant and its mother served an evolutionary function, and ensured survival of the infant in the environment (Bowlby, 1988). Ten years later, Mary Ainsworth expanded on Bowlby’s conceptualization of attachment, arguing that individual differences could be observed in the relationship between infants and their primary caregivers. Ainsworth identified different styles of attachment through her research employing the *strange situation* procedure. In the strange situation, infants were observed while engaged in play with their caregivers, when their caregivers left the room, and when an unfamiliar individual entered the room (Ainsworth & Bell, 1970).

After observing the behavior of her infant subjects in the strange situation, Ainsworth identified three main categories of attachment: secure, anxious-avoidant, and anxious-ambivalent. According to Ainsworth, securely attached infants regard their
mothers as a “secure base” (Ainsworth, 1979, p. 932) from which they are able to explore the environment. When separated from their mothers, these infants are distressed and cease their exploration of the environment. Upon being reunited with their mothers, they actively seek closeness or contact with their mothers. In contrast, Ainsworth described infants whom she classified as insecure-avoidant as unaffected by the separation from their mother. These infants were observed to avoid or ignore their mothers upon reunion. Finally, infants classified as insecure-ambivalent were described by Ainsworth to evidence anxiety before being separated from their mothers, and to exhibit extreme distress when separated from their mothers. When these infants were reunited with their mothers, they displayed ambivalent behavior; initially they sought intimate contact with their mothers, but yet resisted interaction (Ainsworth, 1979).

Following years of developing their individual theories on attachment, Bowlby and Ainsworth eventually came to the agreement that attachment is an important aspect of personality formation. Not only does attachment represent the infant’s style of relating to his or her primary caregiver, it also contributes to individual differences in the way in which individuals interact and form bonds with others throughout the lifespan (Ainsworth, 1989; Ainsworth & Bowlby, 1991). Bowlby theorized that the child’s attachment with the primary caregiver leads to the formation of a representational model of relationships in general. The child maintains this internal representational model, and it is through this model that all future relationships are perceived (Bowlby, 1978).

Given its role in determining whether the infant regards his or her primary caregiver as a secure base, attachment is considered by some to explain, at least in part, the role of caregiving in the development of ER. As explained by Calkins (2004), the
child’s internal model leads the child to form expectations regarding if his or her primary
caregiver can be expected to help the child manage emotion, as well as expectations of
the infant’s own emotional expressions. Likewise, research has demonstrated through
infants’ strategies toward ER that attachment leads to infants’ expectations that the
caregiver can or cannot be relied on to externally assist the child in regulating his or her
emotions. Infants who are identified as securely attached tend to seek social intervention
from their primary caregivers and use other strategies such as social referencing to
regulate emotions. In contrast, insecurely attached infants may employ a variety of
maladaptive ER strategies, including avoiding interaction with primary caregivers,
engaging in solitary play, displaying extreme emotional arousal, or suppressing negative
emotions (Cassidy, 1994). Recent research suggests that co-regulation of emotion is also
observed more frequently in securely attached infants and their caregivers (Evans &
Porter, 2009).

Cassidy (1994) suggests that the securely attached infant, given the expectation
that his or her emotions will be consistently and sensitively responded to by the
caregiver, feel comfortable sharing emotions within the context of the relationship. When
experiencing positive emotions, the infant seeks to share these emotions with the
caregiver in order to ensure the relationship will continue. Alternatively, when the infant
experiences negative emotions, he or she seeks the caregiver for assistance in managing
the negative experience of emotion.

In infants whose attachment is described as insecure-avoidant, Cassidy notes that
emotions are often suppressed. The suppression of emotions is theorized to maintain the
relationship with the caregiver, as the infant comes to expect that the caregiver will reject
him or her if behaviors such as expression of emotion are displayed. In other words, it is an adaptive mechanism for the child in maintaining the relationship with caregiver. Thus, the primary method of ER thought to be employed by insecure-avoidant infants is to suppress the experience of both positive and negative emotions (Cassidy, 1994).

Cassidy also characterizes the ER strategies used by infants whose attachment behavior is identified as insecure-ambivalent. Because these infants are inconsistently responded to by their caregivers, they are thought to heighten their emotional displays in an attempt to elicit responses. Accordingly, the insecure-ambivalent infant continues to engage in exaggerated emotional displays as this guarantees response from the caregiver (Cassidy, 1994).

The ER behaviors characteristic of both types of insecure attachment are believed to be detrimental in contexts outside of the relationship between the infant and caregiver. Although the tendency of insecure-avoidant infants to hide or suppress emotions may serve well to maintain the infant’s relationship with the caregiver, lack of emotional expression may be interpreted by others as a sign of disinterest or defensiveness, and may negatively impact social relations (Cassidy, 1994). Likewise, the heightened expression of emotions amongst infants characterized as insecure-ambivalent may appear inappropriate and disruptive in the context of other relationships as the emotional display may not match the situational context.

Research by Berlin and Cassidy (2003) supports a relationship between attachment and emotions. However, this research failed to produce evidence for attachment-based differences in ER. Attachment style, ER, and maternal control of children’s emotional expression were studied in a sample of 76 preschool children.
Attachment style, classified using the strange situation procedure when the children were between 15 and 18 months old, was related to maternal control of children’s expression of emotion, which was in turn related to ER, derived from observation of children’s expressions of sadness and suppressed anger in response to losing a game, as well as expressed happiness in response to winning a game. Mutual emotion between child and mother was also coded as representing ER.

Analyses indicated no significant differences in ER between children grouped according to attachment styles. However, mothers of children who were classified as having an avoidant attachment style reported being more controlling of their child’s negative and positive expressions of emotion than other mothers. Furthermore, mothers of children classified under the ambivalent attachment style indicated less control of the child’s negative expressions of emotion, when compared to mothers of children with other attachment styles (Berlin & Cassidy, 2003).

Other research to support the role of attachment in the development of ER evidences associations between attachment styles and children’s functioning beyond the caregiver-child relationship (Calkins, 2004). Several studies have examined parental efforts toward socializing their children regarding emotions, which again suggest that ER develops largely through the parent-child relationship.

**Parent Socialization**

According to Neckel (2009), emotions are always expressed within the context of social relationships; the social context has a defining influence on “when, why, and in which way emotions arise and are displayed” (p. 181). Given the dominance of the parent-child relationship in the child’s early years, its influence in shaping emotional
expression and regulation has been examined to some extent. A growing body of research suggests that specific parenting behaviors are associated with children’s knowledge, expression, and regulation of emotions (Berlin & Cassidy, 2003; Cole et al., 2004; Eisenberg et al., 2001).

Cole and colleagues (2004) suggest that “emotions are both regulated and regulating in social interaction” (p. 323). Specifically, the researchers highlight evidence that demonstrates the social context of interaction between mother and child as both fostering and preventing the development of regulatory emotional capacities. Practices that have been associated with positive ER in the literature include maternal matching of emotion, discussions about children’s emotion, and maternal efforts to distract children during stressful or frustrating episodes (Garner, 2006).

Research suggests that valence of parental expressions of emotion have an impact on children’s regulation of emotion. Cole and others (2003) observed mothers’ behaviors in regulating their preschool children’s anger regulation during a frustrating task. Observations of children’s expressed emotion during the frustration task revealed that children were more likely to exhibit contingent positive emotions when positive emotions were expressed by their mothers. In contrast, when mothers expressed negative emotion, children’s responses were mixed, suggesting that positive emotional expression by parents is more helpful in facilitating positive ER.

Additional findings from this work suggest that mothers’ negative reactions to young children’s distress may support children’s continued externalizing behavior problems into the elementary years. Research has demonstrated that angry distress exhibited by mothers in response to children’s frustration at age five significantly predicts
teacher and mother reports of children’s continued behavior problems in first grade (Cole et al., 2003).

This research echoes ideas first presented by Kopp (1989), which emphasized that ER is largely developed through the parent-child relationship. This early work demonstrated that behaviors such as parental warmth, responsiveness, and modeling of appropriate ER strategies lead to the development of healthy ER in children. Support for these ideas can also be found in work by Eisenberg and colleagues (2001), which proposed a model explaining the influence of parenting behaviors on children’s ER and subsequent behavior. The model demonstrates relationships between parental warmth and parental expression of positive emotion, as well as between parental warmth and parental efforts to communicate with their children about emotionally provoking situations, and to link children’s emotional experience to stimuli. Support for the model was obtained by the researchers, in a study of 141 elementary school children. Model analyses revealed a direct, significant negative relationship between parental warmth and problematic externalizing behavior, as well as an indirect, significant negative relationship between parental warmth and externalizing behavior, mediated by lack of parental linking and unregulated emotional expression in children.

Likewise, in research by Garner (2006) positive emotion-related behaviors exhibited by mothers were related to more adaptive ER strategies used by a sample of 70 low and middle SES preschool children. Mother and child interactions were studied during a two-hour home visit, and preschool ER was observed two weeks later during a visit to the child’s preschool. Amongst all mothers studied, emotion-related behaviors, including matching their child’s emotions, discussing emotions, and distracting their
child from distressing situations, were all related to constructive ER (i.e., active resistance, venting, or seeking an adult) techniques exhibited by children. Additionally, mothers who comforted their children in response to emotional distress were more likely to have children that engaged in prosocial behaviors (i.e., helping, sharing, and comforting).

It is possible that parents’ effort to socialize their children regarding emotion can have a powerful effect that impacts not only the child’s ER abilities, but also his or her EC, the mechanism thought to underlie all aspects of self-regulation (Eisenberg et al., 2004). Spinrad and colleagues (2007) examined maternal socialization of children’s behaviors, measured through hypothetical responses to children’s negative emotional expression, as well as observed sensitivity to structured and unstructured play. Results of the study, which included 230 toddlers and their mothers, indicated that maternal behaviors such as validating children’s feelings, interacting with their children in ways that demonstrated warmth and responded to the child’s needs, and modeling ways to manage emotion, were associated with greater EC in the children studied. In contrast, behaviors such as disciplining children for expressing negative emotion, led to increased negative expressions in children and lack of techniques to cope with negative arousal.

Superficial involvement of parents in their child’s experience and expression of emotion appear necessary, but not sufficient, for the development of adequate ER abilities. Eisenberg and colleagues (2001) found that parents’ positive expression in response to positive stimuli, and neutral to positive expression in response to negative stimuli was unrelated to children’s emotion expression, although it was related to overall parental warmth, a factor that did have a direct relation to children’s ER. Likewise,
parents who are highly controlling of their children’s emotional expression and regulation may inhibit children’s development of adequate regulatory abilities. Less emotional expression of sadness has been observed in children with mothers who report high levels of control over their son or daughter’s emotions. Control over specific emotions can also lead to less emotional expression; mothers that report high control over their child’s negative emotional expression have children who are less likely to express anger. Similarly, mothers who are overly controlling of positive emotion expression have children who are less apt to express and share sadness with their mothers (Berlin & Cassidy, 2003). Therefore, parental attempts to guard against their child’s experience of negative emotion do not facilitate the child’s development of adequate ER, and the ability to independently manage his or her reaction to emotionally provocative stimuli.

Parental control of children’s emotions has been shown to negatively impact children’s emotional expression and regulation. For instance, children whose mothers indicated greater control of their child’s positive expression of emotion were less likely to display expression and sharing of sadness in a frustrating task. Interestingly, the same research found that children whose mothers indicated greater control of their child’s negative expression of emotion were more prone to suppressing their anger in the same frustrating task (Berlin & Cassidy, 2003). While anger suppression is not considered to be a direct measure of ER (Eisenberg, Champion et al., 2004), it may be a useful skill in situations that prohibit outward expression of negative emotion. Thus, there may be some benefit to greater parental control over their young children’s expression of emotion.

Parental history of mental illness may also impact the development of ER within the context of the parent-child relationship. For instance, mothers who report suffering
from childhood-onset depression (COD) have children who use less active ER techniques and engage in less expression of positive emotions than children of mothers without COD (Feng et al., 2008).

However, other research suggests a possible modifying function of parent behavior on the relationships between parental characteristics and maladaptive development of ER. Positive maternal behaviors are related to engagement in active ER and displays of positive mood in children of COD mothers (Feng et al., 2008).

**Social Competence**

As is noted by Fabes, Gaertner, and Popp (2006), there is a lack of consensus regarding the exact qualities and behaviors that are incorporated in SC. However, researchers generally agree that SC refers to the individual’s success in interacting socially with others. Scholars concerned with school readiness, such as Webster-Stratton and Reid (2004) cite SC as a main predictor of school readiness. They advocate that skills related to SC are addressed in early childhood education, to prepare young children for the demands of formal schooling.

Social competence influences numerous aspects of child development. In preschool, children who interact in positive ways with their peers during play demonstrate greater levels of motivation, attention, and persistence, and are more positive about learning than children who evidence difficulties with peer play. Alternatively, disruptive or disconnected peer play is associated with maladaptive learning behaviors, including inattention, externalizing problems, hyperactivity, and low motivation (Coolahan, Fantuzzo, Mendez, & McDermott, 2000).
Deficits in social functioning have also been shown to play a role in the development of psychopathology, although only for certain disorders. Shanahan, Copeland, Costello, and Angold (2008) examined risk factors for psychopathology to determine whether patterns of risk could be discerned in terms of gender differences and developmental level. The research, which utilized data from a large-scale dataset, included children ages 9 to 16. The analysis identified friendship difficulties as a risk factor for emotional disorders. Further analyses indicated that difficulty with sibling and friend relationships was associated with depression, but only for preadolescents and females. Additional associations were found between friendship difficulties and generalized anxiety disorder in preadolescent males and adolescent females.

**Emotion Regulation and Social Competence**

Emotional regulation, with its large role in impacting a child’s ability to respond to emotional stimuli in a manner that promotes the attainment of personal and social goals, is strongly intertwined with the idea of SC. Given this relationship, it follows that SC and ER share similar theoretical underpinnings. Fabes and colleagues (2006) name temperament, parent-child interactions, and family relationships as predictors of SC. Similar to how temperament is thought to influence ER, the researchers explain that children with tendencies toward self-regulation, positive emotional expression, and effective regulation of emotions, likely are high in SC. They also contend that parents play a large role in the development of children’s SC through modeling and direct instruction of social skills, as well as through the child’s experiences in the social context of the home environment. These familial influences echo the relationships previously described between ER and factors such as attachment and parent socialization.
The link between emotional functioning and SC, as well as their combined influence in predicting positive outcomes, has been thoroughly documented in the literature. Denham (2002) observed children at home and in the preschool environment, and measured emotional expression, ER, attachment, and SC. Findings of this research indicated that amongst the 91 preschoolers studied, negative emotions, lack of ER, deficits in emotional expression and understanding, and insecure attachment style were all predictive of SC. Similarly, social deficits have been demonstrated to predict difficulties with managing emotion and later difficulties with social interaction (Fantuzzo et al., 2005). Thus, not only are ER and SC related, their impact on functioning continues over time.

Fantuzzo and others (2005) also provide evidence for the relationship between ER and social functioning in the early childhood years. The researchers sought to determine the impact of emotional and behavioral problems on preschool Head Start children’s ($N = 210$) broad social functioning. Of the measures included in social functioning was a measure of ER, as researchers hypothesized that problematic social behavior early in the preschool year would be predictive of more labile and negative emotion later in the year, and that a relationship would exist between withdrawn behavior early in the year and fewer efforts to regulate emotions later in the year.

Hierarchical setwise regression models confirmed these hypotheses. Ratings of inattention/hyperactivity and oppositional behavior in the beginning of the year predicted more emotional lability and negativity at the end of the year. Furthermore, child ratings of withdrawn/low energy behavior were predictive of lower ratings of ER, and likewise, child shyness ratings early in the year were show to predict less ER later in the year.
These results broadly demonstrate how early difficulties with behavior, including defiance and inattention, may impact a child’s ability to regulate his or her emotions over time (Fantuzzo et al., 2005).

Alternatively, lack of ability to engage in ER has been associated with ongoing conduct problems. Research suggests that preschoolers who have difficulty regulating emotions display higher rates of aggression and poorer social skills than children who display adequate ER (Miller et al., 2006; Shields & Cicchetti, 2001). In a sample of 60 children attending a Head Start preschool program, the relationship between teacher-reported ER skills and emotion, behavior, and social skills displayed in the classroom was studied. Results of regression analyses indicated relations between negative ER and higher levels of aggression and anxiety, as well as poorer social skills. Positive ER, alternatively was related to lower levels of anxiety and better social skills. Findings from this research also demonstrated a modifying effect of ER on the relationship between negative emotional expression and social skills, suggesting that management of negative emotion, rather than the display of negative emotion, facilitates positive social interactions (Miller et al., 2006).

In research by Hill and colleagues (2006), children’s ER at age two when presented with a frustrating task was observed. These ratings of ER were then used as a predictor of children’s membership in one of four profiles of externalizing behavior based on behavioral rating scales completed once when children were two years old and again when children were four to five years old. Analyses indicated that low levels of ER predicted girl’s membership in the chronic-clinical profile above and beyond the other three profiles. Emotion regulation was not predictive of boys’ profile membership,
However, these results support the importance of ER in children’s behavioral functioning, but suggest that its role in shaping future behavior may be larger in very young girls than boys.

There is evidence that mutual ER, including both the mother’s ability to regulate the child’s emotion, as well as the child’s efforts to modify their mother’s emotion, is related to fewer problems with conduct in young children. In mother-child dyads, lack of positive mutual ER has been associated with ongoing conduct problems in children from preschool through the transition to elementary school. Reciprocal exchanges of angry distress reactions have conversely been related to ongoing problems with conduct in the elementary school years (Cole et al., 2003).

Research by Eisenberg and colleagues (1993) demonstrated that the experience of personal distress when viewing others’ emotionally laden situations led to decreased empathy response and helping behavior. Thus, difficulty with regulating one’s own emotions may prevent one’s ability to understand the emotions of others and respond by helping (Hinnant & O’Brien, 2007).

Few studies have addressed the longitudinal impact of ER on SC. In one such investigation, examination of emotional abilities in preschool children was compared to later social functioning in kindergarten. Researchers examined 91 preschoolers at age 3 and compared their functioning to later functioning in kindergarten. In preschool, poor ER, as well as other factors such as insecure attachment history, deficient use of behavioral coping strategies, expression of anger, and lack of emotional understanding, were related to deficient social abilities and engagement in oppositional behaviors in kindergarten (Denham et al., 2002). Conversely, studies examining children with greater
abilities in ER have linked this quality to positive outcomes. For instance, results derived by Spinrad and colleagues (2007) found children with greater regulatory abilities at 18 months of age had fewer problems with externalizing behavior and distress when separated from the caregiver, and demonstrated greater social ability one year later. Other evidence suggests that children who are better able to regulate their emotional response to a given situation are better liked by peers (Spinrad et al., 2006).

Recently, Trentacosta and Shaw (2009) demonstrated that similar relationships between ER and SC may remain salient throughout childhood and into adolescence. The researchers studied the relationship between ER in early childhood, rejection by peers in middle childhood, and antisocial behavior in adolescence in a sample of boys from low-income households. Relationships were demonstrated between observations of emotional self-regulation techniques at 3.5 years and peer rejection as measured during a summer camp when the boys were between 8 and 10 years old. Specifically, the use of active distraction rather than focusing on a frustrating task to achieve emotion regulation was associated with lower levels of peer rejection in middle childhood. Although no direct associations were observed between ER techniques and antisocial behavior in adolescence, use of active distraction was indirectly related to lower amounts of antisocial behavior through peer rejection.

Together, this research supports a developmental trajectory in which difficulties with regulating one’s emotions leads to later externalizing and internalizing problems, lack of school achievement, deficits in social relating, rejection by peers, and possible development of psychopathology. The strong connection between this construct and functioning throughout the lifespan demonstrates the importance of intervening early.
when problems with ER arise. The literature on factors believed to play a large part in shaping ER, including child temperament, attachment, and parental socialization behaviors, suggests, but does not yet fully demonstrate, that interventions targeting these factors in early childhood can enhance a child’s ability to regulate his or her emotions.

Given the significant, underlying role of temperamental constructs, particularly EC, in shaping ER, it appears likely that interventions aimed at addressing temperamental difficulties could result in positive emotion-related outcomes for children considered “at-risk” based on temperamental dispositions. Indeed, the influence of the environment has been implicated in shaping temperament. Positive affect and behaviors, for example, have been linked to maternal personality and security of attachment between mother and child, suggesting that these factors are likely sources of shared variance from the environment impacting positive affect (Saudino, 2005).

Early work by Lee and Bates (1985) also provided evidence for the existence of a reciprocal relationship between childhood temperament and the environment, suggestive of the possibility for intervention in this area. Formative investigation conducted by these researchers found that mothers of children rated as more temperamentally difficult were more likely to use intrusive control techniques, which were in turn more often resisted by their difficult children. Specifically, mothers of difficult children were found to restrain or remove their children from situations as a discipline method, were less likely to demand mature behavior from children, and were more likely to give in to initial resistance from their children. Mothers of difficult children were also shown to have more persistent and intense reactions to their children’s behavior.
Thus, in addition to a tendency toward difficult behavior and higher resistance, children rated as temperamentally difficult may also be more likely to receive both negative input from their caregivers as well as be reinforced to exhibit inappropriate behavior when caregivers give in to resistance behaviors (Lee & Bates, 1985). Results such as these indicate that environmental factors may be implicated in the ongoing effects of difficult temperament, but also suggest that these environmental factors can serve as change agents for moderating the underlying influences of temperament in expression and regulation of emotion.

Although limited, recent work supports the role of external influences in the development of ER strategies. For instance, Feng and colleagues (2008) examined individual differences in children’s temperamental inhibition at two to three years of age, support and positive behaviors conveyed by mothers when children were four years old, and mothers’ history of childhood-onset depression. Researchers explored the effects of these factors in predicting children’s ER strategies during a procedure designed to elicit disappointment when children were four years old. Regression analyses indicated that behavioral inhibition significantly predicted children’s use of passive regulation strategies and more frequent displays of sadness only in children whose mothers reported suffering from childhood-onset depression. High ratings on the temperamental construct of behavioral inhibition alone did not predict children’s use of maladaptive ER strategies. It was instead when the external influence of having a mother who experienced difficulties with her own emotions was added that this temperamental characteristic was associated with use of passive strategies and expressions of sadness.
Research by Hastings and others (2008) investigated a predicted relationship between temperamental tendencies, parental behavior, and ER. Specifically, the researchers hypothesized that parental use of overcontrol and less supportive parenting would lead to children displaying higher levels of inhibition, wariness regarding social situations, and difficulties with internalizing behavior. Results of the research, which studied 133 children aged two to four years, indicated that fathers’ observed supportive behaviors were associated with children who were less likely to demonstrate difficulties with inhibition, social wariness, and internalizing behaviors. Conversely, fathers’ observed overcontrol was related to higher levels of these difficulties. Notably, these results were significant only for children who displayed less parasympathetic ability to engage in self-regulation. Similar results were observed in mothers, but were instead evident in mothers’ self-report of supportive and controlling behaviors. Children with higher levels of internalizing problems were associated with mothers who reported significantly less supportive behaviors and higher levels of controlling behaviors. No differences in these outcomes based on children’s physiological self-regulation abilities were noted.

In sum, these results support the notion that parental behaviors can positively or negatively impact a child’s developing emotional functioning, including the ability to engage in ER. Furthermore, it is possible that physiological child characteristics may moderate the negative effects of parenting behaviors on emotional functioning (Hastings et al., 2008). Although this hypothesis needs to be tested further, it may help to explain differential capacities in regulation amongst children who all are exposed to negative parenting practices. Nevertheless, given the growing evidence that links parental
socialization behaviors and children’s use of ER strategies, it follows that interventions aimed at improving parental efforts toward emotion socialization will likely promote children’s use of adaptive ER strategies.

**Parenting and Socioemotional Functioning**

Parent training became a popular way to address the behavior problems of children beginning in the 1960s, when the desirability of other approaches, such as institutionalization, individual child therapy, and adjudication, subsided. Large-scale reviews and meta-analyses of parent training programs provide substantial evidence of the effectiveness of this approach in treating the behavioral and emotional difficulties of children (Kaminski, Valle, Filene, & Boyle, 2008). Research suggests that this remains true for parent training programs with preschool populations (Bates, 2005; Reid, Webster-Stratton, & Baydar, 2004; Shernoff & Kratochwill, 2007). Thus, parent training for children with emotional and social issues in the early childhood years may be a viable technique for addressing these deficits and improving long-term outcomes.

Support for this notion can be found in research studying parent training and its effects on social and emotional outcomes for children. For instance, McCart, Priester, Davies, and Azen (2006) conducted a comparative meta-analysis to determine the effects of behavioral parent training versus cognitive-behavioral therapy for antisocial children ages 18 and younger. Analysis indicated a greater overall effect size (0.45) for behavioral parent training than cognitive-behavioral therapy (0.23) when treatment was given to children ages 6 to 12. Improvements in social behavior were also noted for children with ADHD following the implementation of a manualized parent-training program. Compared to a community control group, greater decreases in negative social behavior
were noted for children whose parents received training. For the group receiving intervention, parent report of social skills following intervention also indicated moderate effect sizes (McGoey, DuPaul, Eckert, Volpe, & Brakle, 2005).

One parent training program that is well-supported in the literature is The Incredible Years program (TIY). The Incredible Years program was developed by Carolyn Webster-Stratton, and includes curricula designed for children, parents, and teachers. The program includes four curricula, each aimed at a different age group, for children ranging in age from 0 to 12 years. The BASIC Preschool/Early Childhood program was designed exclusively for children during the preschool years (ages 4-8). Included in the BASIC program is a focus on strengthening children’s skills related to social and emotional functioning, as well as school readiness. Programs designed for teachers and parents emphasize using praise and incentives to improve behavior, as well as positive discipline techniques. Webster-Stratton began development of TIY in the late 1980s and early 1990s. Since then, the programs have been refined and their effectiveness measured in a variety of contexts and with different populations.

Several studies support the use of TIY as an intervention targeting social skills in preschool-age children. Early research by Webster-Stratton and Hammond (1997) examined the differential effects of child training (CT), parent training (PT), or child and parent training (PT+CT) in 97 children with conduct problems. Compared to a control group, children in all three treatment conditions exhibited significant improvements in behavior problems on three measures based on fathers’ reports, and on two of three measures based on mothers’ reports. Mother reports in all three treatment conditions also indicated higher instances of positive behaviors and fewer negative behaviors at home.
However, no between-group significant differences were observed, suggesting that no version of the program leads to better outcomes in child behavior.

In addition to reduced negative behaviors, results indicated higher levels of prosocial behaviors in the various treatment groups. Children in both the PT +CT and CT groups demonstrated more positive solutions on a test of social problem solving, compared to children in the control and PT conditions. At one year follow-up, all three treatment groups demonstrated significant increases in the number of positive solutions compared to baseline levels (Webster-Stratton & Hammond, 1997). Results of similar research in a clinic-referred group of Norwegian children also indicated significantly more parent-reported prosocial behaviors in children in PT and PT+CT groups compared to controls (Drugli et al., 2007). Reductions in negative conflict management skills have also resulted following implementation of TIY for children in PT, CT, and PT+CT groups (Webster-Stratton & Hammond, 1997).

Additional research suggests that TIY parent training may have some impact on children’s ER. Webster-Stratton and colleagues (2008) utilized a school readiness measure that includes an ER dimension as part of their battery for studying intervention effects of TIY. The results of the study, which involved providing teacher and child training to 1768 children enrolled in Head Start, indicated greater improvements in school readiness in children receiving the intervention when compared to controls. However, no explanation was provided regarding improvements in specific ER skills. Similar results were reported by Reid and colleagues (2007). A group of high risk kindergarteners who received TIY parent and child training were reported by their mothers to have significantly better ER when compared to controls following
intervention. Both studies failed to describe specific improvements in ER skills, highlighting a pervasive gap within the literature evaluating programs aimed at increasing emotional and SC.

Although a body of literature exists to support the use of parent trainings in improving social and emotional outcomes for children, there are limitations to this research that must be addressed through investigation aimed at identifying the underlying processes that bolster socioemotional competencies. Results of large scale research on the components of parent training programs have attempted to highlight the parenting techniques associated with the greatest improvements in skills for children. Kaminski and colleagues (2008) conducted a meta-analytic review of parent training programs, with the specific goal of identifying components of parent training programs associated with strong effect sizes. The research, which included published articles reporting results from parent training programs conducted from 1990 to 2002, included 128 studies. The purposes of the studies included treating specific disorders, such as Attention-Deficit/Hyperactivity Disorder (ADHD), as well as behavior problems, anxiety, and other issues with behavior. Many also targeted positive parenting.

Results of the meta-analysis revealed three components of parent training associated with larger effects on parenting behavior and skills: communication about emotions, positive interactions with their child, and practicing skills with their own child. On the other hand, four components were associated with small effect sizes: problem solving, supporting children’s social skills, supporting children’s academic competencies, and providing additional services (i.e., substance abuse treatment or anger management skills for parents). Six components were associated with larger effects on reducing
externalizing behaviors in children: problem solving, using time out, modeling appropriate behavior, having positive interactions with child, responsiveness, sensitivity, and nurturing, and practicing skills with their own child (Kaminski et al., 2008). The author notes that this is the only meta-analytic study aimed at identifying the specific components of parent training programs that are most effective.

Importantly, the aforementioned study did not examine techniques associated with greater outcomes for social and emotional abilities, despite the fact that these skills are targeted by parent training programs (Bates, 2005). Research is needed to better describe parenting behaviors that lead to positive outcomes in social and emotional functioning. Additionally, the impact of culture on associations between parenting and child outcomes in the social and emotional realm must be addressed. Together this information can be used in the development of culturally-competent interventions that can adequately address the emotional and social needs of all children.

**Model Support**

The extant research supports relationships between aspects of temperament, attachment style, parent socialization related to emotion and social skills, and individual parent and child characteristics in shaping the child’s development of ER abilities and SC. Research to support the relationships that will be explored in the proposed study is described below.

**Parent Responsiveness in Infancy**

Studies on the interactions between caregivers and their infant children support the notion that healthy relationships between the primary caregiver and his or her young child typically include the establishment of mutually responsive and clear communication
between caregiver and child. Home and laboratory observations of parent-infant interactions suggest that responsive and consistent caregiving by the parent leads to a sense of trust within the dyad. Infants are also observed to be responsive to the parent, with mutual regulatory efforts developing between parent and infant (Field, 1994; Kochanska & Aksan, 2004).

In recent years, a focus on the impact of mutual regulatory efforts between parents and infants has emerged. For instance, research regarding the presence of a mutually responsive orientation in parent-infant interactions indicates that mutually responsive interactions between mothers and children are related to less use of power assertion in mothers. Mutually responsive orientation in parent-child dyads is also related to children’s internalization of mothers’ limit setting, higher self-regulation in children, and more developed sense of self (Kochanska, Aksan, Prisco, & Adams, 2008). Similarly, Evans and Porter (2008) examined co-regulation exhibited by mothers and infants during unstructured play sessions. The researchers found that symmetrical regulation at six months, defined as instances of joint attention followed by mutual creation of new actions, was related to higher levels of mental and physical development at nine months.

**Parent Responsiveness and Attachment in Toddlerhood**

Research focused on the development of attachment supports the notion that consistent and supportive responses from parents regarding their children’s physical and emotional needs promote the development of healthy attachment styles. Formative attachment research, such as that by Ainsworth (1970), demonstrated that when caregivers are consistently responsive to their children’s needs and efforts to communicate needs and emotions, children develop secure attachment relationships.
Children who are identified as being securely attached are observed to openly express their emotions with the primary caregiver. Parents of securely attached children, in turn, are responsive to their child’s emotional bids, supporting their emotional expression, accepting emotional distress reactions, and responding in an appropriate manner that supports emotional regulation. With insecurely attached children, parents are avoidant or inconsistent in responding to their children’s needs, and in turn, children often over- or underemphasize their emotional reactions (Cassidy, 1994).

Additional research indicates that the quality of parent response, rather than the valence, supports the development of secure attachment. Studying observations of unstructured play in infant-caregiver dyads, Pauli-Pott and Bettina (2008) found that positive affect expressed by mothers was not related to attachment security for infants who demonstrated low levels of negative affect at four months. Conversely, in dyads in which infants expressed high levels of negative affect and mothers expressed high levels of positive affect, infants were more likely to adopt an insecure attachment style. Additional analysis at 12 months revealed that mothers who expressed more negative affect and were more open to their infants’ emotional expression were more likely to have infants who were securely attached. High levels of positive maternal affect expressed by mothers of infants who also expressed high levels of positive affect was related to a lower likelihood of forming a secure attachment. Together, these findings suggest that at younger ages, lack of maternal matching of emotion and overemphasis on positive affect may overwhelm the infant and lead to withdrawal from the relationship with the primary caregiver. Additionally, as infants age, caregivers who are not open and clear in communicating dissatisfaction with negative emotional expression, or who try to
feign positive emotional expression, may support the development of insecure attachment relationships.

**Parent Responsiveness and Temperamental Negativity**

Research regarding the relationship between parental response and attachment has linked overly positive emotion expressed by mothers to insecure attachment styles in children. The degree to which parents respond appropriately to their children’s emotional overtures, rather than the valence of the response, has been associated with secure attachment. However, less is known regarding the child’s role in soliciting parental responses. Limited evidence has been derived to suggest that the tone (i.e., positive vs. negative) and degree to which emotions are expressed may influence parent response. Amongst infants who initially display high emotionality at three months of age and later demonstrate low emotionality at nine months of age, higher than expected occurrences of mutual and complementary responsiveness are observed in parent-child interactions (Belsky, Fish, & Isabella, 1991).

Research using observations of parent-child interactions indicates that parents who are responsive to their children’s bids for attention are likely to have children who are also responsive to their parent’s bids. Parents, however, are observed to be more consistently responsive to children’s bids when they are positive rather than negative. These results suggest two possible reinforcement patterns that may result from higher responsiveness following positive bids: 1. children continue to exhibit high levels of positive bids due to reinforcement of prior positive bids, or 2. children are inconsistently (i.e., variably) reinforced for negative bids, thus negative bids are maintained, and possibly exaggerated, as a result of this reinforcement (Kochanska & Aksan, 2004).
Parental Responsiveness and SC

Research on early parent-child interactions suggests that the early interaction between the primary caregiver and his or her young child is influential in the child’s developing social abilities, and can be observed when children begin to interact with peers and teachers in the early childhood context. However, it is not yet clear to what degree these early experiences have long-term effects on children’s social abilities. In one study, observed parental responsiveness during play sessions with their children (including shared attentional focus, demonstration of similar emotional responses, and reacting in response to child’s cues) accounted for a significant amount of variance in teacher ratings of SC (Linsey & Mize, 2001). Thus, the effect of parental responsiveness on the child’s growing social and emotional competencies may extend beyond the immediate context of the parent-child relationship.

Additional support for this notion was garnered in research by Adams (2002), which involved observations of interactions in 28 pairs of parents and their children, ranging in age from 5 to 11. Results of this research revealed a negative relationship between parental responsiveness and externalizing, internalizing, and social difficulties in children with clinically-significant symptomatology, as well as between parental responsiveness and externalizing problems in a community sample of children. Although this research supports a relationship between parental responsiveness and child SC, it is limited in scope. The proposed research will explore the longitudinal relationship between parent and child responsiveness in infancy and SC in the preschool years.

Temperamental Negativity and Attachment
Research on temperament suggests that children who are prone to negative emotionality place increased demands on caregivers to assist them in managing high levels of negative affect. In turn, these demands challenge the formation of a healthy attachment relationship (Rothbart, 1986). In her formative work on attachment, Ainsworth (1970) suggested relationships between negative expression of emotion and maternal attachment. Research using the “Strange Situation” procedure (p. 53) demonstrated that in very young, securely attached children, the child’s act of seeking the mother’s presence is the driving force behind the regulation of negative emotions. Conversely, in children who do not demonstrate a secure relationship with their mothers, negative emotions are mollified through alternative methods, such as avoiding the caregiver or heightening and subsequently avoiding negative emotional expression. This suggests differences in the child’s experience and regulation of negative emotion based on attachment. However, limited research has examined the influence of differences in attachment on how children experience and express negative emotions.

Research on interactions between infants and their parents demonstrates that infants who are securely attached display significantly less negativity and avoidant behavior toward their parents in the home environment. These results are supported by lab observations, which indicate that infants with disorganized attachment styles demonstrate significantly more negativity than securely attached infants. Additionally, infants with avoidant attachment styles display significantly more avoidance than securely attached infants (van Bakel & Riksen-Walraven, 2002). These findings are corroborated by other research in which infants who displayed high positive emotionality at three months and low positive emotionality at nine months, were more likely to be
identified as insecurely attached, compared to infants who consistently displayed high levels of positive emotionality over time (Belsky et al., 1991). What is lacking in this body of research are studies that examine the relationship of attachment and negativity as children progress to the toddler years, when negative emotional displays become a focus of the developing child’s emotional expression. This study will therefore investigate the relationship between these constructs in children, beyond the infancy stage.

**Temperamental Negativity and SC**

Emotional development during the toddler period is characterized, in part, by increased abilities and independence in regulating feelings of distress and frustration (Thompson & Goodvin, 2007). Children who are not able to effectively manage their negative emotional reactions to stressful stimuli have been shown to experience concurrent difficulties developing positive social abilities (Denham, Blair, Schmidt, & DeMulder, 2002). Research on very young children indicates that children who display higher levels of impulse control during the first three years also are rated as having lower levels of externalizing problems and expressed negativity during separations from the primary caregiver. Children with these characteristics are also reported to have higher levels of SC as they reach the preschool age (Denham et al., 2007).

Although support for the relationship between earlier difficulties with negative emotional expression and social skills later in life is demonstrated in the work by Denham and colleagues (2007), few other studies have investigated the degree to which a propensity to express negative emotions earlier in life impact the preschool-age child’s SC. Although not a measure of social competency, research conducted by Rubin, Burgess, Dwyer, and Hastings (2003) indicated a relationship between conflict and
aggression displayed by children at age two and externalizing behaviors at age four. Given the strong connections between externalizing difficulties and deficits in SC (Coolahan, Fantuzzo, Mendez, & McDermott, 2000; Denham, Blair, Schmidt, & DeMulder, 2002; Drugli, Larsson, & Clifford, 2007), these findings suggest that negative emotionality may also be related to difficulties in interacting with others. Notably, the researchers attempted to measure social skills through participants’ play interactions with one another during the four year laboratory visit, but these interactions did not result in high rates of aggressive behavior, and this method of measurement was dropped. This highlights both the lack of research studying the long-term impact of negative emotionality and lack of ER on children’s social skills, as well as the methodological challenges faced by researchers in gaining authentic measures of children’s social skills in both the home and laboratory environments.

**Attachment and Parent Emotion Support**

Research into attachment relationships and parent emotion-related behaviors has demonstrated a relationship between parents’ support of children’s emotional expression and the development of secure attachment (Ainsworth, 1970; Berlin & Cassidy, 2003). In a study regarding attachment and maternal efforts toward regulating their child’s emotions, Berlin and Cassidy (2003) found that children who were identified as having an avoidant attachment style had mothers who reported higher control of their emotional expression, while children with an ambivalent attachment style had mothers who reported less control of their emotional expression. In other research, parents who created more logical and detailed narratives while discussing scenes depicting attachment-related content with their preschool-aged child were also more likely to provide scaffolding
regarding their child’s emotional experiences and expressions (Leibowitz, Ramos-Marcuse, & Arsenio, 2002). Together, this research suggests concurrent links between secure attachment behavior and parental support regarding emotions in both the toddler and preschool period. However, no research has tested the relationship between early attachment and parents’ efforts to support their child’s emotion-related skills later in childhood.

**Attachment and SC**

Children who form insecure attachment styles are theorized to base future relationships on a poor working model of interpersonal relationships (Bowlby, 1978). Therefore, it is plausible that insecurely attached children evidence difficulties forming friendships and relating to peers during the preschool years. In one study of preschoolers, poor ER, as well as other factors such as insecure attachment history, deficient use of behavioral coping strategies, expression of anger, and lack of emotional understanding, were related to deficient social abilities and engagement in oppositional behaviors in kindergarten. Results indicated a significant relationship between insecure attachment and deficient emotion skills when children were three years old. Together, these variables significantly predicted deficient social functioning in kindergarten (Denham, Blair, Schmidt, & DeMulder, 2002).

Results from a multi-level analysis examining factors such as parent and family characteristics, temperament, attachment, parent sensitivity, and self regulation, also indicated relationships between attachment and SC. A negative relationship was observed between secure attachment style and insensitive parenting at 54 months. Insensitive parenting was in turn found to significantly differentiate children who had increasing,
versus decreasing, social withdrawal from 54 months until they reached the 6th grade. Although not direct, these results provide evidence for the influence of early attachment relationships in later social behavior (Booth-LaForce & Oxford, 2008). Recent research by Smeekens, Riksen-Walraven, and van Bakel (2009) provide additional support for the role of early attachment style in shaping later social and emotional competencies. Using a non-clinical sample of children, the researchers measured attachment style at 15 months and 5 years, and related these measures to socioemotional outcome measures at 5 years. Results indicated a negative relationship between disorganized attachment at 15 months and SC at 5 years, regardless of 5-year attachment measures. These results underscore the importance of the early attachment relationship in the formation of social competencies.

**Attachment and ER**

Given that insecurely attached children are shown to have difficulties regulating emotions and controlling the expression of overwhelming negative emotion (Cassidy, 1994), it appears likely that attachment style continues to influence the expression of negative emotion once children reach preschool age. Dugan (2007) studied attachment and its relation to emotion regulation in a sample of 15 children ranging in age from 3 to 5, with severe emotional and behavioral disorders. In the sample studied, a pattern emerged suggesting children who were rated as being insecurely attached also displayed higher rates of emotional lability and negativity. Negative relationships between attachment-related responses in preschool children and negativity exhibited by children during discussion of emotion-focused situations have also been observed. Specifically, children who produce more coherent responses during their descriptions of attachment-
provoking situations are shown to be less likely to display severe negativity while discussing emotions with their parents (Leibowitz, Ramos-Marcuse, & Arsenio, 2002).

Strong associations have also been observed between negative behavior and poor attachment style. Smeekens, Riksen-Walraven, and van Bakel (2007) followed a community sample of 116 infants and their parents over the child’s first year. Based on data derived from questionnaires and home observations, disorganized attachment style was identified as one of the most influential factors in predicting externalizing behavior in children at age five. Additionally, disorganized versus non-disorganized attachment was shown to mediate a negative relationship between effective guidance at 15 months and externalizing behavior at age 5. Thus, attachment style may have an impact on a child’s display of negative behaviors, regardless of later efforts of parents to promote positive behavior in their children.

Parent Negativity and Emotion Support

A limited number of studies have examined how negativity exhibited by parents plays a role in parents’ efforts to support emotional expression and competence amongst their children. Results of the research conducted Leibowitz and colleagues (2002) suggests a negative relationship between parental negativity and emotion support. The researchers found that when the 44 preschoolers studied communicated with their mother or father about emotions, parents who exhibited higher levels of negativity during the interaction were also less likely to display scaffolding behaviors to support their child’s expression and understanding of emotion. Alternatively, research has demonstrated a positive relationship between positive emotional regard displayed by parents and greater efforts to support children’s emotional development. In a group of school-aged children,
parent-child interactions were examined while children and their parents viewed emotion-provoking slides. A model proposed by the researchers indicated a positive relationship between parental warmth and higher occurrences of linking slide content to the child’s personal emotional experiences (Eisenberg et al., 2001).

**Parent Negativity and ER**

Research on parent emotional expression has indicated that parents who express positive emotions, both prior to and during the preschool years, often have children with fewer problems surrounding negative emotionality. For example, the findings of Eisenberg and colleagues (2001) suggest a relationship between parental warmth during the child’s early years and fewer problems with externalizing behavior in the elementary school years. Path analysis revealed a direct, significant negative relationship between parental warmth and problematic externalizing behavior, as well as an indirect, significant negative relationship between parental warmth and externalizing behavior, mediated by lack of parental linking and unregulated emotional expression in children. These results are supported by other research examining the efforts of mothers with depression in socializing their children’s emotions. Research on this group indicates that children born from mothers with childhood-onset depression are shown to generally exhibit fewer positive emotional expressions. However depressed mothers who display frequent positive emotions toward their children have children who exhibit more positive emotions and engage in more active regulation of emotions, when compared to children of depressed mothers who do not frequently display positive emotions (Feng et al., 2008).

Observational studies also suggest that parents’ expression of emotion can have immediate effects on children’s reaction to affect-provoking events. Cole and others
(2003) observed the behaviors of mothers in regulating their preschool children’s anger regulation during a frustrating task. Children were shown to demonstrate contingent positive emotions when their mothers exhibited positive emotions. Conversely, greater amounts of negative or neutral reactions to frustration were observed in children when their mothers expressed negative emotion during the task.

**Parent Negativity and SC**

Several studies have indicated that parental characteristics, namely, negativity, influence parents’ efforts to support social skill development in their children. Findings suggest that the impact of negativity displayed by parents is evident in difficulties with social skills and problem behaviors. For instance, Cumberland-Li, Eisenberg, Champion, Gershoff, and Fabes (2003) examined the effect of parental negative emotionality on children’s behavior and social skills in a group of children aged four to eight years. Positive relationships were observed between paternal report of child social and behavioral maladjustment and negative emotions expressed by both mothers and fathers. The profound impact of parental negativity is further underscored in research by Rubin and colleagues (2003), which also found positive associations between maternal negativity in toddlerhood to externalizing problems exhibited by children at four years of age. Importantly, the relationship between conflict-aggression at age two and externalizing problems at age four was strongest for children who experienced the highest levels of maternal negativity in toddlerhood.

Additional findings also support the impact of parental negativity on child behavior over time. Results of a large-scale twin study indicated that parental negativity displayed when children were four years old was positively related to antisocial behavior
displayed by children at age seven. However, in this research it was also found that antisocial behavior in children at age four had a significant effect on parental negativity at age seven, suggesting that the relationship between parental negativity and child behavior and social functioning may be reciprocal, rather than linear.

Given the clear impact of parental negativity on children’s behavior and SC, it is probable that these effects continue in to the school years. Preliminary findings, such as those by Cumberland-Li and others (2003) support this notion. The researchers identified negative relationships between mothers’ positive emotionality and teacher reports of cheating and maladjustment. However, the long-term effects of parental negativity, and the degree to which these effects generalize in to contexts other than the home environment, has seldom been examined in the literature. This study will attempt to derive additional support for the impact of parental negativity on children’s functioning over time.

**Parent Emotion Support and ER**

The extant literature suggests that a reciprocal relationship exists between child negativity and parent’s efforts to support their child’s emotional development. In research examining maternal response to children’s negative emotional expressions, maternal behaviors such as validating children’s feelings, interacting with their children in ways that demonstrated warmth and responded to the child’s needs, and modeling ways to manage emotion were associated with greater abilities in children to manage negative emotional responses. Conversely, when mothers disciplined their children for expressing negative emotion, children were more likely to increase their negative emotional expressions and displayed fewer techniques for effectively controlling negative emotion.
Similarly, Eisenberg and others (2001) found parents’ efforts to assist their children in linking emotion and experience partially modified a negative relationship by parental warmth and children’s externalizing behavior. Thus, in addition to its direct impact on children’s negative emotional expressions, the effect of parental emotion support may impact a child’s functioning regardless of the amount of warmth displayed by the parent.

In children who are regarded as having a propensity toward negative emotional reactions, often indicated through ratings of the child’s temperament, parental support of emotion-related behaviors may be of particular importance. Stright, Gallagher, and Kelley (2008) examined this relationship using data from the National Institute of Child Health and Human Development Study of Early Child Care. Results of the analysis supported a moderating effect for temperament, in that children who were rated as more temperamentally difficult at six months of age were more likely to adjust poorly in first grade if they had also experienced negative parental emotional support and support for independence. Conversely, children who were rated as temperamentally difficult but had experienced positive parenting in early childhood were more likely to adjust positively in first grade.

**Parent Emotion Support and SC**

Parent support of emotional competence in their children has been associated with multiple positive outcomes, including positive behavior in children. Eisenberg and others (2001) examined the impact of parental socialization behaviors regarding emotional experience and expression in their elementary school-age children. The findings indicate that parents’ behaviors such as linking emotion to experience and providing warmth and
support during times of emotional distress were negatively related to problem behavior in children. Although this research only included measures of child behavior, it suggests that parents’ behaviors surrounding emotion have an impact on the child’s ability to navigate the social world without engaging in excessive negative behavior. Other findings, such as that by Cole and colleagues (2003) support this notion. In mother-child dyads, lack of positive, mutual ER was associated with ongoing conduct problems in children from preschool through the transition to elementary school. Additionally, reciprocal exchanges of angry distress reactions were related to ongoing problems with conduct in the elementary school years.

One study has explicitly examined the relationship between parent emotion support and child SC. In a large-scale study, parents who were observed to provide more high quality emotional support (rated using measures of sensitivity to children’s positive or neutral bids, intrusiveness, and positive regard) during the infant and early childhood years were found to have children with more positive relationships with teachers and peers, higher school performance, and better social skills when compared to children of parents who were rated as providing poor emotion support (Stright et al., 2008). Additional research is needed to provide support for findings such as these. The present study will examine this relationship, in an effort to better describe the impact that emotion support has on children’s social functioning both at home and in school.

**ER and SC**

In preschool, children are faced with the sometimes daunting task of interacting in a constructive manner with peers. This task can be challenging for young children, especially when children have difficulty regulating their negative emotional reactions. A
study of preschool children living in low-income, urban households examined the relationships between negativity and various behavioral and social dimensions. Findings from this research indicated a positive relationship between emotional negativity exhibited by children and aggressive, inattentive/hyperactive, and oppositional behavior. Negative relationships were also found between the ability to regulate one’s negative emotional reactions and withdrawn/low energy behavior, as well as between effective regulation of negative emotions and socially reticent behavior (Bulotsky, Shearer, & Fantuzzo, 2004). Additional research suggests similar relationships between negativity and social skills over time. Vaughan Sallquist and colleagues (2009) studied negative and positive emotional intensity, emotional expressivity, and social skills in a group of elementary school students over a period of six years. Children who were initially rated in positive, negative, and overall expressivity were shown to have greater decreases in social skills over time as reported by their teachers. It is interesting to note that while this research supports a relationship between negativity and SC, it appears that the intensity of emotional expression, regardless of valence, has a more salient longitudinal relationship to SC.

Other research suggests that child negativity may be related to more severe forms of psychopathology, which are often accompanied by deficits in social functioning. Hill, Degnan, Calkins, and Keane (2006) studied the emotion regulation abilities of 447 children at two, four, and five years of age. Based on observations during a frustrating task, the researchers found that girls who had difficulty regulating their emotional reaction (thus, displaying higher amounts of negativity) at age two were more likely to have continued clinically-significant behavioral problems at ages four and five. However,
this relationship was not observed in the boys studied. As is the case for many of the studies reviewed in support of the proposed model, the constructs at hand have been studied in relation to behavioral outcomes, but research is limited in linking these constructs to social outcomes. This study will attempt to add to the literature through a focus on social and emotional outcomes.

This relationship may be particularly salient in economically disadvantaged groups. For instance, in a sample of 60 children attending a Head Start preschool program, teachers rated children with greater abilities in regulating their negative emotions as having lower levels of anxiety and greater SC than children who had difficulties regulating negative emotions (Miller et al., 2006).

**Cultural Considerations**

What is largely lacking in the aforementioned research is an attempt to investigate the role of culture in these various relationships. Stainton (2001) suggests that “what a mother finds meaningful and salient in her infant’s behavior is culturally specific” (p.117), and suggests that the multiple and codependent layers of culture, including ethnicity, citizenship, family, geographical location, socioeconomic status, and education, may serve to influence early mother-child interactions. Recent speculation on the nature of culturally-based differences in parenting at large, and how those differences influence socioemotional development, suggests that cultural beliefs concerning the self may play a role in shaping parents’ teaching practices surrounding constructs such as emotion regulation. Rothbaum and Rusk (2011) posit that cultures favoring independence and “high intensity” (p. 104) happiness emphasize emotion regulation tactics that change the situation to meet the individual’s needs, such as outwardly expressing negative emotions.
to achieve positive change and choosing situations that are likely to lead to a positive emotional experience. Such beliefs and practices are attributed to Western cultures, and particularly, Euro-American culture. In contrast, cultures focused on interdependence and harmony, such as East Asian cultures, emphasize emotion regulation practices that detract from one’s own emotions and work to benefit the good of others. Although Rothbaum and Rusk acknowledge that within each culture there are opportunities for both type of aforementioned situation, little attention is paid to within culture differences. In particular, little research has investigated differences based on cultures of origin within American samples.

Of the few studies that have investigated the relationships between cultural factors and parenting practices to support socioemotional development in the United States, results have been inconclusive. Additionally, research has largely focused on differences regarding socioeconomic status (SES) within racially homogeneous samples. For instance, Garner (2006) compared maternal socialization of social and emotional behavior in low and high-SES African American mothers. No between-group differences were found; mothers who exhibited higher levels of sensitive and warm responding were found to promote social and emotional competence in their children, regardless of SES. Another study comparing African American infant-mother dyads above and below the poverty line found that in general, greater amounts of warm and sensitive responding, as well as dyadic communication were associated with better outcomes for children on cognitive and communication skills. Although mothers below the poverty line were found to exhibit lower levels of warm, responsive, and interactive behavior with their infants, the associations between these factors and cognitive and communication outcomes were
not as strong in the lower SES group, suggesting that these behaviors were less significant to infants’ development when compared to the group above the poverty line (Wallace, Roberts, & Lodder, 1998).

Kolobe (2004) found some evidence of group differences based on SES and maternal education in parenting practices employed by Mexican-American mothers. The researcher examined mothers’ stimulation of their children in the home, use of warm and responsive parenting practices, as well as self-reported parenting techniques in relation to psychomotor and cognitive development in their infants. Results indicated higher frequency of nurturing, stimulating, and responsive parenting among mothers who completed high school in the middle SES group, compared to low SES mothers who did not complete high school. Notably, differences in nurturing behaviors were also observed based on level of acculturation as reported by mothers. Mothers who self-identified as bicultural reported greater developmental expectations for their children and more frequent use of nurturing behaviors than those who were not acculturated. However, no differences in child outcomes were noted based on these groups, leaving the impact of acculturation on child development in question. Despite some evidence for the influence of culture on early mother-child interaction and later developmental outcomes, the extant literature that examines culture in relation to socioemotional development is exceptionally limited. Further, the extant literature demonstrates the need to better identify the differential influences of factors such as SES and ethnicity. This research is essential to informing the development of culturally sensitive and valid assessment measures and intervention programs to promote socioemotional development. In our
increasingly diverse world, the availability of such tools in all geographic locations is an absolute necessity.

**Proposed Study**

As is demonstrated above, a great deal of research has examined relationships between aspects of attachment, temperament, and parent socialization as they are related to ER and SC. Together, this research demonstrates that effective ER and SC are most often observed in children who exhibit low levels of temperamental negativity, have a highly responsive parent or caregiver, develop a secure attachment relationship with a caregiver, and/or have parents who demonstrate regulated emotional responses reflective of the child’s emotional needs. However, this research is largely reliant on small, homogeneous samples, and is lacking in longitudinal examinations of the impact of these variables on social and emotional functioning over time.

To better understand how these relationships are connected and serve to impact these skills, it is necessary to study their connections using normative, longitudinal, and representative data in an inclusive model. The proposed model will attempt to add to the extant literature by broadly examining the longitudinal influence of parent behaviors on factors influential in the development of ER (i.e., attachment and temperament), as well as the combined effects of these factors on ER and SC in preschool. Additionally, this research will explore possible cultural differences within such a model.

**Conceptual Model**

The conceptual model for the proposed study is depicted in Figure 1. A direct relationship between parent-child responsiveness and SC is proposed. Additionally, it is hypothesized that relationships between parent-child responsiveness and child negativity
and attachment style, as well as between parent-child responsiveness and parent emotion-related behavior mediate this relationship.
CHAPTER III

METHOD

Sample and Participant Selection

Data Source

This study utilized data from the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B). The ECLS-B is comprised of a nationally representative sample of children born in 2001. Data from these children were collected at four time points; when children were nine months old, two years old, in preschool, and as they entered kindergarten. Two phases of kindergarten data collection were conducted: in 2006 for the children entering kindergarten during this year, and in 2007 for children entering kindergarten during this year, or repeating their first year of kindergarten (Snow et al., 2009). The ECLS-B sample contains data from approximately 10,700 children (U.S. Department of Education, National Center for Education Statistics, n.d.c.). Of note, due to ECLS-B reporting requirements, all sample sizes have been rounded to the nearest 50 (Mulligan, 2009).

The dataset contains both observational and reported data regarding children’s development, including the cognitive, social, emotional, and physical domains. Data were collected from children through home visits conducted by trained researchers. Physical data, such as height, weight, and arm circumference were collected, along with data based on children’s performance during activities that aimed to evaluate cognition, language, social and emotional skills, and physical abilities. Researchers also collected questionnaire data from fathers, and completed interviews with the child’s primary
caregiver (U.S. Department of Education, National Center for Education Statistics, n.d.a.).

**Data Collection**

Data was collected for the ECLS-B using computer, face-to-face, and written questionnaire methods. During the 9-month, 2-year, and preschool phases, in-person interviews were conducted with the child’s primary caregiver using a computer-assisted method. During this visit, observations were also conducted in the home, which allowed for the collection of direct child assessments. Additionally, fathers completed written questionnaires, and the child’s early child education providers completed telephone interviews. Observations were also conducted in the child’s early childhood education environment (Jacobson Chernoff, Flanagan, McPhee, & Park, 2007). In the kindergarten 2006 phase, a home visit was conducted which including a parent interview and direct child assessments. Self-administered questionnaires were distributed to kindergarten teachers of all children enrolled in kindergarten in 2006. Additionally, telephone interviews were conducted with early care and education providers (ECEP) of children not enrolled in kindergarten in 2006, as well as wrap-around early care and education providers (WECEP) providing homeschooling or before- and after-school care to children enrolled in kindergarten in 2006. Similar data collection procedures were conducted in 2007, with the exception of the ECEP interview, as study authors expected that all children would at least be enrolled in kindergarten by the 2007 wave (Snow et al., 2009).

**Participants**

Children and their parents participated in the sample when children were approximately nine months old, two years old, preschool age, and entering kindergarten.
In the first wave of data collection, when children were 9 months old, approximately 10,700 children and their families participated. Included in this sample were 5,450 males and 5,250 females. Race/ethnicity of the sample was comprised of 54% White, non-Hispanic, 14% Black, non-Hispanic, 26% Hispanic, 3% Asian/Pacific Islander, and 4% Other. Among mothers included in the sample, 19% had less than a high school education, 54% had completed high school, obtained a GED, attended some college, or attended vocational technology education, and 26% obtained a bachelor’s degree or higher. Within the sample, 26% of children and their families reported living below the poverty threshold (U.S. Department of Education, National Center for Education Statistics, n.d.d.).

The second wave of data collection occurred when children were two years old, and included approximately 9850 children and their parents. The race/ethnicity of this data wave included 43% White, non-Hispanic, 16% Black, non-Hispanic, 20% Hispanic, 11% Asian/Pacific Islander, non-Hispanic, and 10% Other, non-Hispanic. Sixteen percent of mothers in this wave of data reported having completed less than a high school education, while 56% completed a high school diploma/GED/some college/vocational technology, and 27% held a bachelor’s degree or higher. The poverty status of the sample in this data wave was 24% below poverty level (U.S. Department of Education, National Center for Education Statistics, n.d.d.).

Sample size for the third wave of data collection, completed when children were in preschool, included 8900 children and their parents. Of this group, 44% were White, non-Hispanic, 15% were Black, non-Hispanic, 20% were Hispanic, 10% were Asian, non-Hispanic, and 11% were Other, non-Hispanic. Mother’s education level in this data
wave included 14% with less than a high school education, 56% with a high school diploma/GED/some college/VOTECH, and 29% with a bachelor’s degree or higher. In this wave of data collection, 24% of those sampled reported living below the poverty threshold (U.S. Department of Education, National Center for Education Statistics, n.d.e.).

**Sampling Process**

According to Jacobson Chernoff and colleagues (2007), a “clustered, list frame sampling design” (p. 17) was used to derive the original sample of children born in 2001. The vital statistics system provided by the National Center for Health Statistics (NCHS) provided a list of registered births, which comprised the list frame. Births contained in this list were derived from 96 core primary sampling units (PSUs; i.e., counties and county groups), which were considered representative of all United States births in 2001. Before the 9-month data collection began, information was collected from state registrars regarding children who were deceased or were adopted after being issued their birth certificate, as well as children who had biological mothers younger than 15 years of age. These children were excluded from the sample before collection began.

Oversampling was conducted with American Indian/Alaska Native, Chinese, and other Asian and Pacific Islander children to ensure an ethnically diverse and nationally representative sample was obtained. To account for this oversampling, a supplemental list frame was used to identify 18 additional PSUs in areas with greater occurrences of American Indian/Alaska Native births. Oversampling was also conducted for children born with moderately low and very low birth weights, as well as for twins (Jacobson Chernoff et al., 2007).
Weights

Weighting was applied to response rates for all phases of data collection. As the study authors explain, weighted response rates were applied so that sample data could be used inferentially to describe the population from which the sample was taken (Snow et al., 2009). For the child assessment component of the 9-month data collection phase, the weighted unit response rate was 95.6%. This includes all parents who completed the 9-month parent interview and eligibility criteria, as these were both required in order to be eligible to complete the child assessments. The unweighted unit response rate for child assessments during this phase of data collection was identical to the weighted rate.

According to the National Center for Education Statistics, “both rates are usually similar unless the probabilities of selection and the unit response rates in the categories with different selection probabilities vary considerably” (p. 2, U.S. Department of Education, National Center for Education Statistics, n.d.d.).

Of all eligible participants (i.e., those for whom complete data was collected during the 9-month wave), the weighted unit response rate for child assessment data during the 2-year collection phase was 94.2%, while the unweighted unit response rate was 93.7%. For the preschool data collection phase, the weighted unit response rate was 98.3%, and the unweighted unit response rate during this phase of data collection was 97.9% for child assessments (U.S. Department of Education, National Center for Education Statistics, n.d.d.).

Because the present study used parent and teacher questionnaire data from the kindergarten phases, weighted response rates for these data sources are reported. In the 2006 kindergarten wave, the weighted response rate for parent questionnaire data was
91.8%, and the unweighted response rate was 91.5%. Response rates for teacher questionnaire data from the 2006 wave were conditional on completion of the 2006 parent questionnaire. Both the weighted and unweighted response rates for teacher questionnaire data in the 2006 wave were 100% (Wheeless, Ault, Copello, Black, & Johnson, 2009a). For the 2007 kindergarten wave, the weighted unit response rate for parent questionnaire data was 92.5%, and the unweighted unit response rate was 91.7%. Similar to the 2006 wave, both the weighted and unweighted response rates for the 2007 teacher questionnaire data were 100% (Wheeless, Ault, Copello, Black, & Johnson, 2009b).

Table 1 lists the overall, cumulative response rates for each wave of data collection. Of note, overall cumulative response rates decreased in magnitude with each subsequent wave of data collection, given the decreased numbers of ECLS-B participants who were eligible for each subsequent wave, subsampling of eligible participants for each wave, and elimination of nonresponders. Importantly, while most participants were required to have completed the parent questionnaire portion of the previous wave’s data collection in order to be eligible for all subsequent waves, American Indian/Alaskan Native participants were eligible for the preschool wave if a parent had completed a questionnaire at either the 9-month or 2-year waves. Likewise, American Indian/Alaskan Native participants were eligible for participation in the kindergarten 2006 and 2007 waves if a parent questionnaire was completed at either the 2-year or preschool waves (Wheeless et al., 2009b).

Table 1.

*Overall Unit Response Rates for all ECLS-B Data Collection Phases*
Response Rates

<table>
<thead>
<tr>
<th>Data Collection Phase</th>
<th>Unweighted (%)</th>
<th>Weighted (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-month</td>
<td>76.8</td>
<td>74.1</td>
</tr>
<tr>
<td>2-year</td>
<td>71.3</td>
<td>69.0</td>
</tr>
<tr>
<td>Preschool</td>
<td>65.5</td>
<td>63.1</td>
</tr>
<tr>
<td>Kindergarten 2006</td>
<td>60.8</td>
<td>58.0</td>
</tr>
<tr>
<td>Kindergarten 2007</td>
<td>55.7</td>
<td>53.7</td>
</tr>
</tbody>
</table>


Assessments and Measures

The present study included data from direct child assessments of social and emotional variables, as well as data collected from parent questionnaires. Data were used from the 9-month, 2-year, preschool, and kindergarten 2006 collection periods.

Parental Responsiveness and Clarity

The clarity of parental communication and ability to respond appropriately to children’s cues during infancy was measured using the Nursing Child Assessment Teaching Scale (NCATS). The NCATS is one element of the Nursing Child Assessment Satellite Training (NCAST), a program utilizing multiple assessment measures to evaluate the quality of parent-child interaction during feeding and teaching situations (NCAST, 2009).

During the 9-month data collection, parents were asked to select an activity that was novel to their child, and teach their child to complete the activity. These interactions were videotaped, and the interactions were later coded by trained coders. Codes resulted
in three scores: Total Parent, Total Child, and overall Total. Parents were coded on the clarity of their teaching behaviors, as well as their ability to understand and appropriately react to cues exhibited by their baby, with higher scores indicating higher levels of responsiveness and frequent use of teaching behaviors. Children were coded on how responsive they were to the parent’s teaching behaviors, and how clearly they indicated their needs to the parent. Higher scores on the Total Child scale is evidence of more responsiveness and clarity exhibited by children. Both the Parent and Child scores were summed to create the overall Total score. Thus, higher scores on this measure indicated more responsiveness and ease of interaction between the parent and infant (Flanagan, 2009).

Results of research using the NCATS has indicated satisfactory reliability ratings, including internal consistency as indicated by Chronbach’s alphas ranging from .74 to .80 for the Total Parent score and .69 to .73 for the Total Child score (Magill-Evans, Harrison, & Ogden Burke, 1999). Harrison, Magill-Evans, and Sadoway (2001) report moderate to high Chronbach’s alpha scores for fathers (.67 - .77), and mothers (.74 - .79). Other research using the NCATS reported moderate to high average interrater reliability scores, including percentage agreement ranging from 90.86 to 94.57, Cohen’s kappa values ranging from .69 to .86, and correlations ranging from .61 to .75 (Hodges, Houck, & Kindermann, 2009).

**Attachment Style**

Attachment style was measured using the Toddler Attachment Sort (TAS-45). The TAS-45 is a 45-item card sort measure that assesses attachment style. The TAS-45 was developed specifically for the ECLS-B. This measure was based on the Attachment
Q–Sort (AQS; Waters & Deane, 1985). The AQS is a 100-item measure. Completion of the Q-Sort requires a card sorting procedure, in which the examiner must complete a series of piles using small cards and reorganize these piles in several iterations to measure aspects of attachment. Results of the sort yield four construct scores: security, dependency, sociability, and social desirability.

Meta-analysis of studies using the AQS conducted by Ijenzdoorn, Vereijken, Bakermans-Kranenburg, and Riksen-Walraven (2004) found moderate support for the validity of this measure, and cited modest support for its reliability. Importantly, these findings were found in support of the AQS security score, when the measure was completed by an observer, as opposed to a parent or caregiver (AQS self-report). Convergent validity was supported through a comparison of secure attachment as measured by the AQS and the Strange Situation Procedure. Secure attachment as measured by the AQS was moderately correlated with secure attachment when measured through the Strange Situation Procedure ($r = .31$). Further analysis indicated a weak relationship between AQS attachment security and measures of temperamental reactivity ($r = .16$), indicating discriminant validity of the measure. Predictive validity for AQS security was also garnered by an examination of its association to measures of maternal sensitivity and socioemotional development. Results indicated a strong relationships ($r = .39$). Finally, associations between observer and self-reported AQS and measures of socioemotional development were moderate ($r = .22$), providing additional evidence for the predictive validity of this measure. The researchers indicated a paucity of research examining the reliability of this measure. They identified four studies that examined stability of the measure, and reported a modest combined stability correlation ($r = .28$).
Attachment data for the ECLS-B were collected during the 2-year home visit. Given that several measures were included in this data collection point, it was not feasible to include the AQS, as this measure takes an average of three hours to complete. Instead, a concise measure was created by adapting the AQS. The resulting TAS-45 included 45 items, and required that only four piles be completed. The measure was designed as a laptop application, to be completed by the interviewer following each home visit. Results of the sort produce attachment classification scores consistent with Mary Ainsworth’s Strange Situation procedure (Ainsworth & Bell, 1970). TAS classification scores include Attachment Type A (avoidant), Attachment Type B (secure), Attachment Type C (ambivalent), and Attachment Type D (disorganized; Andreassen, Fletcher, & Park, 2007). Additionally, data from the TAS-45 were used to derive attachment security and attachment dependency scores. These variables were rated on a scale from -1 to 1, with higher levels indicating greater ability on the part of the child to use the caregiver as a secure base (security), and less dependency on the caregiver (dependency; Nord, Edwards, Andreassen, Green, & Wallner-Allen, 2006).

Because it was designed specifically for the study, little psychometric data is available for the TAS-45. Andreassen and colleagues (2007) report results of reliability analysis conducted by an independent consultant and his graduate students, who assisted in the design of the TAS-45 computer application. “Prototypical profiles” were created by the consultant and his students, after viewing simulated home visits depicting the ECLS-B data collection procedures (p. 8-22). The reliability of the ECLS-B interviewers was then measured by determining how accurately the results of their sorting procedures matched the prototypes developed by the consultant and his team.
Results of this reliability analysis indicated 88 percent agreement between interviewers’ classifications and prototype profiles for children identified with Attachment Type B, secure attachment. This attachment style yielded the highest reliability results. Eighty-three percent agreement between interviewer ratings and prototypical classifications was noted for Attachment Type C, ambivalent attachment, and 75 percent for Attachment Type A, avoidant attachment. No reliability was reported for Attachment Type D, disorganized attachment (Andreassen, Fletcher, & Park, 2007).

Construct validity for the TAS-45 is provided by a report of the weighted distribution of attachment classifications derived from the ECLS-B 2-year data collection phase. Andreassen et al. (2007) report weighted distributions equaling 16.27% Avoidant attachment, 61.12% Secure attachment, 8.91% Ambivalent attachment, and 13.46% Disorganized attachment. These results are consistent with the general distribution of attachment style noted in the literature on attachment (Ainsworth et al., 1978).

**Parent and Child Emotion-Related Behavior**

Emotion-related behaviors exhibited by parents and children were measured using observational data collected during the Two-Bags Task (TBT). The TBT was used in the 2-year and preschool data collection waves to measure a variety of parent and child variables, including parent sensitivity, positive regard, cognitive stimulation, negative regard, intrusiveness, and detachment, as well as child engagement, sustained attention, and negativity at two years. Scores obtained during the preschool wave were somewhat modified to adjust for developmental changes, as well as findings that indicated parent sensitivity, positive regard, and cognitive stimulation were highly correlated and could be combined in to one composite score. For this reason, these variables were aggregated in
to one score, supportiveness, for the 2-year phase. For the preschool phase, sensitivity and positive regard were again combined into an aggregate “emotional supportiveness” score. Preschool parent scores also include cognitive stimulation, negative regard, intrusiveness, and detachment. Child scores in the preschool wave included engagement, quality of play, and negativity (U.S. Department of Education, National Center for Education Statistics, n.d.b.).

Like the TAS-45, the TBT was an adaption of an existing assessment, the Three Bags Task, used in the Early Head Start Research and Evaluation Project and in the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care (NICHD Early Child Care Research Network 2004, 2005). During the Three Bags Task, mothers were asked to play on their own with their children for a 7 to 8-minute interval. Mothers were then asked to engage their child in completing a series of three developmentally-appropriate play tasks, encompassing pretend play, joint book reading, and role play using costumes. For instance, when children were 54 months, mothers and their children worked together to use and Etch-A-Sketch to finish a maze, constructing multiple identical block towers, and play with a set of six puppets. Fathers were also observed playing with their children during structured activities designed by the researchers.

Parental sensitivity scores were created from three, 4-point scales (i.e., sensitivity to nondistress, intrusiveness, and positive regard) during Phase I of the data collection, when children were 6 to 24 months of age. During Phase II, when children were 36 months old through first grade, sensitivity scores were also derived from a composite of three 7-point rating scales (i.e., supportive presence, hostility, and respect for autonomy).
Ratings of parental sensitivity when children were 6 to 24 months of age yielded Chronbach’s alpha scores of .75 at 6 months, .70 at 15 months, and .74 at 24 months. Higher internal consistency was noted for Phase II sensitivity ratings, with Cronbach’s alpha scores of .78 at 36 months, .84 at 54 months, and .82 at first grade. High interobserver reliability was also reported between coders, reported as .87 at 6 months, .83 at 15 months, .85 at 24 months, .84 at 36 months, and .88 at 54 months. Ratings of sensitivity were also shown to be fairly stable over time ($r = .64$; NICHD Early Child Care Research Network, 2004, 2005).

Maternal cognitive stimulation was also measured during the observed play sessions. This scale was rated based on the frequency and quality with which mothers engaged their children in activities that were assumed to promote physical, language, perceptual, and cognitive development. Similar to the sensitivity scores, these ratings were based on a 4-point scale during the first phase of data collection, and a 7-point scale during the second phase. Data on this measure suggests moderate to high consistency amongst raters at each time point. Intraclass correlations reported were .81 at 6 months, .69 at 15 months, .71 at 24 months, .78 at 36 months, .86 at 54 months, and .90 at first grade (NICHD Early Child Care Research Network, 2005).

Time concerns were cited by researchers as the reason for the adaptation of the Three Bags Task into the TBT, which shortened administration time from 15 to 10 minutes. The TBT was administered in the child’s home, during the 2-year and preschool home visits. To complete the TBT, the parent and child were asked to play with two bags, each containing differing groups of toys. During the 2-year phase, the first bag (labeled ‘1’) contained a set of toy dishes, and the second bag (labeled ‘2’) contained the book
Good Night, Gorilla by Rathman. The parent and child were asked to play with the bags in numerical order, and were given 10 minutes to play with each bag. The interaction was videotaped by the interviewers and later coded by trained coders (Andreassen et al., 2007).

Coding for each parent and child scale on the TBT was based on a 7-point Likert scale, with one indicating very low, and seven indicating very high levels of each construct, based on coders’ observations of the videotaped interactions between parents and their children. Coding reliability was maintained by the statistics lab, Westat, who was contracted to complete the 2-year data collection phase. Reliability was achieved using a random subsample of videotapes, selected by the coding supervisor. The supervisor and a trained coder would then code the videotape and resolve discrepancies, consulting with a third trained coder if needed. To ensure reliability was maintained over the course of the year in which coding was completed, coders coded one reliability tape each week for the duration of the coding year. The overall average reliability for the year, indicated by percent agreement, for all parent scales was reported to be 96.5%. Average reliabilities for the parent rating scales were 97% for Sensitivity, 98% for Intrusiveness, 93% for Positive Regard, 94% for Cognitive Stimulation, 98% for Negative Regard, and 99% for Detachment. For the child scales, an overall average reliability of 94.7% was reported. For the individual scales, the researchers report average reliability of 94% for Engagement, 93% for Sustained Attention, and 97% for Negativity (Andreassen et al., 2007).

As previously noted, the parent scales of Sensitivity, Cognitive Stimulation, and Positive Regard were combined to form a Supportiveness scale, which represented the
mean of these three scales. The same procedure was performed during the ECLS-B preschool phase. Notably, researchers also investigated the possibility of combining the remaining parent scales. To test the feasibility of this approach, they calculated Chronbach’s alpha to test the internal consistency of the remaining scales. The results yielded a Chronbach’s alpha of 0.73. Despite this moderate consistency, however, the researchers warn that combining the parent scales into an aggregate score may reduce their usability, as these scales were intended to be used separately (Andreassen et al., 2007).

Researchers sought additional support for the validity of the TBT by examining the correlations of parent and child rating scales with scores obtained on the NCATS during the 9-month data collection phase. Low correlations were reported between all scales of the TBT and the NCATS Total score, Total Parent score, and Total Child score. Intercorrelations between TBT Parent and Child scales and NCATS Total, Parent, and Child scores are listed in Table 1 (Andreassen et al., 2007). Although several relationships between TBT and NCATS scores were found to be significant, low correlations indicate these two measures are quantifying distinctly different aspects of parent and child behavior. These differences are likely impacted by the differing developmental level and socioemotional capacities at nine months and two years of age.

Social Skills

Questionnaire data was used to derive a measure of social skills upon kindergarten entry. Items from the Preschool and Kindergarten Behavior Scales-2nd Edition (PKBS-2; Merrell, 1994) were included in the parent, caregiver, and teacher questionnaires during the preschool and kindergarten entry waves to measure a variety of
socioemotional variables (Snow et al., 2009). The PKBS-2 evaluates problem behaviors and social skills in young children, resulting in two scale scores, Problem Behavior and Social Skills. The Social Skills scale is comprised of three subscales: Social Cooperation, Social Interaction, and Social Independence. The Problem Behavior scale includes two subscales: Externalizing Problems and Internalizing Problems. In addition to the PKBS-2, ECLS-B study authors included items from the Social Skills Rating System (SSRS; Gresham & Elliot, 1990), the Early Childhood Longitudinal Study – Kindergarten Class (ECLS-K; U.S. Department of Education, n.d.g.) Social Rating Scale, and the Family and Child Experiences (FACES, U.S. Department of Health and Human Services, n.d.) study. Additionally, two items were developed exclusively for the ECLS-B study (Snow et al., 2009). Because questionnaire items measuring socioemotional skills contained select items from the measures listed above, a confirmatory factor analysis (CFA) was conducted as part of the preliminary analysis in the present study.

Although items from several measures were used to measure socioemotional skills, the majority of items were taken from the PKBS-2. In its full form, the PKBS-2 has demonstrated good psychometric properties through reliability and validity studies. Support for the reliability of the PKBS-2 Social Skill scale is evident in strong ratings of internal consistency for each subscale and total scale score, based on both Cronbach’s Alpha and Spearman-Brown split-half reliability tests. Data from the entire PKBS-2 normative sample indicated Cronbach’s Alpha scores ranging from .88 to .94 for the Social Skills subscales, and .96 for the Social Skills Total score. Split-half reliability scores were also high, ranging from .86 to .92 for subscales and .94 for the Total scale. Short and long-term test-retest reliability tests indicated moderate to strong ratings; for
the Social Skills subscales ratings ranged from .62 to .70, and .58 to .69 for the Social Skills Total score. Interrater reliability was also determined based on ratings completed by a pair of raters (teachers and classroom aides) on 82 preschool children. Interrater reliability scores, measured using Pearson bivariate product-moment correlations, were moderate. Specifically, interrater reliability for the Social Skills subscales ranged from .36 to .61, and the Total scale score was .48. Importantly, reliability tests of ratings across the home and school settings were low to moderate, ranging from .20 to .57 for the Social Skills Total and subscale scores. In general, the PKBS-2 is a reliable measure of young children’s social skills, but ratings across settings are less consistent. The measure appears sensitive to differences in social functioning between the home and school settings (Merrell, 1994).

Validity of the PKBS-2 has also been demonstrated through various studies examining content, internal, convergent, and discriminant validity. Item-total correlations were derived to reflect the correlation between individual items and the total score for their subscales. All Social Skills items were correlated at .32 or higher with their subscales, and the majority of items correlated within the range of .60 to .70. Exploratory factor analysis was used to develop the PKBS-2 subscales. The researchers report a three-factor solution for the Social Skills scale, which explained 54.1% of the total variance. Factor loadings for each item on its respective subscale were all acceptable. Confirmatory factor analyses were conducted following the development of the subscales, and confirmed the stability of the factor structure. Convergent and discriminant validity studies also provide support for the validity of the PKBS-2. For instance, the Social Skills subscales and Total score were shown to have moderate to high significant correlations.
with the Cooperation, Assertion, Responsibility, Self-Control, and Social Skills Total scales of the Social Skills Rating System (SSRS; Gresham & Elliot, 1990). Correlations ranged from .32 to .76. Discriminant validity of the Social Skills scale was supported from comparison with the Social Skills subscales and composite score with the Externalizing Problems, Internalizing Problems, and Total Problems scales of the Teacher’s Report Form (TRF; Achenbach, 1991). In all but two cases (i.e., Social Interaction and Social Independence to TRF Externalizing Problems), PKBS-2 Social Skills scores were significantly and negatively correlated, with a range of moderate to strong correlations (-.36 to -.78). Overall, seven tests of convergent and discriminant validity supported the validity of the PKBS-2 Social Skills Scores (Merrell, 1994).

**Data Preparation**

In order to use data collected from the ECLS-B, the researcher first created a taglist in the ECLS-B database, including all variables of interest in the study as well as relevant demographic variables, and exported this information into SPSS 14.0 Likert scaled variables measuring negativity (i.e., Child Negativity for two year and preschool wave, Parent Negativity to Child for two year wave) were reverse scored so that higher ratings reflected greater levels of positive behavior, consistent with the other Likert-scaled variable included in the model (i.e., Parent Emotion Support). The sample was then narrowed to include participants who entered kindergarten in the 2006 year only. The sample was reduced due to difficulties encountered while attempting to include data from all participants in the CFA (see Appendix for additional information). In this subsample, participants who had missing data from items measuring social skills in the 2006 parent questionnaire were eliminated due to complications with the confirmatory
factor analysis (CFA), as explained in the Results section, below. Data were then exported to the EQS structural equation modeling software (Bentler, 1995) for further analysis.

**Research Questions and Hypotheses**

The following research questions and hypotheses were proposed:

**Research Question #1**

How do early parent responsiveness, child temperament, attachment style, parent socialization regarding emotions, and parent negativity influence the development of prosocial behavior upon kindergarten entry?

**Hypothesis #1**

**Early parent responsiveness.** Parent responsiveness and clarity at nine months is expected to be positively related to attachment style at two years, such that parents who display high levels of responsiveness and clarity will be more likely to have children with secure attachment styles at two years. It is also predicted that parent responsiveness and clarity will be positively related to social competence at kindergarten entry, in that higher levels of parent responsiveness and clarity at nine months will be associated with greater social competence in children when they enter kindergarten.

**Child temperament.** It is hypothesized that parent responsiveness and clarity at nine months will be negatively related to child negativity at two years. Parents who are high in responsiveness and clarity will be more likely to have children who display low levels of negativity at two years. Furthermore, a negative relationship is anticipated between child negativity at two years and prosocial behavior at kindergarten entry. Higher levels of negative behaviors when children are two will be related to lower levels
of prosocial behavior. Furthermore, it is believed that child negativity at two years will be negatively related to attachment at two years. Children who display more negativity at age two will be more likely to demonstrate an insecure attachment style at two years. Additionally, it is hypothesized that preschool child negativity and preschool parent emotion support will be negatively related. Parents of highly negative children will be less likely to offer emotion support than parents of children who display fewer negative behaviors. Finally, a negative relationship is expected between preschool child negativity and prosocial behavior at kindergarten entry. Preschoolers who display high levels of negative behaviors will be less likely to demonstrate prosocial behavior upon kindergarten entry.

**Attachment style.** It is predicted that two-year attachment will be negatively related to child negativity in preschool. Preschoolers who display higher levels of negative behaviors will be more likely to have demonstrated an insecure attachment style at two years. Additionally, it is hypothesized that attachment style at two years will be positively related to preschool parent emotion support. Parents of securely attached children will be likely to display higher levels of emotion support when the child reaches preschool age.

**Parent socialization regarding emotions.** It is hypothesized that preschool parent emotion support will be positively related to prosocial behavior at kindergarten entry. Parents who provide high levels of emotion support to their preschool children will have children who display higher levels of prosocial behavior at kindergarten entry.

**Parent negativity.** Parent negative regard when children are two years old will positively predict child negativity in preschool. Greater levels of negative regard will be
associated with more expressed negativity in the preschool years. Additionally, a negative relationship will be observed between parent negative regard at two years and parent emotion support in preschool. Parents who display higher levels of negative affect when children are two will be less likely to provide emotion support during the preschool years. Finally, a direct, negative relationship will emerge between parent negative regard at age two and prosocial behavior upon kindergarten entry. Parents who display negativity toward their two-year-old children will be less likely to have children who demonstrate prosocial behavior at kindergarten entry.

Research Question #2

Are there differences in the manner in which early parent responsiveness, child temperament, attachment style, parent socialization regarding emotions, and parent negativity influence the development of prosocial behavior upon kindergarten entry for children of differing racial/ethnic backgrounds?

Hypothesis #2

Research question 2 is exploratory in nature, given limited evidence to suggest if and how the relationships between the study variables differ by racial and ethnic groups. It is predicted that the relationships between early parent responsiveness, child temperament, attachment style, parent socialization regarding emotions, and parent negativity will differentially influence the development of prosocial behavior for children identified as White, Black/African-America, Hispanic, or Asian.

Statistical Model

The study used Structural equation modeling (SEM) techniques in order to test the proposed research questions and research hypotheses. Structural equation modeling is a
broad term used to refer to a set of similar statistical techniques, including path analysis, confirmatory factor analysis, and structural regression models. Thus, it is broad-based in nature and can be used to both confirm and explore hypothesized relationships. Another key feature of SEM is its inclusion of both observed and latent variables, which allows for better analysis and description of the impact of interactions between observed variables (Kline, 2011).

Commonly in SEM, a structural regression (SR) model is used, which includes a mix of a structural model common to path analysis, and a measurement model often used in CFA. The combination of structural and measurement models allows the researcher to examine hypotheses based on both observed and latent variables (Kline, 2011). The current research made use of such a model. Figure 2 depicts the structural model that was proposed for the main analysis of the study.

The model depicted in Figure 2 indicates proposed relationships between several exogenous variables, the term used for independent variables in SEM, and endogenous variables, SEM’s term for dependent variables (Kline, 2011). In the structural model, specific relationships were proposed between exogenous and endogenous observed variables. Both bolded and dashed lines are depicted in the model, indicating confirmatory relationships (bolded lines) and exploratory relationships (dashed lines). These proposed relationships were categorized as either confirmatory or exploratory based on the extant literature supporting relationships between these variables (see Model Support, Chapter 2).

Mediation and Moderation
Mediating effects are observed when the relationship between two variables is indirectly altered due to the presence of a third variable. Moderating effects are indicated when the relationship of one variable to another changes as a function of a third variable (Kline, 2011). In the model, it was hypothesized that the relationship between parent responsiveness and clarity in infancy and preschool social competence would be mediated by attachment style, which in turn would be mediated by child negativity and parent emotion support in preschool. Specifically, it was predicted that insecure attachment style in toddlerhood would be related to higher levels of child negativity in preschool, which in turn was predicted to be related to lower levels of social competence at kindergarten entry. Additionally, it was predicted that the relationship between parent negativity and social competence in preschool would be mediated by parent emotion support in preschool, such that high levels of parent emotion support would buffer the negative relationship between parent negativity and lower levels of social competence at kindergarten entry.

Analysis

Data Type

The data that were included in the model were based on continuously scored (i.e., NCATS), likert-scale/ordered categorical (i.e., TBT), and continuous (i.e., attachment security) data. Prior to conducting analysis, the data were screened and examined to determine if the distribution of each of the variables was normal. Transformations were conducted to adjust for non-normality, when necessary. The data were also tested for collinearity and homoscedasticity. Outliers and missing data were examined, and the data were adjusted to account for both of these issues when necessary.
**Estimation Method**

Estimation method is the term used in SEM to describe how the parameter estimates are obtained for a given model. Maximum likelihood (ML) estimation assumes that observations are independent of one another, endogenous variables are multivariate normal, exogenous variables and their disturbances are independent, and the model is correctly specified. Maximum likelihood estimation also assumes that no values are missing from the dataset. When data are normally distributed, the ML estimation method is most commonly used. This is also often the default technique used in SEM computer programs. Because the estimations are derived simultaneously in ML estimation, it is considered a *full information* method. Other methods, such as *partial-information* and *limited-information* techniques, consider equations for each endogenous variable singularly. Maximum likelihood estimation results in the identification of a *discrepancy function*, which indicates discrepancies between the predicted model and the covariances derived from the sample data (Kline, 2011). Due to issues of non-normality and missing data, ML estimation was not used in the study.

As an alternative to ML estimation, a corrected normal theory method was used, which involved using the ML estimation method with the addition of robust standard errors (i.e., standard error estimates assumed to be robust to nonnormality) and corrected test statistics. Corrected test statistics include specific statistics that adjust to correct for the skew of the data (Kline, 2011).

**Alternative Models**

Alternative models present other theoretical ways of conceptualizing the researcher’s proposed model in a non-hierarchical manner. Thus, alternative models
contain the same variables as the original model, but theorize model relationships in different ways. Such models can be compared with the original model using fit index statistics. Usually the AIC, or predictive fit index, is used to compare an alternative model to the original model proposed by the researcher. The model with the smaller AIC value is considered more likely to be replicated in a hypothetical replication of the model using a sample from the same population in which the research sample was drawn. Generally, models with fewer parameters, thus more simplistic, and better predictive fit indexes are preferable in alternative model comparisons (Kline, 2011).

Although numerous alternative models exist for most structural equation models, it is beyond the scope of any research to consider all alternatives (Kline, 2011). Likewise, one alternative model was considered in the proposed research study. The alternative model proposes a bidirectional relationship between Attachment Security and Child Negativity at two years. Unlike the original model, the alternative model does not include direct relationships between Parent Negativity at two years and Child Negativity in preschool, Parent Responsiveness at nine months and Social Skills at kindergarten entry, or Child Negativity in preschool and Social Skills at kindergarten entry. The alternative model is depicted in Figure 4.

**Equivalent Models**

Following the main analysis, an equivalent models was tested. Equivalent models include models that are identical to the research model in terms of fit indices and correlations or covariances. Although mathematically identical, equivalent models were considered in order to provide credence to the superiority of the research model (Kline, 2011). The equivalent model tested against the final model is displayed in Figure 5.
CHAPTER IV
RESULTS

The following chapter contains results for all analyses conducted as part of the current study. Specifically, descriptive statistics are presented for the overall sample, as well as the demographic variables of gender and race/ethnicity. Results of preliminary analyses conducted to screen the data are then provided. Additionally, results of the CFA used to derive a composite social skills rating are reported. Finally, results of analyses that align with each of the proposed research questions are presented.

Descriptive Statistics

The ECLS-B included a sample of 10,700 children born in the United States in 2001. For the current study, data were used for children who entered kindergarten in 2006. After the creation of a taglist in the ECLS-B codebook, data selected for use in the study were imported into SPSS 14.0. Descriptive statistics were derived in SPSS. Of note, due to difficulties with missing data encountered while conducting the CFA children with incomplete data derived from the social skills parent questionnaire items were eliminated from the final sample. Thus, the overall sample used in the current study was smaller than the general ECLS-B sample. The sample used to answer the first research question consisted of 5050 ELCS-B participants (2500 male). The racial/ethnic background of participants included in this sample was as follows: White, Non-Hispanic \((n = 1900)\); Black/African-American, Non-Hispanic \((n = 800)\); Hispanic, race specified \((n = 800)\); Hispanic, no race specified \((n = 300)\); Asian, Non-Hispanic \((n = 600)\); Native Hawaiian/Pacific Islander, Non-Hispanic \((n = 50)\); American Indian/Alaska Native, Non-Hispanic \((n = 200)\); more than one race, Non-Hispanic \((n = 450)\). To answer the second
research question, the proposed model was examined across four of the racial/ethnic groups contained in the overall sample: White, Non-Hispanic; Black/African-American, Non-Hispanic; Hispanic, race specified; and Asian, Non-Hispanic. The means and standard deviations for all study variables are presented in Table 2 for the overall sample, and across the selected racial/ethnic groups.

Table 2

*Descriptive Statistics by Overall Sample and Race/Ethnicity*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall Sample</th>
<th>White, Non-Hispanic</th>
<th>Black/African-American, Non-Hispanic</th>
<th>Hispanic, race specified</th>
<th>Asian, Non-Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Responsiveness&lt;sup&gt;a&lt;/sup&gt;</td>
<td>34.42 (4.61)</td>
<td>35.29 (4.68)</td>
<td>33.63 (4.63)</td>
<td>33.50 (4.49)</td>
<td>34.14 (4.60)</td>
</tr>
<tr>
<td>Child Negativity to Parent&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.37 (0.75)</td>
<td>1.28 (0.66)</td>
<td>1.56 (0.88)</td>
<td>1.45 (0.85)</td>
<td>1.36 (0.77)</td>
</tr>
<tr>
<td>Attachment Security&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.43 (0.36)</td>
<td>0.48 (0.34)</td>
<td>0.39 (0.41)</td>
<td>0.38 (0.35)</td>
<td>0.44 (0.35)</td>
</tr>
<tr>
<td>Parent Negative Regard&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.03 (0.11)</td>
<td>0.17 (0.08)</td>
<td>0.07 (0.15)</td>
<td>0.03 (0.10)</td>
<td>0.04 (0.13)</td>
</tr>
<tr>
<td>Child Negativity to Parent&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.30 (0.69)</td>
<td>1.29 (0.68)</td>
<td>1.36 (0.76)</td>
<td>1.25 (0.60)</td>
<td>1.33 (0.68)</td>
</tr>
<tr>
<td>Parent Emotion Support&lt;sup&gt;c&lt;/sup&gt;</td>
<td>4.39 (0.90)</td>
<td>4.62 (0.84)</td>
<td>4.14 (0.94)</td>
<td>4.20 (0.95)</td>
<td>4.38 (0.85)</td>
</tr>
<tr>
<td>Social Skills Composite&lt;sup&gt;d&lt;/sup&gt;</td>
<td>20.52 (3.11)</td>
<td>20.75 (2.97)</td>
<td>20.48 (3.46)</td>
<td>20.48 (2.98)</td>
<td>19.94 (3.01)</td>
</tr>
</tbody>
</table>


<sup>a</sup>Data for variable collected during 9-month wave
Preliminary Statistical Analysis

To conduct the CFA and main analyses, data were exported from SPSS to EQS 6.1 (Bentler, 1995). EQS was selected to conduct these analyses, given the availability of robust estimation methods and ability to accommodate for missing data (Byrne, 2006).

Confirmatory Factor Analysis

Prior to conducting the main analyses, a confirmatory factor analysis (CFA) was conducted on all parent questionnaire items that were deemed by ECLS-B study authors to measure social skills upon kindergarten entry (Snow et al., 2009). As indicated in chapter three, the CFA was completed due to the inclusion of select items from a variety of commercial and research-based instruments purporting to measure various aspects of socioemotional skills. The CFA model was created based on theoretical and empirical knowledge that suggested each item was measured by one of three possible factors: Social Skills, Behavior Problems, or School Readiness. Authors of the ECLS-B noted that items selected for the social skills questionnaire were intended to measure similar constructs (e.g., prosocial skills, problem behaviors and emotions, approaches to learning, friendships; Snow et al., 2009). Additionally, the theoretical and empirical basis for the measures from which the majority of social skills items were derived (i.e., PKBS-2; Merrell, 1996; SSRS, Gresham & Elliot, 1990) indicates these measures were designed to assess the constructs of social skills, behavior problems, and school readiness.

All items included in the analysis were all measured on a 5-point Likert scale. All negatively worded items were re-coded, such that high scores on all observed variables
indicated high rates of positive behavior. Collinearity was not a concern as the observed variables in the model were weakly to moderately correlated (correlations ranged from -.010 to .499). Inspection of the data indicated that the normality assumption was violated; all variables were negatively skewed (skewness ranged from -.106 to -1.473). Appendix A contains the covariance matrix for all indicator variables included in the CFA model.

The data set contained large amounts of missing data. Due to the violation of normality, presence of missing data, as well as the fact that all variables were categorical rather than continuous, non-normality robust standard error maximum likelihood (MLR) estimation was used to test the CFA model. This estimation method is recommended when using data of this nature in analysis (Kline, 2011). The ECLS-B study’s authors also recommended that robust statistics be used to adjust standard errors given the study’s complex and non-random sampling design (Flanagan, 2009). Listwise deletion was used to eliminate all cases in which data for a variable contained in the model was missing.

All variables were initially specified as categorical in the CFA model. However, the model would not converge due to problems with lack of normality in the distribution of responses for each item. The categorical variables were then re-specified as continuous. Byrne (2006) indicated that this approach is advisable when categorical variables contain five or more categories and variables are not highly skewed, or skewed in opposite directions. Importantly, four variables had skew values larger than 1, thus there was increased risk for falsely inflated Chi-square values, underestimated factor loadings and/or factor correlations, increasingly sensitive error variance estimates, and low standard error estimates. Nevertheless, it was deemed necessary to specify the data as continuous so the model would converge.
With the data specified as continuous, the root mean square error of approximation (RMSEA) value of .055 (90% confidence interval = .054 - .056) indicated the hypothesis of not-close fit could not be rejected, as close fit is associated with a RMSEA value equal to or lower than .04, and the lower bound of the 90% confidence interval falling at or below .05 (Browne & Cudeck, 1993; MacCallum, Browne, & Sugawara, 1996). Similarly, the comparative fit index (CFI) value of .870 suggested poor fit (Bentler, 1990; Sivo, Fan, Witta, & Willse, 2006). Additionally, the high Satorra-Bentler Scaled Chi-square value of 5881.810 ($p = .000$) indicated poor model fit. The effect of Social Skills on all social skill indicator variables was weak, with robust unstandardized coefficient values ranging between .007 and .021. Robust unstandardized coefficient values for indicators on the Behavior Problems factor were similar, ranging from .007 to .026 to. Similar findings also emerged for the School Readiness factor on indicator variables, with robust unstandardized coefficient values falling between .005 and .018. Inspection of the variance accounted for in each indicator by its respective factor ($R^2$) indicated weak to moderate explained variance, with $R^2$ values ranging between .024 and .483 overall. Residual analysis yielded satisfactory results, with an average standardized residual value of .04.

After reviewing the initial indication of fit for the CFA model, modification indices were considered given the mixed results regarding fit. Lagrange statistics indicated that statistically significant decreases in Chi-square would result by allowing two pairs of error terms to covary, specifically “Is angry” and “Has temper tantrums” as well as “Invites other children to play” and “Invited to play by other children.” The author deemed these changes both statistically and theoretically admissible, given the
potential decrease in Chi-square and the fact that both pairs of items measured similar constructs. When these paths were allowed to covary, a statistically significant improvement in Chi-square was observed (Satorra-Bentler Scaled Chi-square = 5254.724, $p = .000$); $\Delta \chi^2(2) = 627.086, p < .01$). Additional fit indices indicated improved fit over the original model, although the CFI still suggested poor fit. Specifically, RMSEA = 0.052 (90% confidence interval = .051 - .054) and CFI = .885 for the final CFA model. Residual analysis again yielded satisfactory results (average standardized residual = .038, see Appendix B for residual values).

The standardized path coefficients for all variables included in the final CFA model are displayed in Table 3, along with the $R^2$, or variance explained by a given factor on a corresponding variable. Given the large number of items included in the CFA, data are displayed in table format, rather than a traditional figure depicting all items and their respective factors.

Table 3

Path Coefficients for Social Skills Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Unstandardized Coefficient $^a$</th>
<th>Standardized Coefficient</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Skills</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invited to play by other children</td>
<td>.007*</td>
<td>.464</td>
<td>.216</td>
</tr>
<tr>
<td>Volunteers to help others</td>
<td>.021*</td>
<td>.667</td>
<td>.445</td>
</tr>
<tr>
<td>Is liked by others</td>
<td>.020*</td>
<td>.569</td>
<td>.324</td>
</tr>
<tr>
<td>Accepts ideas</td>
<td>.020*</td>
<td>.531</td>
<td>.282</td>
</tr>
<tr>
<td>Comforts other children</td>
<td>.021*</td>
<td>.638</td>
<td>.407</td>
</tr>
<tr>
<td>Uses words to describe feelings</td>
<td>.021*</td>
<td>.526</td>
<td>.277</td>
</tr>
<tr>
<td>Invites other children to play</td>
<td>.015*</td>
<td>.589</td>
<td>.346</td>
</tr>
<tr>
<td>Stands up for others’ rights</td>
<td>.020*</td>
<td>.622</td>
<td>.387</td>
</tr>
<tr>
<td>Tries to understand others</td>
<td>.021*</td>
<td>.651</td>
<td>.423</td>
</tr>
</tbody>
</table>
**Behavior Problems**

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Coefficient</th>
<th>T Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is physically aggressive</td>
<td>.026*</td>
<td>.670</td>
<td>.449</td>
</tr>
<tr>
<td>Seems unhappy</td>
<td>.007*</td>
<td>.373</td>
<td>.139</td>
</tr>
<tr>
<td>Angry</td>
<td>.023*</td>
<td>.534</td>
<td>.285</td>
</tr>
<tr>
<td>Acts impulsively</td>
<td>.024*</td>
<td>.506</td>
<td>.256</td>
</tr>
<tr>
<td>Worries about things</td>
<td>.022*</td>
<td>.138</td>
<td>.019</td>
</tr>
<tr>
<td>Is overly active</td>
<td>.024*</td>
<td>.508</td>
<td>.258</td>
</tr>
<tr>
<td>Has temper tantrums</td>
<td>.025*</td>
<td>.625</td>
<td>.391</td>
</tr>
<tr>
<td>Annoys other children</td>
<td>.026*</td>
<td>.672</td>
<td>.451</td>
</tr>
<tr>
<td>Destroys others’ things</td>
<td>.026*</td>
<td>.664</td>
<td>.441</td>
</tr>
</tbody>
</table>

**School Readiness**

<table>
<thead>
<tr>
<th>Skill</th>
<th>Coefficient</th>
<th>T Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shows eagerness to learn</td>
<td>.005*</td>
<td>.631</td>
<td>.399</td>
</tr>
<tr>
<td>Pays attention well</td>
<td>.015*</td>
<td>.592</td>
<td>.351</td>
</tr>
<tr>
<td>Works/plays independently</td>
<td>.018*</td>
<td>.491</td>
<td>.241</td>
</tr>
<tr>
<td>Keeps working until finished</td>
<td>.016*</td>
<td>.559</td>
<td>.313</td>
</tr>
<tr>
<td>Adjusts to new situations</td>
<td>.017*</td>
<td>.563</td>
<td>.317</td>
</tr>
<tr>
<td>Tries new things</td>
<td>.015*</td>
<td>.601</td>
<td>.361</td>
</tr>
<tr>
<td>Shows imagination</td>
<td>.017*</td>
<td>.575</td>
<td>.331</td>
</tr>
</tbody>
</table>

*Robust statistics are reported due to large amounts of missing data and non-normality
*p < .05

As displayed in Table 3, robust unstandardized coefficients for all variables were similar to the original model, with values ranging between .007 and .021 for the Social Skills factor, .007 to .026 for the Behavior Problems factor, and .005 to .018 for the School Readiness factor. All coefficient values were statistically significant at the .05 level, as is often the case with large sample sizes. Variance explained ($R^2$) for all variables was also similar in the final model, with values ranging between .019 to .451 overall. Notably, the variable with the smallest variance accounted for was the same for both models: “Worries about things.”

**Missing Data**

As indicated above, all participants who had missing responses on social skills items for the 2006 parent questionnaire were eliminated from the dataset due to
difficulties encountered with missing data (see Appendix C for additional explanation). Although missing data existed for the remaining dataset on other variables, inspection of missing data patterns indicated data were missing at random (MAR), and thus could be included in the analysis without further adjustments to the data (Kline, 2011).

**Normality**

Data preparation also included examining variables for univariate normality. Inspection of skewness and kurtosis values for all model variables indicated positive skew for Likert variables measuring negativity. Specifically, skewness for Child Negativity to Parent was 2.55 for the 2-year wave, and 3.00 for the preschool wave. Additionally, substantial positive skew (4.60) was noted for Parent Negative Regard in the 2-year wave. Issues with skew were initially ignored, given the planned use of robust estimation methods. However, multiple complications encountered during model testing with EQS prompted the researcher to reconsider data transformations (see Appendix C). Given the substantial positive skew of the Parent Negative Regard variable, a log transformation was performed. Although the transformed variable continued to evidence positive skew, with a skewness value of 3.39, the transformation alleviated complications with EQS and thus allowed for the SEM analysis to proceed.

**Sampling Weights**

As discussed in chapter three, sampling weights were designed for ECLS-B data to adjust for sampling methods, non-response of selected participants, and non-response of participants over time. Additionally, sampling weights were included to allow for generalization of findings to the national population of children born in 2001. A sampling weight variable was selected for the present study based on the guidelines set forth by
ECLS-B authors. That is, the sampling weight was selected based on the highest data wave of interest (i.e., Kindergarten 2006), as well as the data components included (e.g., child and parent interview data; Walston & Flanagan, 2010).

**Correlation Analysis**

Prior to conducting the analyses examining each research question, the bivariate correlations of all variables included in the study were derived to screen for potential collinearity. Table 4 presents bivariate correlations between all study variables.

Table 4

*Bivariate Correlations for Study Variables*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Parent Responsiveness&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.00</td>
<td>-.107**</td>
<td>.114**</td>
<td>-.142**</td>
<td>-.017**</td>
<td>.180**</td>
<td>.093**</td>
</tr>
<tr>
<td>2. Child Negativity to Parent&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.00</td>
<td>-.187**</td>
<td>.293**</td>
<td>.084**</td>
<td>-.088**</td>
<td>-.061**</td>
<td></td>
</tr>
<tr>
<td>3. Attachment Security&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.00</td>
<td>-.085**</td>
<td>-.045**</td>
<td>.081**</td>
<td>.092**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Parent Negative Regard&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.00</td>
<td>.070**</td>
<td>-.098**</td>
<td>-.046**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Child Negativity to Parent&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.00</td>
<td>-.097**</td>
<td>-.034**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Parent Emotion Support&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1.00</td>
<td>.066**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Social Skills Composite&lt;sup&gt;d&lt;/sup&gt;</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Data for variable collected during 9-month wave
<sup>b</sup>Data for variable collected during 2-year wave
Data for variable collected during preschool wave
Composite variable created based on results of confirmatory factor analysis.
**p < .001

As displayed in Table 4, all bivariate correlations were statistically significant. Results indicated small relationships for most variable pairs. An exception was noted for the variables Child Negativity to Parent at two years and Parent Negative Regard at two years, which were moderately correlated.

**Statistical Analyses to Examine Research Questions**

**Research Question #1**

How do early parent responsiveness, child temperament, attachment style, parent socialization regarding emotions, and parent negativity influence the development of prosocial behavior upon kindergarten entry?

**Hypothesis #1**

**Early parent responsiveness.** Parent responsiveness and clarity at nine months is expected to be positively related to attachment style at two years, such that parents who display high levels of responsiveness and clarity will be more likely to have children with secure attachment styles at two years. It is also predicted that parent responsiveness and clarity will be positively related to social competence at kindergarten entry, in that higher levels of parent responsiveness and clarity at nine months will be associated with greater social competence in children when they enter kindergarten.

**Child temperament.** It is hypothesized that parent responsiveness and clarity at nine months will be negatively related to child negativity at two years. Parents who are high in responsiveness and clarity will be more likely to have children who display low levels of negativity at two years. Furthermore, a negative relationship is anticipated
between child negativity at two years and prosocial behavior at kindergarten entry.
Higher levels of negative behaviors when children are two will be related to lower levels of prosocial behavior. Furthermore, it is believed that child negativity at two years will be negatively related to attachment at two years. Children who display more negativity at age two will be more likely to demonstrate an insecure attachment style at two years. Additionally, it is hypothesized that preschool child negativity and preschool parent emotion support will be negatively related. Parents of highly negative children will be less likely to offer emotion support than parents of children who display fewer negative behaviors. Finally, a negative relationship is expected between preschool child negativity and prosocial behavior at kindergarten entry. Preschoolers who display high levels of negative behaviors will be less likely to demonstrate prosocial behavior upon kindergarten entry.

**Attachment style.** It is predicted that two-year attachment will be negatively related to child negativity in preschool. Preschoolers who display higher levels of negative behaviors will be more likely to have demonstrated an insecure attachment style at two years. Additionally, it is hypothesized that attachment style at two years will be positively related to preschool parent emotion support. Parents of securely attached children will be likely to display higher levels of emotion support when the child reaches preschool age.

**Parent socialization regarding emotions.** It is hypothesized that preschool parent emotion support will be positively related to prosocial behavior at kindergarten entry. Parents who provide high levels of emotion support to their preschool children will have children who display higher levels of prosocial behavior at kindergarten entry.
**Parent negativity.** Parent negative regard when children are two years old will positively predict child negativity in preschool. Greater levels of negative regard will be associated with more expressed negativity in the preschool years. Additionally, a negative relationship will be observed between parent negative regard at two years and parent emotion support in preschool. Parents who display higher levels of negative affect when children are two will be less likely to provide emotion support during the preschool years. Finally, a direct, negative relationship will emerge between parent negative regard at age two and prosocial behavior upon kindergarten entry. Parents who display negativity toward their two-year-old children will be less likely to have children who demonstrate prosocial behavior at kindergarten entry.

**Results for Research Question #1**

As indicated in chapter three, sequential equation modeling (SEM) was conducted for the overall model in order to answer the first research question. The entire sample (N = 5050) was included in this analysis. This sample size was sufficient to ensure adequate power (.80) was achieved for the fit indices that were used to test close and not-close fit of the overall model (MacCallum et al., 1996). Repeated complications were encountered during initial attempts to test the proposed model depicted in Figure 2, which reflects the hypothesized relationships between study variables. In particular, the proposed model would not converge when submitted to EQS for analysis. EQS output suggested the Total Parent score of the NCATS (depicted in Figure 2 as 9 month Parent Responsiveness and Clarity), as well as 2-year Parent Negativity were particularly problematic. Attempts to transform both variables were made (see Appendix C). As previously discussed, a log transformation was conducted for the 2-year Parent Negativity variable, and subsequently
alleviated difficulties with severe positive skew. However, attempts to transform the Total Parent NCATS variable did not resolve issues with this variable, and a decision was made to exclude the variable from further analysis.

Given these changes, results of analyses herein refer to the model illustrated in Figure 3. Although these changes allowed for further analysis of the model, continued difficulties with a singular matrix were encountered, and prevented the calculation of robust statistical estimates of model fit. Furthermore, use of weighting variables resulted in repeated EQS system failure. Therefore, weighted results could not be determined.

For the model submitted for analysis, the Likelihood Ratio Chi-square value suggested there was a statistically significant difference between the model and the data, $\chi^2(9) = 5319.013$, $p < .000$. Inspection of fit indices indicated the model fit the data poorly, with RMSEA = .342 (90% confidence interval = .334 - .349) and CFI = .902. Given these findings, modification indices were examined. Results of the Lagrange Multiplier Test suggested improved fit with the addition of a path between 2-year Child Negativity and 2-year Parent Negativity. Given that these variables were purported to measure a similar construct in the child and the parent (Fauth, Brady-Smith, & Brooks-Gunn, 2003), a path was added between these variables, resulting in a hierarchical model. As indicated by Kline (2011), model respecification should be conducted in a cautionary manner when using the automatically-generated Lagrange Multiplier values such as those created in EQS, as this approach capitalizes on chance model improvement.

Fit indices for the hierarchical model yielded a Likelihood Ratio Chi-square value that again suggested there was a statistically significant difference between the model and the data, $\chi^2(7) = 4468.216$, $p < .000$. Examination of the CFI suggested improved
model fit (CFI = .92). However, similar findings were indicated for the RMSEA (.355, 90% confidence interval = .346 - .364). The chi-square difference statistic was used to determine if a statistically significant difference in overall model fit resulted from the addition of the path (Kline, 2011). Results indicated a statistically significant improvement in model fit, $\Delta \chi^2(2) = 850.797, p < .01$. Although not optimal, the hierarchical model indicated improved fit compared to the original model, and thus was used in the examination of path estimates.

Results indicated all path estimates for the overall model were statistically significant. Inspection of path estimates indicated that effect sizes were generally small to moderate (ranging from .048 to .345), but in the hypothesized directions. Specifically, Child Negativity at two years was positively related to Parent Negative Regard at two years. Additionally, negative relationships emerged for Attachment Security at two years and Child Negativity at two years, as well as Attachment Security at two years and Child Negativity in preschool. Attachment Security at two years was positively related to Parent Emotion Support in preschool, while a negative relationship was observed between Child Negativity in preschool and Parent Emotion Support in preschool. Parent Negative regard at two years, Child Negativity in preschool, and Parent Emotion Support in preschool all had a positive effect on Social Skills at kindergarten entry. Path estimates for the overall model are displayed in Table 5.

Table 5

Path Estimates for Overall Model

<table>
<thead>
<tr>
<th>Path</th>
<th>B</th>
<th>SE</th>
<th>β</th>
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</table>

*Indirect Effects*
Attachment Security\textsuperscript{a} – Child Negativity to Parent\textsuperscript{a} & -.435* & .020 & -.320 \\
Child Negativity to Parent\textsuperscript{a} – Parent Negative Regard\textsuperscript{a} & .048* & .002 & .345 \\
Attachment Security\textsuperscript{a} – Child Negativity to Parent\textsuperscript{b} & -.097* & .019 & -.080 \\
Attachment Security\textsuperscript{a} – Parent Emotion Support\textsuperscript{b} & .177* & .024 & .111 \\
Child Negativity to Parent\textsuperscript{b} – Parent Emotion Support & -.174* & .020 & -.131 \\

\textit{Direct Effects} \\
Child Negativity to Parent\textsuperscript{b} – Social Skills\textsuperscript{c} & -.187* & .070 & -.041 \\
Parent Emotion Support\textsuperscript{b} – Social Skills\textsuperscript{c} & .263* & .053 & .077 \\
Parent Negative Regard\textsuperscript{a} – Social Skills\textsuperscript{c} & -1.368* & .453 & -.048 \\

\textit{Note.} B = unstandardized estimate. SE = standard error of the estimate. $\beta$ = standardized estimate. \\
\textsuperscript{a}Data for variable collected during two-year wave \\
\textsuperscript{b}Data for variable collected during preschool wave \\
\textsuperscript{c}Data for variable collected during 2006 kindergarten entry wave \\
*p < .05

\textbf{Alternative models.} When a researcher compares a model to another that is not hierarchically related, but includes the same variables, this model is considered an alternative model (Kline, 2011). As was discussed in chapter three, comparison of alternative models was planned following testing of the proposed study model. A model that included a bidirectional relationship between Attachment Security and Child Negativity at two years was introduced for consideration. Additionally, the alternative model differed from the original in that it did not include relationships between Parent Negativity at two years and Child Negativity in preschool, Parent Responsiveness at nine months and Social Skills at kindergarten entry, and Child Negativity at two years and
Social Skills at kindergarten entry (see Figure 4). However, as was encountered during testing of the proposed model, this model could not be tested, as it would not converge given issues experienced with the Parent Responsiveness variable. Therefore, it was not possible to further compare the fit of this and the original model.

Equivalent models. Equivalent models refer to models with identical covariances and fit statistics, but have paths that are configured differently from the original model (Kline, 2011). In chapter three, it was indicated that equivalent models would be evaluated and compared to the original model. The equivalent model that was considered is displayed in Figure 5. Issues with nonconvergence were again encountered when this equivalent model was submitted to EQS for analysis. Thus, a comparison was not possible and this model was excluded from further consideration.

Research Question #2

Are there differences in the manner in which early parent responsiveness, child temperament, attachment style, parent socialization regarding emotions, and parent negativity influence the development of prosocial behavior upon kindergarten entry for children of differing racial/ethnic backgrounds?

Hypothesis #2

Research question 2 is exploratory in nature, given limited evidence to suggest if and how the relationships between the study variables differ by racial and ethnic groups, as discussed in chapter two. It is predicted that the relationships between early parent responsiveness, child temperament, attachment style, parent socialization regarding emotions, and parent negativity will differentially influence the development of prosocial behavior for children identified as White, Black/African-American, Hispanic, or Asian.
Results for Research Question #2

To answer the second research question, the overall model was tested across four groups based on racial/ethnic status. Specifically, the model was compared to four subsamples taken from the overall sample used to test the first research question. The following racial/ethnic groups were compared: White, Non-Hispanic; Black/African-American, Non-Hispanic; Hispanic; and Asian, Non-Hispanic.

**White, non-Hispanic.** For the White, Non-Hispanic group, adequate power (.80) was achieved for tests of close and not-close fit, given the sample size (n = 1900; MacCallum et al., 1996). As in the main analysis, it was not possible to apply the weight variable with this sample, as the weighted model would not converge and resulted in a forced shut down of the EQS system. Analysis was therefore conducted with the unweighted sample. Results suggested that a statistically significant difference between the model and the data, $\chi^2(7) = 2031.593$, $p < .000$. Additional fit indices indicated poor fit (RMSEA = .388, 90% confidence interval for RMSEA = .374 - .402; CFI = .898). Path estimates for this group are displayed in Table 6. Results indicated that estimates for the White, Non-Hispanic group were similar to estimates for the overall model, with one exception. In the White, Non-Hispanic group, the path estimate for Attachment Security at two years and Parent Emotional Support in preschool was not statistically significant ($B = .046$, $SE = .034$, $ns$). Consistent with results for the overall model, the relationships between all study variables were in the hypothesized directions. Also consistent with the overall model, effect magnitudes between variables were small to moderate.

**Black/African-American, non-Hispanic.** For the Black/African-American, Non-Hispanic group, the unweighted sample size (n = 784) was smaller than necessary to
achieve adequate power (.80) for tests of close and not-close fit (MacCallum et al., 1996). However, use of weights for the analysis was not possible, as the model would not converge and resulted in EQS system shut down when the weight variable was applied. Therefore, analysis proceeded with the unweighted sample. Results of model analysis indicated a statistically significant difference between the data and the specified model, $\chi^2(7) = 537.265, p < .000$. Further examination of fit indices revealed moderate (CFI = .948) to poor fit (RMSEA = .311, 90% confidence interval for RMSEA= .289, .333).

Table 6 also contains path estimates for this group. Path estimates for the Black/African-American, Non-Hispanic group were consistent with overall model results, with two exceptions. Nonsignificant estimates emerged for Attachment Security at two years and Child Negativity in preschool (B = -.078, ns), as well as Child Negativity in preschool and Social Skills at kindergarten entry (B = -.283, ns). Effect sizes for statistically significant paths were also small to moderate, similar to the results obtained for the overall model and the White, Non-Hispanic group.

**Hispanic.** For the Hispanic group, the unweighted sample size (n = 780) was also smaller than necessary to achieve adequate power (.80) for tests of close and not-close fit (MacCallum et al., 1996). As encountered in analyses of other groups, the use of weights for the analysis was not possible, as the model would not converge and resulted in EQS system shut down when the weight variable was applied. Therefore, analysis of the Hispanic group was also conducted with the unweighted sample. For the Hispanic group, and consistent with other groups, results indicated a statistically significant difference between the data and the specified model, $\chi^2(7) = 569.355, p < .000$. Additional fit indices suggested moderate (CFI = .947) to poor fit (RMSEA = .321, 90% confidence interval for
RMSEA = .299, .343). Path estimates for the Hispanic group are also displayed in Table 5. Nonsignificant estimates resulted for three paths in the model. Specifically, no relationship was found between Attachment Security at two years and Parent Emotion Support in preschool (B = .113, SE = .068, ns), Attachment Security at two years and Child Negativity in preschool (B = -.055, SE = .043, ns), and Parent Negative Regard at two years and Social Skills at kindergarten entry (B = .476, SE = 1.196, ns). The directions of all statistically significant path estimates were consistent with results obtained with the overall model, as well as the White, Non-Hispanic, and Black/African-American, Non-Hispanic groups. Effect sizes for statistically significant paths were small to moderate, also similar to results obtained with the overall model, White, Non-Hispanic, and Black/African-American, Non-Hispanic groups.

**Asian, non-Hispanic.** The size of the sample for the Asian, Non-Hispanic group (n = 620) was also insufficient for adequate (.80) power size for tests of close and not-close fit (MacCallum et al., 1996). As in previous analyses, the model would not converge, and the EQS system shut down. Thus, it was not possible to proceed with weighted analysis, and the unweighted sample was used. For this group, results indicated a statistically significant difference between the data and the specified model, $\chi^2(7) = 551.640, p < .000$, as was observed in the overall model and other racial/ethnic groups studied. Further examination of fit indices indicated poor fit (RMSEA = .355, 90% confidence interval for RMSEA = .330, .380; CFI = .919). Table 6 also includes path estimates for the Asian, Non-Hispanic group. Estimates were again in the hypothesized directions, with the exception of the relationship between Child Negativity in preschool and Social Skills at kindergarten entry (B = .530, SE = .236, p < .05). Unlike the overall
model and other racial/ethnic groups, there was a small, yet statistically significant relationship between these factors for the Asian group. All other statistically significant relationships were in the same direction as results for the overall model and other racial/ethnic groups. Effect sizes were small for all statistically significant relationships. Three path estimates were not statistically significant in the Asian group. Specifically, no relationship emerged between Attachment Security at two years and Parent Emotion Support in Preschool (B = .002, SE = .078, ns), Parent Emotion Support in Preschool and Social Skills at kindergarten entry (B = -.085, SE = .190, ns), and Parent Negativity at Two Years and Social Skills at kindergarten entry (B = -1.376, SE = 1.152, ns).

Table 6

<table>
<thead>
<tr>
<th>Indirect Effects</th>
<th>White</th>
<th>Black/African-American</th>
<th>Hispanic</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attach Sec(^a) – Ch Neg(^a)</td>
<td>-.249</td>
<td>-.327</td>
<td>-.329</td>
<td>-.382</td>
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<tr>
<td>Ch Neg(^a) – Prt Neg(^a)</td>
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<td>.456</td>
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<td>.312</td>
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<td>-.058</td>
<td>-.048</td>
<td>-.135</td>
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<td>Attach Sec(^a) – Prt Emo Sup(^b)</td>
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<td>.106</td>
<td>.063</td>
<td>.001</td>
</tr>
<tr>
<td>Ch Neg(^2) – Prt Emo Sup(^2)</td>
<td>-.169</td>
<td>-.166</td>
<td>-.099</td>
<td>-.112</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Direct Effects</th>
<th>White</th>
<th>Black/African-American</th>
<th>Hispanic</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch Neg(^b) – Soc Skls(^c)</td>
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<td>-.062</td>
<td>-.028</td>
<td>.120</td>
</tr>
<tr>
<td>Prt Emo Sup(^b) – Soc Skls(^c)</td>
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<td>.122</td>
<td>.116</td>
<td>-.024</td>
</tr>
<tr>
<td>Prt Neg(^a) – Soc Skls(^c)</td>
<td>-.048</td>
<td>-.104</td>
<td>.016</td>
<td>-.058</td>
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</table>

\(^a\)Data for variable collected during two-year wave
\(^b\)Data for variable collected during preschool wave
Data for variable collected during 2006 kindergarten entry wave

Table 7

Unstandardized Path Estimates for Model by Racial/Ethnic Groups

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Black/African-American</th>
<th>Hispanic</th>
<th>Asian</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Unst.</td>
<td>SE</td>
<td>Unst.</td>
<td>SE</td>
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<td><strong>Indirect Effects</strong></td>
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<td></td>
</tr>
<tr>
<td>Attach Sec(^1) – Ch Neg(^1)</td>
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<td>.027</td>
<td>-.523*</td>
<td>.060</td>
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<tr>
<td>Ch Negt(^1) – Prt Neg(^1)</td>
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<td>.003</td>
<td>.078*</td>
<td>.006</td>
</tr>
<tr>
<td>Attach Sec(^1) – Ch Neg(^2)</td>
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<td>.028</td>
<td>-.078</td>
<td>.053</td>
</tr>
<tr>
<td>Attach Sec(^1) – Prt Emo Sup(^2)</td>
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<td>.034</td>
<td>.178*</td>
<td>.064</td>
</tr>
<tr>
<td>Ch Neg(^2) – Prt Emo Sup(^2)</td>
<td>-.207*</td>
<td>.029</td>
<td>-.206*</td>
<td>.047</td>
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<tr>
<td><strong>Direct Effects</strong></td>
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<td></td>
</tr>
<tr>
<td>Ch Neg(^2) – Soc Skls(^3)</td>
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<td>-.283</td>
<td>.177</td>
</tr>
<tr>
<td>Prt Emo Sup(^2) – Soc Skls(^3)</td>
<td>.292</td>
<td>.086*</td>
<td>.449*</td>
<td>.142</td>
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<tr>
<td>Prt Neg(^1) – Soc Skls(^3)</td>
<td>-1.830</td>
<td>.952</td>
<td>-</td>
<td>.881</td>
</tr>
</tbody>
</table>

\(^a\)Data for variable collected during two-year wave
\(^b\)Data for variable collected during preschool wave
\(^c\)Data for variable collected during 2006 kindergarten entry wave

*p < .05
CHAPTER V
DISCUSSION

This study was the first of its kind to examine the relationships between aspects of temperament, attachment, emotion regulation, and parenting behaviors in the formation of social competence using a nationally representative, prospective sample. The following chapter provides a detailed explanation of the results, as well as discussion regarding the results in light of current empirical work focused on the constructs of interest. Additionally, implications and limitations of the findings are presented, as well as directions for future research.

Summary of Results

This investigation made use of a nationally representative, longitudinal birth cohort study to investigate the relationship between various aspects of child and parent behavior, emotionality, and attachment in the early development of social competence. First, the relationships between early parent responsiveness, child temperament, attachment style, parent support of emotions, and parent negativity in the formation of prosocial behavior at kindergarten entry were examined. Results of this initial aim of the study indicated that factors such as temperament, parent emotional support and expressed negativity, as well as attachment, had a small to moderate impact on the development of social skills.

Findings were in accordance with hypothesized relationships between study variables. Specifically, results indicated that children who displayed high levels of anger or dislike toward their parent at age two in turn had parents who displayed a greater degree of anger toward, or rejection of, the child at this age. Additionally, at two years,
children who showed higher levels of attachment security demonstrated lesser amounts of negativity toward their parent. The association between attachment security and child negativity toward the parent extended into the preschool years, with findings again suggesting a negative association between these factors, although this relationship was weaker than was found at two years. Early child negativity was also shown to have a small, yet significant, effect on social skills in that children displaying greater levels of negativity toward the parent in preschool were rated as having lower social skills when they reached kindergarten entry.

Further findings supported hypothesized relationships between attachment and parental support of emotions in the development of social skills. For instance, results indicated that children who displayed higher levels of attachment security at two years had parents who in the preschool years responded more consistently to the needs of the child and were rated as being more supportive in their physical and emotional efforts towards assisting the child in times of distress. Increased levels of consistent, emotionally responsive parental behavior were also associated with higher levels of social skills at kindergarten entry. In contrast, parental negativity was shown to have a detrimental effect on social skills development. Parents who displayed higher levels of anger toward or rejection of the child at two years had children who displayed lower levels of social competence at kindergarten entry.

An additional aim of the study explored whether the relationships between child temperament, parent negativity, parent support of emotions, and attachment would differ across various cultural and ethnic groups. Although little research has explored cultural differences in constructs such as temperament, attachment, and emotion-related parent
behavior, group differences were expected based on theory that suggests culturally-based differences influence socioemotional development (Rothbaum & Rusk, 2011; Stainton, 2001).

Findings indicated that the early development of social skills was influenced by these factors similarly across White, Black/African-American, Hispanic, and Asian groups. However, some notable differences emerged. Overall analyses indicated the hypothesized relationships between study variables were stronger for Black/African-Americans and Hispanics as compared to Whites and Asians. For the cultural/ethnic group studied, relationships between the factors of interest in the study were generally consistent with results obtained for the overall sample, and likewise were in accordance with the predicted relationships proposed. However, in the Asian group, a positive relationship emerged between anger and hostility displayed toward the parent in preschool and social skills at kindergarten entry. This finding was not evident for the other groups, in which the relationship between these factors was extremely weak or insignificant.

Additional findings indicated other relationships between variables of interest were insignificant for select racial/ethnic groups. For Blacks/African-Americans and Hispanics, attachment security at two years did not have an effect on the amount of negativity a child displayed toward the parent in preschool. In contrast, results suggested there were small, negative associations between these factors for Whites and Asians. Further, while overall findings indicated that children who were more securely attached at two years had parents who displayed greater amounts of emotional support in preschool, support for this relationship emerged only for Blacks/African-Americans when
groups were compared. Findings also indicated there was no relationship between parent support of emotions in preschool and social skills at kindergarten entry for Asians, while these factors were positively, although weakly, related in other groups. Finally, greater levels of negativity toward or rejection of children displayed by parents at two years were related to lower social skills ratings at kindergarten entry only for Blacks/African-Americans. This relationship was not significant in the other groups.

Importantly, these results should be interpreted in a cautionary manner, as small to moderate relationships emerged between all variables of interest in the study. Nevertheless, such findings are consistent with other work examining similar ECLS-B variables. For instance, Bronte-Tinkew, Scott, and Horowitz (2009) reported small effect sizes for the impact of fathers’ pregnancy intentions on attachment security. Additionally, research by Gibson-Davis and Gassman-Pines (2010) cited small to moderate effect sizes for the relationship between family structure and factors derived from the Two Bags Task, including Child and Parent Negativity. Further, caution must be taken in interpreting the results of group comparisons, as low sample sizes for the Black/African-American, Hispanic, and Asian groups call into question the reliability of the results for these groups. It is possible that with larger sample sizes for each of these groups, relationships that were found to be insignificant in the current analysis may indeed be significant.

Results must also be interpreted with caution in light of several data-based issues encountered throughout the analysis. As was described in chapter four, one result of these issues was the revision of the structural model. Parent Responsiveness was removed from the model, preventing further exploration of the effect of this construct on social
development. Moreover, initial inspection of model fit indicated the model fit the data poorly. For this reason, a path was added between Child Negativity at two years and Parent Negativity at two years. Although relative model fit improved somewhat, fit indices continued to suggest the model fit the data poorly. Of note, particularly poor results were indicated for the RMSEA, while the CFI value, although below the recommended cutoff value (Hu & Bentler, 1999), was consistent with values obtained in research employing similar sample sizes (Kohen, Leventhal, Dahinten, & McIntosh, 2008). The contrast in RMSEA and CFI values suggests there is a source of unidentified error within the structural model. Analyses to identify the source of this error are outside the range of the current investigation, but warrant further analysis in future work.

Weighted analyses were planned as part of the current study, in order to account for sampling biases and missing data. However, weighted analysis of the model could not be completed, as the addition of the weighting variable led to repeated EQS system failure. Additional analyses aimed to investigate the relative fit of alternative and equivalent models, as is advised by Kline (2011). However, data-based issues that are beyond the scope of this study prevented the completion of hypothesis testing for these models. As a result, comparison of alternative and equivalent models could not be completed.

Conclusions

Child-Parent Attachment and Emotionality

The present study explored emotion regulation, in particular child negativity, as well as parent emotionality and support of children’s emotional expression during the early childhood period. Extant research associates early expressed emotion, considered
evidence of temperament, with the formation of maladaptive attachment styles (e.g., van Bakel & Riksen-Walraven, 2002). Results of the current study support this proposition, in that child negativity expressed at two years was related to lower attachment security at two years. Additional findings provided some support of previous work that suggests there are long-term effects of attachment on social and emotional competence. Work such as that of Berlin and Cassidy (2003) identified insecure attachment styles in children whose parents were overly controlling or overly permissive regarding emotional expression. The current findings suggest that while positive, the magnitude of the relationship between attachment security at two years and parent emotional support in the preschool years was small. Similarly, findings revealed a negative, yet negligible, relationship between attachment security at two years and child negativity in the preschool years. These results marginally support previous research that links insecure attachment to poor emotion regulation in the preschool years (Dugan, 2007).

Additional results of the present study add to the literature surrounding the relationship between early parent and child emotion-related behaviors. Studies of toddler-parent dyads suggest that children who exhibit high levels of negative emotions benefit from warm, complementary responses provided by parents or caregivers (Eisenberg et al., 2001; Pauli-Pott & Bettina, 2008). In contrast, higher levels of negative emotional expression are observed in children whose mothers frequently display negative emotion (Feng et al., 2008). Likewise, results of the current study support a positive relationship between child negativity expressed at two years, and concurrent levels of negativity expressed in parents. However, findings suggest that early parent negativity has little long-term effect on social skills when children enter kindergarten, as this relationship was
found to be negligible in the model. Moreover, results of the analysis align with research suggesting parent support of children’s emotional expression leads to lower levels of negative emotion expressed by children (e.g., Stright et al., 2008), although the relationship of these constructs in the present study was small in magnitude.

**Emotionality and Social Competence**

In general, findings of the current study yielded small effect sizes for the constructs studied and their relationship with social skills at kindergarten entry. The study is among the first of its kind to examine the direct, long-term effects of parent negativity during the toddler period on social skills at kindergarten entry. Although small in magnitude, a negative relationship emerged for these constructs, in that higher levels of parent negativity were associated with lower levels of social competence. These findings support similar research linking maternal negativity in toddlerhood with preschool externalizing problems (Rubin et al., 2003).

Additionally, previous research suggests that difficulties with emotion regulation in the preschool years hinders the formation of positive social relationships with peers later in childhood (Denham et al., 2002; Denham et al., 2007). Findings of the current study provided some support of this assertion as child negativity in preschool was weakly related to social skills at kindergarten entry. Finally, findings of the current investigation align with previous results suggesting a positive association between parental efforts to support their children’s emotional expression and positive social skills (Spinrad et al., 2007). Study findings indicated a small, yet positive, relationship between parent emotion support at preschool and social skills at kindergarten entry. These findings also extend extant research examining similar parent and child behaviors concurrently, and when
children have reached school age (e.g., Eisenberg et al., 2001). Specifically, current results suggest that parents’ support of emotional expression is influential in the preschool years, and may continue to have a positive impact as children reach school age.

**Racial/Ethnic Differences**

The second aim of the present study was to examine how the relationships between study variables inform the development of social skills across different racial/ethnic groups. Examination of racial and ethnicity-based differences in parent and child relationships and the development of socioemotional competence is an area that has received little attention in the literature until late. Some researchers have suggested that parenting behaviors related to social and emotional development are influenced by cultural views of the self (Rothbaum & Rusk, 2011). The results of the current research add to this literature by identifying potential culturally-based differences in parent and child behavior within the context of the United States.

When the model was compared across White, Black/African-American, Hispanic, and Asian groups, differences emerged in the magnitude and significance of relationships between constructs studied. For instance, differences were noted in the role of attachment across groups. The relationship between attachment security and child negativity at two years was moderate and negative for all four groups, consistent with overall model findings. However, the relationship between attachment security at two years and child negativity in preschool was not significant for the Black/African-American and Hispanic groups, while this relationship was similar to the overall model for the White and Asian groups. These findings suggest that for Black/African-American and Hispanic American children, the influence of attachment security on negative emotional expression may
dissipate by the preschool years. Yet another difference resulted for the relationship between attachment security at two years and parent emotion support in preschool. This relationship, which was positive and significant for the overall model, was insignificant for all but the Black/African-American group. These results align with work by Garner (2006) which highlighted associations between sensitive, warm responding among African American mothers and social and emotional competence in children. However, the findings call into question whether the degree to which a child forms a secure base with the caregiver influences parental support of the child’s experience and expression of emotion into the preschool years.

Additional noteworthy differences emerged for variables that were purported to have a direct effect on social skills upon kindergarten entry. For instance, the association between child negativity in preschool and social skills upon kindergarten entry was not significant for the Black/African-American and Hispanic groups, but was for the White and Asian groups. Further, the relationship between these constructs was negative for the White group, and positive for the Asian group. It is possible that the discrepancy in these findings can be attributable to differences in parents’ approach to the teaching of social skills. Harkness, Super, and Mavridis (2011) suggest that in Asian cultures, such as Japan, Taiwan, and China, direct instruction of social skills is emphasized, and negative responses are viewed as teaching opportunities. Thus, it is possible that in the current sample, children who displayed greater levels of negative emotionality in preschool were in turn provided with greater amounts of direct instruction concerning social skills, and as a result were rated higher on social skills at the time they entered kindergarten. Of note, however, the relationship between parent emotion support in preschool and social skills
at kindergarten entry was not significant in the Asian group, while a positive, significant relationship between these variables resulted for the other groups.

A final difference that resulted when the model was tested across groups was the relationship between negativity expressed by parents at two years and social skills upon kindergarten entry. In the overall model a small, yet significant, negative relationship resulted between these variables. However, among the groups studied, the relationship between these variables was not significant for any groups except the Black/African-American group. This finding suggests that parent negativity may have a lasting, detrimental effect on the child’s development of social skills when he or she reaches school age among Black/African-American children only. In contrast, parent negativity may have little effect on social skills among White, Hispanic, and Asian children.

Together, these findings expanded extant research concerning differences between racial and cultural groups regarding the development of social and emotional skills. In particular, this study was the first known to examine these differences within a sample of children born in the United States. Results highlight important aspects of child rearing within and across cultures that warrant additional study, as will be discussed later.

**Limitations**

Several noteworthy limitations must be addressed in light of the results discussed above. One remarkable limitation to the present research was the use of singular measures as indicators of several constructs studied. Particularly, the measurement of parent responsiveness, child and parent negativity, attachment, and parent emotion support was based on a singular observation conducted by an ELCS-B field researcher. Therefore, these measurements reflected only the behaviors exhibited during parent-child
interactions observed within the relatively short observation period. Additionally, low
levels of negative emotional expression were evident for the majority of parents and
children studied, as the Child Negativity and Parent Negativity variables were positively
skewed. The degree of positive skew for the Parent Negativity variable was such that a
transformation was required, which decreased skew but did not normalize the variable.

Additionally, the Parent Responsiveness variable, while normally distributed, led
to unidentifiable issues when entered into the model, as the model would not converge
when it was included, and the EQS system frequently shut down. Thus, this variable had
to be removed from the analysis. The exclusion of this factor is a major limitation, as
early parent responsiveness and warmth have been associated with positive social and
emotional outcomes (Belsky et al., 1991; Kochanska et al., 2008; Pauli-Pott & Bettina,
2008).

Yet another limitation concerns the derivation of the social skills composite
variable. Items included in the parent and teacher questionnaires purported to measure
social skills were drawn from several instruments, thus the CFA was conducted to
identify those items loading on the social skills construct. Due to issues encountered
while conducting the CFA, the final model was tested using data from children entering
kindergarten in 2006, for which no data was missing on any of the social skills items.
Thus, the sample excluded data on social skills provided by teachers of children entering
kindergarten in 2006, as well as parents and teachers of children entering kindergarten in
2007. This led to a substantial decrease in the study’s sample size. It is possible that
group differences may exist between children who were included in the sample and
children who were eliminated due to missing data.
An additional, significant limitation lies in the fact that the weighted analysis could not be conducted for the overall model or the model tested across racial/ethnic groups. As was previously discussed, models would not converge when the weight variable was applied, frequently resulting in a forced shut down of the EQS system. This is a major limitation, as the weight variables were included in order to adjust for the ECLS-B sampling procedures (i.e., use of primary sampling units and oversampling of minority populations), as well as nonresponse of participants in prior data collection waves. Thus, the results of the research cannot be generalized to the entire population of children born in the United States in 2001. Furthermore, it is likely that different results regarding model fit and path estimates would have been obtained from weighted analyses.

The ECLS-B contains multiple demographic variables from which race/ethnicity can be derived for a given case. For the present study, race/ethnicity was based on parent report. Although parent report of racial/ethnic status was favored over classifications based on birth certificate data, there are limitations inherent in using a singular method of racial and ethnic identification. One such limitation is the study did not take into account how long the child’s parents were living in the United States prior to the child’s birth, nor did it control for immigrant parents’ perceived level of acculturation into American culture (e.g., parenting practices). Research by Kolobe (2004) indicated differences in nurturing, simulating, and responsive parenting among Mexican-American mothers, in that mothers who identified themselves as bicultural reported greater use of these behaviors compared to those who did not identify as bicultural. Findings such as these support the need for future research to examine cultural differences in parent emotion-
related behavior that address levels of acculturation with mainstream culture and accommodate for potential transiency in cultural identification.

**Future Directions**

Although several factors limit the applicability of the current investigation, results suggest that further examination of similar models is warranted in other samples. Importantly, future research should include more comprehensive measures of factors such as temperament, attachment, emotion regulation, and parent behavior related to emotion. Such measures should include both observational and informant report data, as the current study highlighted limitations in the scope of singular observational samples when examining negative emotionality. Although issues pertaining to the use of teacher questionnaire data were beyond the scope of the current investigation, future research should include both parent and teacher report of social competence, especially when children reach preschool and school age, given the multitude of opportunities for observing social behavior within the school environment. Additionally, future endeavors should examine the impact of early child and parenting behaviors on social development beyond kindergarten entry. Such research will address large gaps in the literature, as few studies have explored these relationships across the early childhood-school age divide.

Results regarding model differences across the racial/ethnic groups studied also provide evidence of the need for continued research in this area. More research is needed to investigate the positive relationship between child negativity in preschool and social skills at kindergarten entry that was found for the Asian group. Similarly, additional research should investigate why select relationships studied were not significant for certain racial/ethnic groups, but were significant for others. Differences such as these
may be attributable to elements of parenting practice or cultural beliefs related to socioemotional development that were not addressed by the factors included in the model.

Perceptions of culture vary widely and can include place of origin, racial makeup, SES, and current place of residence. It would be beneficial to conduct additional investigations that further explore cultural differences in early child and parent behaviors related to emotional and social development across various dimensions of culture. Although it has been speculated that cultural differences in parenting practices related to emotion vary according to western and eastern orientations and views of the self (Rothbaum & Rusk, 2011), it is possible that within the westernized culture of the United States, cultural differences have a large impact on how parents respond to and foster their child’s emotional and social development. Findings of the present study suggest this is the case, and provide a starting point from which additional research should follow.

**Implications for the Practice of School Psychology**

The results of this research support early efforts to promote social and emotional skills in young children. Intervention programs should include a parent training component that supports parents’ use of effective strategies for supporting emotional development in their children, as results indicated that early efforts to support emotionally competent behavior were related to prosocial behavior as children entered kindergarten. In addition to parent training, additional research is needed to test the viability of programs that focus on teacher behavior, including teachers’ use of practices that support the establishment of healthy attachments in the classroom environment, as well as provide support of children’s emotional expression and regulation. Because
previous research has linked deficits in emotion regulation and social competence to conduct problems and the development of antisocial behavior (e.g., Coolahan et al., 2000; Miller et al., 2006), it is vital that interventions such as these are implemented to support effective emotional and social functioning in children early in life.

A small number of intervention programs have been established to address both parent and teacher practices regarding children’s social and emotional development (e.g., Webster-Stratton & Hammond, 1997). However, findings of the current research highlight a missing element of extant intervention programs designed for early childhood populations. In particular, the results identified culturally-based differences in the groups studied. Findings from the current study and theories regarding similar constructs suggest that cultural differences influence the way in which parents view appropriate emotional expression and foster this in their children. Furthermore, results suggest that elements of early child emotionality and the manner in which parents regard emotions may function differently across groups, yet all lead to the development of prosocial behavior at school entry. Nevertheless, intervention packages designed to address early socioemotional development often follow a “one-size-fits-all” approach, ignoring potential cultural bias that may deter or hinder parents’ application of the intervention, and in turn, prevent the advancement of children’s emotional and social capabilities. Thus, additional research is warranted in the development of culturally-sensitive interventions to address social and emotional development.

Given their training in social and emotional development in children, school psychologists are poised to serve as leaders in the development and testing of such programming in early childhood settings. School psychologists can support collaborative
efforts between parents and early childhood educators to ensure that practices are implemented in a consistent manner across environments. Additionally, they can provide valuable information to both parents and teachers regarding normative social and emotional development, and offer guidance on the use of emotionally supportive techniques. Notably, the results of this research suggest that efforts made by parents very early in their child’s life had a long-term impact on socioemotional development. Thus, there is a need for school psychologists to partner with organizations providing support to infants and toddlers, rather than initiating interventions in traditional early childhood settings (i.e., preschool). Moreover, school psychologists can educate early childhood personnel about cultural differences that are salient in the promotion of emotional and social competence. In sum, it is imperative that school psychologists advance the science of intervention to address social and emotional skills by focusing on the early childhood arena, and by giving credence to potential cultural differences that exist in early emotional and social developmental processes.
References


Figure 1. Conceptual model.
Figure 2. Structural model. Predicted relationships are indicated for each path.
Figure 3. Final model.
Figure 4. Alternative model.
Figure 5. Equivalent model.
Appendix A

Covariance Matrix for CFA Variables
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Appendix B

Standardized Residuals for Observed CFA Variables
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| P4ACTIVE V18 | .201  | 0.053  | 0.055  | 0.040  | .000  |
| P4INVITE V19 | -0.061 | -0.045 | -0.046 | -0.069 | -0.072 |
| P4FINISH V20 | 0.168  | 0.022  | 0.096  | -0.064 | 0.136 |
| P4STNDUP V21 | -0.008 | -0.015 | 0.019  | -0.127 | -0.002 |
| P4TEMPER V22 | 0.070  | -0.014 | 0.014  | 0.053  | 0.046 |
| P4ADJUST V23 | -0.036 | 0.004  | -0.021 | 0.035  | 0.013 |
| P4ANNOYS V24 | 0.127  | -0.005 | -0.006 | -0.021 | 0.000 |
| P4DESTRY V25 | 0.113  | 0.013  | 0.000  | -0.049 | -0.032 |
| P4UNDRST V26 | -0.070 | -0.051 | 0.005  | -0.129 | -0.038 |
| P4TRYNEW V27 | -0.077 | -0.044 | -0.055 | -0.024 | -0.108 |
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<p>| P4INVITE V19 | .000  |
| P4FINISH V20 | -0.061 | .000  |
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Appendix C

Analytic Details
A. Confirmatory Factor Analysis (CFA)
   a. Conducted Exploratory Factor Analysis (EFA) in SPSS 14.0 with Social
      Skills items for Kindergarten 2006, Parent Questionnaire data
   b. Repeated EFA for Kindergarten 2006, Teacher Questionnaire;
      Kindergarten 2007, Parent Questionnaire; and Kindergarten 2007, Teacher
      Questionnaire data
   c. Conducted CFA in EQS 6.1 for Kindergarten 2006, Parent Questionnaire
      data
   d. Initial analyses resulted in shut down of EQS system
   e. Attempted re-specification of CFA model based on theoretical factor
      assignment (completed by author and two faculty advisors) of variables on
      each factor
   f. Experienced continued system shut down with re-specified models
   g. Conducted list-wise deletion of all missing data for Social Skills items for
      Kindergarten 2006, Parent Questionnaire items
   h. Ran CFA on Social Skills items for Kindergarten 2006, Parent
      Questionnaire items; and Kindergarten 2006, Teacher Questionnaire items
   i. CFA model would not converge for Kindergarten 2007, Parent
      Questionnaire items; and Kindergarten 2007, Teacher Questionnaire items

B. Sequential Equation Modeling
   a. Ran full structural model with Social Skills item data from Kindergarten
      2006, Teacher Questionnaire data
b. Model would not converge, system shut down

c. Ran full structural model with Social Skills item data from Kindergarten 2006, Parent Questionnaire data

d. Model would not converge, system shut down

e. Conducted bivariate correlations of variables of interest to acquire start values

f. Ran full structural model with Social Skills item data from Kindergarten 2006, Teacher Questionnaire data with start values based on bivariate correlations of study variables

g. Model did not converge; output indicated warnings about singular matrices

h. Ran full model described in f with weighted data

i. Model did not converge; output indicated warnings about singular matrices

j. Ran structural model with without Parent Responsiveness and Attachment variables (Kindergarten 2006, Teacher Questionnaire Social Skill items)

k. Model did not converge

l. Ran full model described in j with weighted data

m. Model converged; fit indices indicated especially poor fit

n. Ran full structural model with Social Skills item data from Kindergarten 2006, Parent Questionnaire data with start values based on bivariate correlations of study variables
o. Model did not converge; output indicated warnings about singular matrices and poor start values

p. Ran model described in n with Social Skills item data from Kindergarten 2006, Teacher Questionnaire data

q. Model did not converge; output indicated warnings about singular matrices and poor start values

r. Ran structural model without Parent Responsiveness and Attachment variables (Kindergarten 2006, Parent Questionnaire Social Skill items)

s. Model did not converge

t. Ran model described in r with weighted data

u. Model did not converge

v. Under the advisement of chair (McGoey) and committee member (Schreiber), decided to limit analysis by using Social Skills data obtained from Kindergarten 2006, Parent Questionnaire only. This decision was made due to multiple complications experienced while using Social Skills item data from Kindergarten 2006, Teacher questionnaire; and Kindergarten 2007, Parent and Teacher questionnaires, as addressing all data issues was outside of the scope of the current investigation.

w. Created composite Social Skills variable based on factor loadings that resulted for final CFA with Kindergarten 2006, Parent Questionnaire data

x. Ran full model using composite Social Skills variable

y. Output indicated warnings about singular matrices and poor start values; no fit indices or estimates could be calculated
z. Ran model without Parent Responsiveness and Attachment variables, using composite Social Skills variable and start values based on bivariate correlations

aa. Model converged; fit indices indicated very poor fit (e.g., CFI = .00)

bb. In an effort to identify potential problematic variables, added one path at a time and ran each iteration of the original model; also added a constant (V999) to each equation to accommodate for missing data

c. Model would not run with Parent Responsiveness (9-month wave) and Parent Negativity (preschool wave) variables

d. Recoded Parent Negativity variable into dichotomous (i.e., low/high) variable; ran model with this recoded variable and without Parent Responsiveness variable

e. Model did not converge

ff. Recoded Parent Responsiveness variable to categorical (i.e., low/moderate/high) variable; ran model with this recoded variable and without Parent Negativity variable

g. Model converged; fit indices indicated mixed results (i.e., CFI = .00; McDonald Fit Index (MFI) = .946; RMSEA = .118, 90% CI for RMSEA = .110, .126)

hh. Recoded Parent Responsiveness variable to dichotomous (i.e., low/high); ran model with this recoded variable and without Parent Negativity variable
ii. Model converged; fit indices indicated mixed results (i.e., CFI = .00; MFI = .929; RMSEA = .114, 90% CI for RMSEA = .106, .123)

jj. Recoded Parent Negativity variable to categorical (i.e., low/moderate/high) variable; ran model with this recoded variable and without Parent Responsiveness variable

kk. Model converged; fit indices indicated very poor fit (e.g., CFI = .270)

ll. Split data on Parent Responsiveness groups (i.e., low/high) and ran separately to see if parameter estimates were the same across groups

mm. Results indicated parameter estimates differed across groups

nn. Ran MIMIC model with original Parent Responsiveness variable, excluding Parent Negativity variable

oo. Model did not converge

pp. Split data on Parent Negativity groups (i.e., low/high) and ran separately to see if parameter estimates were the same across groups

qq. Model for group 1 (low) would not converge; model for group 2 (high) converged but indicated poor fit (CFI = .960; MFI = .932, RMSEA = .374, 90% CI for RMSEA = .331, .417)

rr. Ran model with original Parent Negativity variable, excluding Parent Responsiveness variable

ss. Model converged; results indicated very poor fit (CFI = .292; MFI = .639; RMSEA = .375, 90% CI for RMSEA = .367, .383)
tt. Added Parent Responsiveness variable to model in $rr$; ran this model with Parent Responsiveness as 1. Continuous variable, 2. Dichotomous variable, and 3. as Categorical variable

uu. Models would not converge

vv. In consultation with committee member (Schreiber) decided to drop Parent Responsiveness variable, as resolving issues encountered with this variable was beyond the scope of the project

ww. Transformed Parent Negativity due to positive skew and ran model described in $rr$

xx. Proceeded with analysis as described in chapter four