ABSTRACT

Title of Document:	MATERNAL ADOLESCENT PARENTING BEHAVIOR AND CHILD AGGRESSIVE AND INATTENTIVE BEHAVIORS: FINDINGS FROM THE EARLY HEAD START RESEARCH AND EVALUATION PROJECT
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Adolescent parenting is associated with a wide variety of risk factors for both the mother (Berlin, Brady-Smith, & Brooks-Gunn, 2002) and child (Moore & Brooks-Gunn, 2002). Understanding the pathways leading toward poor parenting practices, and the subsequent influences on child aggressive and inattentive behavior may yield important information for intervention efforts on the part of adolescent families. The current study examines which maternal characteristics influence parenting behavior in a high risk sample of adolescent mothers and their toddlers, using Belsky's (1984) parenting process model. The purpose of the study was to: 1) examine whether maternal age, depression, or stress influenced positive and negative parenting behavior, 2) examine the influence of positive and negative parenting behavior on child aggressive and inattentive behavior, and 3) examine whether positive parenting would mediate the association between maternal characteristics and child aggressive and inattentive behavior. Data from the Early Head

Start Research and Evaluation dataset was used to examine the aforementioned questions. The sample consisted of 319 mothers ages 15-19 and their toddlers ages 2-3 years. Heirarchical regression analyses revealed that maternal depression predicted higher levels of negative parenting behavior, younger adolescent mothers are more likely to engage in punitive parenting behavior than older adolescents, and maternal stress predicted lower levels of positive and higher levels of negative parenting behavior. Logistic regression analyses revealed that adolescent mothers who engaged in positive parenting behavior were less likely to have children who engaged in aggressive and inattentive behavior, and parents who engaged in negative parenting behavior were more likely to have children who engaged in aggressive and inattentive behavior. Mediational analyses revealed that positive parenting behavior mediated the association between maternal stress and child aggressive and inattentive behavior. These findings suggest that maternal characteristics are an important factor to consider in parenting behavior, and that despite the difficulties faced by adolescent mothers, there is room for positive parenting, which may mitigate the influence of maternal stress. The findings from this study indicate that intervention efforts may benefit from focusing on teaching adolescent mothers how to engage in positive parenting behaviors with their toddlers, thereby reducing the risk for future child aggressive and inattentive behaviors.

MATERNAL ADOLESCENT PARENTING BEHAVIOR AND CHILD AGGRESSIVE AND INATTENTIVEAGGRESSIVE AND INATTENTIVE BEHAVIOR: FINDINGS FROM THE EARLY HEAD START RESEARCH AND EVALUATION PROJECT

By

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Dissertation submitted to the Faculty of the Graduate School of the
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Dedication

I would like to dedicate this dissertation to my parents. They have always believed in me and encouraged my efforts in any endeavor I chose to undertake. My father imparted to me the importance of a solid work effort, and my mother taught me the value of a rich imagination. Both of my parents were strong proponents of a good education, which served as a strong impetus to succeed academically, leading, ultimately, to the completion of this dissertation. I cannot thank my parents enough for all they have done for me, they have shaped me into the person I am today. I hope this dedication begins, in some small measure, to allow me to begin to repay them for their efforts and their faith in me.

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I would also like to extend my thanks to all of the graduate students, past and present, without whose support I'm not sure I would have made it through.

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Chapter 1: Introduction

Despite decreasing adolescent birth rates in the United States, there still are nearly a half-million children born to adolescent mothers each year (Franzetta, Ikramullah, Manlove, Anderson Moore, & Terry-Humen, 2005). Research on adolescent mothers has focused on the risk factors associated with adolescent parenting, and academic and behavioral outcomes related to the children of adolescent parents. The influence of adolescent parenting on both mother and child has been studied by examining factors that might influence child behavioral outcomes, such as race, poverty, and education. For example, within adolescent samples, black mothers have been found to be more controlling than Cuban mothers in their parenting behavior, whereas Cuban mothers demonstrated more positive affect toward their children than black mothers (Field, Widameyer, Adler, & Cubas, 2002), and mothers reporting elevated levels of stress are less likely to demonstrate positive affect toward their children (Ketterlinus, Lamb, & Nitz, 1991). Researchers who compared adolescent and adult samples have shown that adolescent mothers are more detached, intrusive, and hostile toward their children than adult mothers (Berlin, Brady-Smith, & Brooks-Gunn, 2002). The parenting styles of adolescent mothers have been examined to understand knowledge of parenting and quality of parent-child relationships. Children of adolescent mothers have also been studied to understand potential effects on child outcomes including aggressive and inattentive behavior.

Although researchers have thus far addressed the overall influence of adolescent parenting on developmental outcomes in school age children, little is known about the relationship between potential risk factors associated with adolescent parenting and child

aggressive and inattentive behaviors as it may vary by the age of mother, and the influence on very young children. Does the age of the adolescent mother (e.g. early versus late adolescence) influence parenting and child aggressive and inattentive behavior? Are children particularly vulnerable during the toddler years? Work on trajectories of aggression suggests that these behaviors may begin early (Nagin & Tremblay, 1999). It is important to understand what is occurring during the early years in order to devise early intervention methods that will stave off the negative long-term impacts on children of adolescent mothers. In my study, the risk factors associated with adolescent parenting and toddler aggressive and inattentive behavior were examined.

Despite the difficulties faced by adolescent parents and their children, there are intervention programs in place to assist these families. For example, Early Head Start (EHS) is a federally run program that provides child-care and parent training to impoverished families. Although the focus is not exclusively on adolescent parents, due to the high rates of poverty among this group, these mothers are eligible for participation in EHS, and are provided with the guidance necessary for developing appropriate parenting skills.

The Early Head Start Research and Evaluation (EHSRE) project is a federally funded study that evaluates the effectiveness of EHS interventions on child development (U.S. Department for Health and Human Services (DHHS), 2001). My study utilized the public EHS data set to examine the effects of adolescent parenting on the child aggressive and inattentive behaviors of aggression and inattention. The analyses for my study implemented regression statistics to examine both direct and mediational effects of

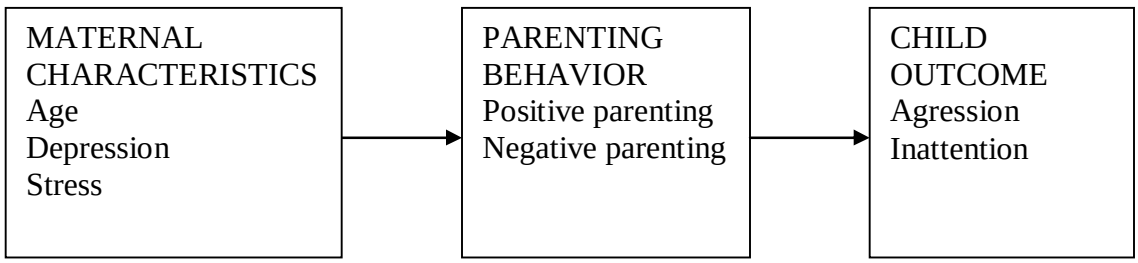
adolescent parenting on child aggressive and inattentiveaggressive and inattentive behavior.

Theoretical Framework

Belsky's (1984) parenting process model is derived from Bronfenbrenner's ecological systems theory (1986). In Belsky's (1984) model, parental characteristics, child characteristics (e.g. aggressive and inattentive behavior), and contextual sources of stress and support (e.g. family involvement with their children) do not have equal influences on child development. Instead, parental characteristics are regarded as having the strongest influence (Belsky, 1984). Parenting itself is influenced by parental characteristics, developmental history (e.g., poverty), and contextual factors (e.g., work and social support). The interplay of these factors determines parenting behavior and subsequent child outcome. In my study maternal characteristics (e.g. depression, education, and stress) and contextual factors (e.g. low-income levels and familial support) were examined as predictors of child characteristics (e.g. aggressive and inattentive behaviors) (see Figure 1).

Figure 1.

Adolescent Parenting Model Adapted from Belsky's (1984) Parenting Process Model



Dimensions of Parenting

Parenting behavior can be broken down into two broad types: positive and negative. Positive parenting has been described as that which includes appropriate responses to child behavior (Albright & Tamis-LeMonda, 2002; Whiteside-Mansell, Bradley, Owen, Randolph, & Cauce, 2003; Whiteside-Mansell, Pope, & Bradley, 1996), and includes sensitivity (Albright & Tamis-LeMonda, 2002; De Wolff & van Ijzendoorn, 1997; Elster, McAnarney, & Lamb, 1983). Other dimensions of positive parenting include support for the child's activities (DeWolff & van Ijzendoorn, 1997; Matas, Arend, & Sroufe, 1978) and positive affectional states toward the child (DeWolff & van Ijzendoorn, 1997), also known as positive regard.

Negative parenting has been described as behavior that includes punitive and intrusive behavior toward the child (Whiteside-Mansell et al., 2003). Demonstrating negative affect (DeWolff & van Ijzendoorn, 1997), also known as negative regard, is also part of negative parenting. Additionally, neglect of, or detachment from the child has been frequently identified as having an adverse influence on child development (Skinner, Johnson, & Snyder, 2005).

We know that the parent-child relationship has a bidirectional influence on both mother and child (Sameroff & MacKenzie, 2003). For example, in their examination of predictors of child aggressive and inattentive behavior, Miner and Clarke-Stewart (2008) found that not only did maternal depression predict future levels of child aggressive and inattentive behavior, but that previous levels of child aggressive and inattentive behavior predicted future levels of maternal depression. According to the authors, the interplay of both parent and child behaviors are an important component of subsequent child

outcomes. The findings from this study illustrate the importance of examining the transactional nature of the parent-child relationship.However, it was beyond the scope of my study to examine the effect of children's behavior on parenting; this study focused on the influence that maternal behavior had on child aggressive and inattentive behavior.

Adolescent Parenting

Adolescent parenting has been found to be qualitatively different from that of adults. Importantly, younger mothers were shown to be more likely to reject their children than older mothers (Shaw, Gilliom, Ingoldsby, & Nagin, 2003). While some researchers have found that adolescent mothers did not demonstrate high levels of negative behavior toward their children (Levine, Garcia-Coll, & Oh, 1985; Reis, 1993), others have shown that adolescents were more likely to engage in punitive parenting practices when compared to older mothers (Bernardi, Schwartzman, Conetti, Cerutti, Trenchi, & Rosenberg, 1992). Furthermore, many researchers continued to find that adolescents' parenting stands a higher likelihood of being less cognitively stimulating, less gentle, less vocal, and less affectively positive (Berlin et al., 2002; Bernardi et al., 1992; Elster et al., 1983; Levine Coley & Chase-Lansdale, 1998; Levine et al., 1985; Moore & Brooks-Gunn, 2002; Passino & Whitman, 1993; Sommer, Whitman, Borkwoski, Schellenbach, Maxwell, & Keogh, 1993). Additionally, adolescents' were found to behave in ways that were more punitive (Berlin et al., 2002; Bernardi et al., 1992; Elster et al., 1983; Levine Coley & Chase-Lansdale, 1998; Levine et al., 1985; Moore & Brooks-Gunn, 2002; Passino & Whitman, 1993; Sommer et al., 1993), more detached, more hostile, more intrusive (Berlin et al., 2002), and more emotionally unstable (Clemmens, 2002) than older mothers.

In addition to the high levels of negative parenting behavior noted above, researchers have found low levels of positive parenting behavior. For example, adolescent mothers were less likely to be supportive of their children's endeavors, they were less likely to be engaged in their children's activities (Berlin et al., 2002), and adolescent mothers were less likely to be sensitive to their children's needs (Levine Coley & Chase-Lansdale, 1998). Adolescent mothers were more likely to engage in punitive behavior (Bernardi et al., 1992; Elster et al., 1983), to hold unreasonable expectations of their children's abilities, and were more likely to regard their children as being temperamentally difficult compared with older mothers (Elster et al., 1983; Levine Coley & Chase-Lansdale, 1998). In sum, adolescent mothers appear to have difficulty engaging in appropriate parenting behavior and are more likely to resort to punitive child rearing practices. Therefore it is important to investigate which factors place adolescents at increased risk for engaging in poor parenting behavior.

Influences on Adolescent Parenting. Among the maternal characteristics that require further examination in the adolescent parenting literature is age. Maternal age at first birth in the adolescent literature has been confounded with developmental differences due to inclusion of younger and older adolescents in the analyses (Elster et al., 1983; Ketterlinus, et al., 1991). The majority of studies have included adolescent mothers who ranged in age from 11-21 years. Some authors have found that younger adolescents were more likely to engage in more punitive parenting than older adolescent mothers (Lytle & Bakken, 1997). Researchers have demonstrated differences in affective experiences (Galambos, McDonald, Naphtali, Cohen, & de Frias, 2005; Moneta, Schneider, & Czikszentmihaly, 2001) and cognitive regulation (Moneta et al., 2001,

Levine et al., 1985) between younger and older adolescents. Younger adolescents tend to report a larger degree of lability in their affect (Moneta et al., 2001) and demonstrate a less sophisticated capacity to engage in rational thought than older adolescents (Klaczynski, 2000). These age differences presuppose the importance of examining within group variations in adolescent parents. Currently, little work has been conducted in this area, and additional investigations of age variations in adolescent parents are needed to better understand how adolescent mothers interact with their children.

Poverty. There is economic variation within low-income populations and that examination of parenting and child outcome within these populations can provide important information. According to one study, it is not unusual for families' income levels to fluctuate several times during the year, variously leaving them above and below the federally mandated poverty line at different times (Ruggles & Williams, 1989). This income instability likely yields a population with varied circumstances, characteristics, and histories. Additionally, low-income neighborhoods vary in their characteristics (e.g. schools and community support) (Barnes, Belsky, Broomfield, Dave, Frost, & Melhuish, 2005). These variations, in turn, are associated with variations in the well-being of individuals living in these communities (Barnes et al., 2005).

Adolescent mothers are at higher risk for coming from a low-income background (Bernardi et al., 1992; Deal & Holt, 1998; Ketterlinus et al., 1991; Levine Coley & Chase-Lansdale, 1998), living in impoverished neighborhoods, and coming from single parent homes (Ketterlinus et al., 1991). In one study, 61% lived at or below the poverty line (Kalil & Danziger 2000), and in another 60% were receiving public assistance (Furstenberg, Levine, & Brooks-Gunn, 1990). Conversely, Bernardi and colleagues

(1992) found no differences between adolescent and adult mothers in socioeconomic status (SES). However, this study was conducted using 2 samples that were from a low-income area, possibly creating a floor effect in terms of economic status. The majority of studies concur that adolescent mothers are more likely to experience poverty at some point in their lives.

Psychological Factors

Depression. Parenting can also be affected by psychological factors. For example, maternal depression has been examined as an important factor affecting parenting behavior. According to Beeghly and colleagues (2003), depressive symptoms were stable in adult mothers. Associations have been found between depression and single parenthood, perceptions of financial stability, and low-income status; higher numbers of risk factors were associated with higher levels of depressive symptoms in adults (Beeghly, Olson, Weinberg, Pirece, Downey, & Tronick, 2003). Given the stability of depression in adult samples, an examination of this disorder in adolescent samples is warranted.

Adolescent mothers are at increased risk for depression when compared with older mothers (Deal & Holt, 1998). Some studies reported that up to 1/3 of adolescent mothers demonstrated depressive symptoms at some point during their teenage years (Deal & Holt, 1998), whereas others have found that half of their sample were at risk for depression (Kalil & Danziger 2000). There are a variety of emotional (Moneta et al., 2001) and cognitive (Klaczynski, 2000) changes occurring during adolescence. Those adolescents who have difficulty adjusting are at greater risk for experiencing high levels of stress (Passino & Whitman, 1993). High levels of stress may in turn lead to an

increased risk for experiencing symptoms of depression (Moore & Brooks-Gunn, 2002; Passino & Whitman, 1993), which may explain the high rates of depressive symptoms within the adolescent population.

Differences in depressive symptoms have been found for adolescents from different ethnic backgrounds. Black adolescent mothers were nearly twice as likely to be depressed when compared to white adolescent mothers (Deal & Holt, 1998). Black mothers were also at greater risk for depression than women from other ethnic backgrounds (Civic & Holt, 2000). Researchers have found that there are variations between ethnic groups in response to adolescent pregnancy (Battle, 2000; Moore & Brooks-Gunn, 2002). For example, Latino adolescents have reported that they have an expectation that their families will provide assistance in raising their children, whereas white adolescent mothers tended to report that they plan on raising their children with a significant other (Battle, 2000). It is possible that in those communities where adolescent pregnancy is not condemned, adolescent mothers will experience fewer symptoms of psychological distress. Psychological difficulties (partly due to identity development problems) also contributed to depressive symptoms (Levine Coley & Chase-Lansdale, 1998; Moore & Brooks-Gunn, 2002). Additional risk factors included 1) age: younger adolescents were at higher risk for experiencing depression than older adolescents (Black, Papas, Hussey, Hunter, Dubowitz, Kotch, et al., 2002; Moore & Brooks-Gunn, 2002); 2) romantic relationships: mothers who had a poor relationship with their partners were more likely to be depressed than those with a positive relationship (Black, Papas, Hussey, Hunter, et al., 2002); and 3) coping strategies: avoidant coping styles were associated with maternal depression (Lee, 2003). Higher levels of depression were associated with

low educational attainment and low SES (Harnish, Dodge, & Valente, 1995). These variables, however, were highly correlated with one another, making it difficult to tease apart more specific relationships.

Some researchers have argued that depression in adolescent mothers was also a function of coming to terms with the reality of their situation. Adolescents experiencing the responsibilities attached to parenting felt trapped between wanting the life of an adolescent and the expectations of an adult. Another emotional burden experienced by adolescent mothers was the perception that those they trusted have not followed through on their commitment. For example, the father of the child may not have been involved with the family, or family members of the mother were not perceived as providing enough support. This resulted in feeling overwhelmed, insecure with respect to the parental role, and an overall state of emotional turmoil. This in turn led to depressed affect and difficulty in daily functioning (Clemmens, 2002).

Other researchers argued that etiological factors of maternal depression in adolescence lay in stressful life experiences, rather than stemming from the more neurologically based factors underlying clinical depression (Moore & Brooks-Gunn, 2002; Prodromidis & Abrams, 1994). Evidence to support this claim pointed to the adolescent mothers' difficulties with completing daily tasks (Moore & Brooks-Gunn, 2002) and their reports of high levels of daily life stress (Sommer et al., 1993). Young mothers were also less likely to seek help for depressive symptoms, putting them at further risk (Bernardi et al., 1992).

Stress. Adolescence was generally considered a stressful period due to various biological and social changes that needed to be navigated by each individual. Adolescent

mothers had the added stressor of being responsible for a new life (Ketterlinus et al., 1991). Kalil and Danziger (2000) found that 95.5% of their sample of adolescent mothers reported high stress levels (e.g. someone close to them has either died or gone to jail). Other studies have also found that adolescent mothers reported higher levels of parenting stress relative to adult mothers (Passino & Whitman, 1993). One study found that parenting stress in adolescent mothers was predicted by prenatal personal adjustment, race, and SES (Passino & Whitman, 1993), with personal adjustment accounting for the majority of the variance. The authors also found that children whose mothers perceived them as creating the least amount of parenting stress received the most appropriate parenting. Adolescent mothers reporting high levels of stress were at increased risk for demonstrating fewer instances of positive affect toward their children (Ketterlinus et al., 1991), demonstrateing lower levels of sensitivity for their children's needs (Elster et al., 1983; Ketterlinus et al., 1991), responding inappropriately to their children's behavior (Elster et a., 1983), and reporting lower levels of satisfaction with their parenting role (Ketterlinus et al., 1991).

Outcomes for Children of Adolescent Mothers

Aggressive and inattentive behavior during the toddler period appears to be normative (Campbell et al., 2000; Coie & Dodge, 1998). However, those children who continue to engage in high levels of aggressive and inattentive behavior as they get older, instead of demonstrating a normative decline, are at increased risk for continued behavior problems in later years (Nagin & Tremblay, 1999). Children of adolescent mothers have been found to be at increased risk for aggressive and inattentive behavior well into their childhood years (Bernardi et al., 1992; Moore & Brooks-Gunn, 2002). It is therefore

important to understand the associations between maternal parenting in adolescence and child aggressive and inattentive behavior.

Controversy surrounds the age at which children can be reliably assessed for attentional difficulties. For example, in his review of the literature Barkley (2003) indicated that children as young as 3 years of age can be assessed accurately for symptoms of dysregulated behavior. Other authors have found that children's ability to focus on a single object begins to emerge at approximately 3 to 4 years of age (Masten & Coatsworth, 1998). Importantly, Spencer, Biederman, and Mick (2007) indicated that a significant number of children who demonstrate difficulties with attention in early childhood are never subsequently diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). This underscores the importance of taking into account the range of normative behaviors during the toddler years. Although some of these behaviors may appear dysfunctional, they may in fact be developmentally appropriate.

Parenting in general has a strong influence on child development, which presupposes the need to study adolescent parenting in particular. Mothers of all ages who display high levels of negative control and negative emotional reactions are more likely to have children with a decreased capacity to regulate their emotional state, which in turn had been linked to aggressive behavior in childhood (Campbell et al., 2000; Caspi, Harrington, Milne, Amell, Theodore, & Moffitt, 2003; Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002). For example, mothers who reject their children are more likely to have children with a fearless disposition, which has also been linked to higher levels of aggressive behavior (Shaw et al., 2003). Additionally, responsive parenting behavior was negatively associated with aggressive behavior problems (Rothbaum & Weisz, 1994;

Shaw, Keenan, & Vondra, 1994), whereas overreactive behavior in the parent was positively associated with aggressive behaviors during childhood (O'Leary & Slep, 1999).

Evidence for children's outcomes as they related to adolescent parenting is equivocal. Some researchers have found that children of adolescent mothers were no more likely to demonstrate problems with hyperactivity and aggression than children of older mothers (Bernardi et al., 1992). However, others have demonstrated various behavioral difficulties associated with children of adolescent mothers. Several authors have found that children born to adolescent mothers were more likely to experience maternal insensitivity and negative parent-child interactions, which were associated with aggressive behavior problems (Levine Coley & Chase-Lansdale, 1998; Levine et al., 1985; Moore & Brooks-Gunn, 2002), and inattention (Gelfland & Teti, 1990). Notably, children of adolescent mothers were at increased risk for aggressive and inattentive behavior, with studies citing figures as high as 33-36% (Black, Papas, Hussey, Dubowitz, Kotch, & Starr, 2002; Black, Papas, Hussey, Hunter, et al., 2002). The authors of one study suggested that while there were no differences in the first few years of life, by preschool age, differences in behavior problems and academic performance began to emerge (Moore & Brooks-Gunn, 2002).

Importantly, researchers in the adult parenting literature have made a distinction between those parenting behaviors associated with children demonstrating aggressive behavior and parenting behaviors associated with children demonstrating inattentive behavior (Mclaughlin & Harrison, 2006; Katsurada & Sugawara, 2000). This difference in parenting behavior and child outcome has not been examined in the adolescent

literature. Finally, higher levels of corporal punishment were associated with higher levels of aggressive and inattentive behavior (Olson, Ceballo, & Park, 2002). Although these associations have been found in the adult parenting literature, much of the extant research on adolescent mothers has not examined the association between positive and negative parenting behavior and aggressive and inattentive behavior in children (Olson et al., 2002). Additionally, much of this research was correlational, with few researchers examining the underlying mechanisms of parenting and child development. Findings from previous studies have shown that children who did not show decreases in aggressive and inattentive behavior over time were at risk for behavior problems at school entry (Coie & Dodge, 1998; Cummings, Iannotti, & Zahn-Waxler, 1989; Hay, Castle, & Davies, 2000; Tremblay, 2000), demonstrating the long term influence these early behavior patterns may have.

Mechanisms. There is as yet no clear information about the causal mechanisms associated with adolescent parenting behavior and child outcome (Moore & Brooks-Gunn, 2002). Some researchers suggest that low levels of involvement on the part of adolescent parents may play a role in development of aggressive and inattentive problems in children (Moore & Brooks-Gunn, 2002). Additionally, the majority of the work has focused on adolescent parenting during infancy, without follow-up research into early and middle childhood. Examination of time varying and time invariant factors that influence adolescent parenting and child outcome are important in understanding the mechanisms involved in the interactions between these mothers and their children.

Methodological Issues

A variety of methodological concerns regarding studies of adolescent parenting exist. For example, inclusion of a wide age range (11 to 21) prevented examination based on the developmental stage of the adolescent parents (Ketterlinus et al., 1991). Age of the child was also an issue: most of the research focused on child outcomes has looked at school aged children. Toddlers were not often the subjects of research studies in this field. In addition, measurement issues prevented accurate assessment of adolescent functioning. Moreover, studies have shown that different ethnic groups varied on responses to instruments such as the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), making it difficult to generalize findings across ethnic groups (Posner, Stewart, Marin, & Perez-Stable, 2001). Another difficulty was that the majority of studies used either self-report or direct observation measures but not both; few studies used a multi-method approach. Finally, sampling problems prevented generalization of findings to the adolescent population (Posner et al., 2001).

To address these methodological issues, my study was designed to include a large sample of ethnically diverse adolescent mothers (ages 15-19 years), and included both self-report and observation of parent-child interactions.

Rationale & Research Questions

Overall, there was a dearth of information regarding the mediating effects of maternal age, maternal depression, and maternal parenting stress on adolescent parenting and child outcome. The purpose of my study was to address the aforementioned gaps in the literature through examination of a large sample of adolescent mothers and their children taken from the EHSRE Project. This national data set included extensive

information on parents and their children, including parent interviews and video taped observations taken at child age 14, 24 and 36 months. Specifically, the following questions were addressed:

R1: How do maternal characteristics influence parenting in a low-income high-risk sample of adolescent mothers?

- Hypothesis 1a: Low levels of depression at 14 months will predict positive parenting behaviors at 24 months, and low levels of depression at 36 months will predict positive parenting behaviors at 36 months.
- Hypothesis 1b: High levels of depression at 14 months will predict negative parenting behaviors at 24 months, and high levels of depression at 36 months will predict negative parenting behaviors at 36 months.
- Hypothesis 1c: Older adolescent mothers will display more positive parenting behaviors than younger adolescent mothers at 14, 24 and 36 months.
- Hypothesis 1d: Low levels of parenting stress at 14, 24 and 36 months will predict positive parenting behavior at 24 and 36 months.
- Hypothesis 1e: High levels of parenting stress at 14, 24 and 36 months will predict negative parenting behaviors at 24 and 36 months.

RQ2: How do positive and negative parenting behaviors directly influence child aggressive and inattentive behavior at 24 and 36 months?

- Hypothesis 2a: Mothers who engage in positive parenting behaviors at 14, 24 and 36 months are more likely to have children who do not engage in borderline or clinical levels of aggressive behavior at 24 and 36 months.

- Hypothesis 2b: Mothers who engage in positive parenting behavior at 14, 24 and 36 months are more likely to have children who do not engage in borderline or clinical levels of inattentive behavior at 24 and 36 months.
- Hypothesis 2c: Mothers who engage in negative parenting behavior at 14, 24 and 36 months are more likely to have children with borderline or clinical levels of aggressive behavior at 24 and 36 months.
- Hypothesis 2d: Mothers who engage in negative parenting behavior at 14, 24 and 36 months are more likely to have children with borderline or clinical levels of inattentive behavior at 24 and 36 months.

RQ3: How do positive and negative parenting behaviors at 14, 24 and 36 months mediate the association between contextual and maternal characteristics at 14, 24 and 36 months, and child aggressive and inattentive behavior at 24 and 36 months?

- Hypothesis 3a: Positive parenting at 14, 24 and 36 months will mediate the association between maternal age at birth of the child and child aggressive and inattentive problems at 24 and 36 months. It is expected that higher maternal age will predict more positive parenting behaviors, which in turn will decrease children's levels of aggressive and inattentive behavior (i.e. aggressive or inattentive behavior).
- Hypothesis 3b: Positive parenting at 14, 24 and 36 months will mediate the association between maternal depression at 14 and 36 months and child aggressive and inattentive problems at 24 and 36 months. It is expected that lower levels of depression will predict more positive parenting behavior, which in turn will decrease children's levels of aggressive and inattentive behavior (i.e. aggressive or inattentive behavior).

Definition of terms

In my study, *adolescence* was defined as those individuals between the ages of 15 and 19 years old. Early adolescents are those between the ages of 15 and 17 years old, older adolescents are those between the ages of 18 and 19 years old. *Aggressive* and *inattentive* behavior was defined as borderline or clinical levels of behavioral problems as measured by the Child Behavior Checklist 1 ½-5 years (CBCL 1 ½ -5) (Achenbach, Edelbrock, & Howell, 1987). *Positive parenting behavior* was defined as those behaviors high in warmth, sensitivity, and involvement. *Negative parenting behavior* was defined as those behaviors high on intrusiveness, negative regard, and detachment. *Parenting stress* was defined as clinical level scores on the Parenting Stress Index (Abidin & Wilfong, 1989). The term parenting stress is used wherever that specific construct was discussed, otherwise the term stress was used by itself (the exception to this is in the tables, where space was limited. It should be noted that within tables, the term stress should be taken to mean parenting stress).

Limitations

One limitation of my study had to do with the sample. This sample was composed primarily of parent-child dyads from a low-income background, which may prevent generalization to adolescent parenting from different financial backgrounds. Additionally, because the participants in my study all sought out EHS services, it is possible that they may differ from those adolescent parents who were also from low-income backgrounds, but who did not attempt to place their children in EHS. Additionally, the EHSRE is an experimental design; consequently, approximately half of the mothers in my sample were part of an intervention study, whereas the other half did not receive EHS services.

However, the mothers in the control group were free to receive services from other programs. These factors limit the generalizability of the findings in my study beyond the current sample.

Chapter 2: Review of the Literature

Adolescent parents represent an important subset of all parents in the United States. The birth rate for adolescent mothers in the United States in 2004 was 40.4 (births per 1,000), compared with the total national birth rate of 66.7 (births per 1,000) (Hamilton, Martin, & Ventura, 2005). Risk factors for adolescent pregnancy include dropping out of school, low-income background (Elster et al., 1983), poor academic performance, and psychological difficulties (e.g. depression) (Ketterlinus et al., 1991; Levine Coley & Chase-Lansdale, 1998; Moore & Brooks-Gunn, 2002). Additionally, adolescent mothers are at increased risk for engaging in negative parenting behavior (e.g. punitive, insensitive parenting), and having children who exhibit behavior problems (e.g. aggression and inattention) (Levine Coley & Chase-Lansdale, 1998).

The aim of this chapter is to review literature on the influence of adolescent parenting on child development. I begin with a discussion of Belsky's (1984) parenting process model to form the theoretical framework for the study. Next I discuss the parenting behavior of adolescent mothers and influences on adolescent parenting behavior. Finally, I examine the literature linking adolescent parenting behavior with child aggressive and inattentive behavior.

Theoretical Framework

Belsky (1984), in his parenting process model, uses an ecological approach to examine parenting behavior in mothers. This approach has its roots in Bronfenbrenner's ecological systems theory (1986), which emphasizes the role of the environment in child development. Belsky took into account the influence of a variety of environmental factors and parental characteristics on parenting behavior. In addition to examining determinants

of parenting, Belsky also stipulated that parenting behavior influences child development. To begin with, parenting behavior is influenced by parental characteristics (e.g. depression), child characteristics (e.g. aggressive and inattentive behavior), and contextual sources of stress and support (e.g., social support). According to this model, these 3 determinants of parenting have unequal influences on child development. Belsky (1984) postulated that parental characteristics have the strongest influence, followed by contextual sources of stress and support, then child characteristics. The primacy of parental characteristics stems from the idea that if a parent is equipped to manage difficult situations and difficult child characteristics, the outcomes for children will be better than if a parent does not have the ability to deal with various situations as they arise. For example, even with positive contextual factors such as high levels of social support, and a child that was easy to parent, a depressed individual may not be able to engage in optimal parenting behavior.

The Parenting Process Model has been used in a number of studies investigating parenting and child outcomes (Feldman, Greenbaum, Mayes, & Erlich, 1997; O'Callaghan, Borkowski, & Whitman, 1999; van Bakel & Riksen-Walraven, 2002). One study found that maternal cognitive readiness to parent had a positive correlation with parental sensitivity (O'Callaghan et al., 1999). In another study of 129 Dutch parents and their 15-month-old infants, van Bakel and Riksen-Walraven (2002) found support for Belsky's (1984) contention that parental characteristics, social support, and child characteristics all contribute to parenting behavior. The authors found that education and ego resiliency of the parent, support from spouse or significant other, and child fearfulness contributed to parenting quality. Although the authors did not report specific

parenting behaviors that were associated with parental characteristics and contextual characteristics (except that they were positively associated), they did note that parents of fearful children were more likely to engage in warm, structured, directive interactions with their children than were parents of non-fearful children. Another study of high-risk mothers and their 1-month-old infants found support for multiple determinants of parenting. Those mothers who were moving off and on public assistance, a process associated with higher levels of stress, were more likely to report beliefs that were consistent with increased likelihood of child abuse. However, those mothers who received support in the form of home visits from professionals, and who had a supportive partner, were less likely to report beliefs that were consistent with engaging in abusive behavior (McCurdy, 2005).

Additionally, there is evidence that high-income, well educated mothers who feel their role as a parent entails a high degree of responsibility display more sensitive parenting behavior compared with low-income, poorly educated mothers who report that they do not feel they have a lot of responsibility in their parental role (Pelchat, Bisson, Bois, & Saucier, 2003). Single mothers are less likely to demonstrate sensitive parenting compared with mothers who have a partner (Pelchat et al., 2003). It is likely that determinants of parenting differ in low-income versus middle or high-income families due to varying demands made on individuals in the different groups. For example, in a study of 1,035 parents and their children, social support among lower-income families had a stronger influence on parenting behavior than on higher-income families, such that increased levels of support were associated with more positive parenting behavior (Hashima & Amato, 1994). The differential influence of social support in this study was

likely a function of increased difficulties faced by lower-income families, which then influenced parenting behavior. Therefore assistance rendered to these families was expected to have a stronger positive influence on parenting than on families with more financial security, and whose life situation was less likely to adversely influence parenting behavior. In another study of 173 low-income mothers, maternal emotional response to becoming pregnant had no association with maternal warmth, mother-child interaction once the child was born, social support, or child characteristics (Ispa, Sable, Porter, & Csizmadia, 2007). However, the researchers did find that pregnancy acceptance predicted maternal feelings that being a parent is burdensome (inverse association); pregnancy acceptance was also positively associated with attachment security in the toddlers (Ispa et al., 2007). Finally, Olson and Banyard (1993) found that single low-income mothers reported difficulty managing 'environmental barriers', situations that are not easily dealt with (e.g. needing to spend several hours traveling to a grocery store).

Given the difficulties that adult low-income mothers face, it is likely that adolescent mothers, who are overwhelmingly low-income, also experience challenges that adult middle class mothers do not encounter. The parenting process model has rarely been applied to an adolescent sample. Several researchers tested only part of the model, in conjunction with examination of other theories of development (Black & Nitz, 1996; Spieker & Bensley, 1994). O'Callahan and colleagues (1999) tested Belsky's (1984) parenting model in a sample of 135 adolescent mothers and their 6-month old children. They found that intelligence and personal adjustment had significant influence on adolescent parenting behavior, with cognitive readiness to parent serving as a mediator between the former 2 constructs and parenting. Although there were some results

suggesting an influence of personal characteristics on adolescent parenting behavior, there was no evidence that social support influenced adolescent parenting. There was also no evidence of any influence of child characteristics on adolescent parenting. However, in this study, the researchers utilized maternal perceptions of child characteristics. As there was no objective measure of child characteristics, the latter finding may have been confounded with parental characteristics.

In sum, Belsky's (1984) parenting process model stipulates that there are multiple determinants of parenting in the form of parental, contextual, and child characteristics. However, the majority of research on this model has been with adult samples. Therefore it is important to conduct additional investigations into determinants of parenting using an adolescent sample.

Parenting Behavior

Adult parenting. The relationship of various parenting behaviors to child outcomes have been examined. These include sensitivity (Elster et al., 1983), support (Moore & Brooks-Gunn, 2002), warmth (Elster et al., 1983), responsivity (Ketterlinus et al., 1991; Levine et al., 1985), rejection (Ketterlinus et al., 1991), and intrusiveness (Moore & Brooks-Gunn, 2002). Different behaviors on the part of the parent are expected to result in variable outcomes on the part of the child (Belsky, 1984; Elster et al., 1983, Ketterlinus et al, 1991; Levine et al., 1985; Moore & Brooks-Gunn, 2002); positive parenting behaviors are likely to yield positive child outcomes, whereas negative parent behaviors are likely to yield negative child outcomes (Belsky, 1984; Elster et al., 1983, Ketterlinus et al, 1991; Levine et al., 1985; Moore & Brooks-Gunn, 2002).

According to Elster and colleagues (1983), sensitivity is a crucial aspect of positive parenting. Sensitivity is “the ability of a parent to provide contingent, consistent, and appropriate responses to his/her infant's signals-most importantly, the infant's cry. A parent must perceive the child's cues, interpret these cues correctly, and implement an appropriate response in an effective manner. A deficiency at any point in the process would result in insensitive parental behavior." (p.495). In addition to sensitivity, positive parenting behavior includes high levels of warmth (Belsky, 1984), defined as parental expressions of positive affect and demonstrable interest in the activities of the child (Zhou, Eisenberg, Losoya, Fabes, Reiser, Guthrie, et al., 2002), and responsivity (Lounds, Borkowski, Whitman, Maxwell, & Weed, 2005), defined as attending to the same object as the child, and noticing and reacting to changes in the child’s behavior (Tamis-LeMonda, Bornstein, & Baumwell, 2001).

Conversely, negative parenting behavior is associated with a higher probability of having children who engage in aggressive and inattentive behavior. Negative parenting is exemplified by punitive disciplinary practices (Belsky, 1984), hostility (Belsky, 1984), low levels of sensitivity (Belsky, 1984; Elster et al., 1983), and low levels of warmth (Belsky, 1984). Negative parent-child relationships are defined as those low in warmth, involvement and appropriate disciplinary strategies (Campbell et al., 2000). Negative parenting is a concern because of its association with negative child outcomes such as aggressive behavior (Olson et al., 2002).

A variety of measures have been devised to assess parenting behavior. They ranged from interviews and self-report questionnaires to observations (Gardner, 2000). The degree to which these measures demonstrate convergent validity with one another

vary, though the correlations tend to be within the moderate range (Gardner, 2000). Although each type of measure may assess unique aspects of parenting behavior, there is nevertheless an overlap in the behaviors that have been examined (Gardner, 2000). Observational measures vary on accuracy based on observational settings. Observational data collected in a natural setting, such as the home environment, is likely to yield more accurate information regarding actual behavior, as compared with observations occurring in a laboratory setting (Gardner, 2000). Concerns regarding possible change in participants' behavior as a function of researcher presence appear unfounded. Researchers have found that observer presence has a minimal influence on participants' behavior (Aspland & Gardner, 2003; Gardner 2000).

Adolescent parenting. Research on adolescent parenting behavior has yielded contradictory findings. In some studies, no differences have been found in various parenting behaviors when comparing adolescent and adult mothers. For example, adolescent and adult parents display similar levels of sensitivity (Passino & Whitman, 1993; Sommer et al., 1993) and activity with their infants (Bernardi et al., 1992; Passino & Whitman, 1993; Sommer et al., 1993). Adolescent parents do not exhibit high rates of negative attitudes toward their children (Reis, 1993), and are as likely to demonstrate warmth toward their children as are adult mothers (Levine Coley & Chase Lansdale, 1998). Additionally, adolescent mothers do not differ from adult mothers regarding their involvement with their children (Bernardi et al., 1992; Passino & Whitman, 1993; Sommer et al., 1993), warmth (Levine Coley & Chase-Lansdale, 1998), neglect, and punitive parenting (Bernardi et al., 1992).

Despite the aforementioned positive findings, concerns regarding adolescents taking on parental roles persist. Several studies have documented that adolescent parenting behavior is in fact more negative than that of adult mothers (Berlin et al., 2002; Bernardi et al., 1992; Elster et al., 1983; Ketterlinus et al., 1991; Levine et al., 1985; Moore & Brooks-Gunn, 2002; Passino & Whitman, 1993; Sommer et al., 1993). Some researchers have found that adolescent mothers are more insensitive (Belsky, 1984; Elster et al., 1983), detached, intrusive, and less supportive than adult mothers (Berlin et al., 2002). Adolescent mothers are less flexible and less positive when interacting with their infants, engage in fewer verbal exchanges, have more difficulty matching their infants' affect, and are more controlling in their interactions relative to adult mothers (Sommer et al., 1993). Adolescent mothers are also more likely to engage in punitive parenting as compared to older mothers (Belsky, 1984; Bernardi et al., 1992; Levine et al., 1985).

Passino & Whitman (1993) found that adolescent parents engaged in fewer overall interactions with their children, and the interactions that did occur were more negative than those of adult mothers. Adolescent mothers are less likely to engage in verbal interactions and less likely to respond appropriately to their children's signals (Pomerleau, Scuccimarri, & Malcuit, 2003). However, adolescent mothers show no differences in interactions that require physical activity compared with adult mothers (Pomerleau et al., 2003). Others have found that adolescent mothers engage in parallel play with their children, unlike adult mothers (Moore & Brooks-Gunn, 2002), which may account for findings that children of adolescent and adult mothers do not differ in their motor development (Pomerleau et al., 2003). In a review of the literature, Elster et al. (1983) found that during physical interactions with their infants, adolescent mothers did

demonstrate warm behavior toward their children. However, physical interactions are less nurturing when compared to verbal interactions, thereby suggesting lower levels of empathy on behalf of the adolescent mothers, which may lead to lower levels of maternal responsivity (Elster et al., 1983).

It is likely that measurement and sampling issues factor strongly in the discrepancy of these findings. Several researchers have found that when measuring parenting behavior with a micro-level coding scheme, adolescent mothers appear to engage in much more negative parenting behavior than when using a global measure of parenting (Passino & Whitman, 1993; Sommer et al., 1993). For example, the findings of Passino and Whitman (1993) and Sommer and colleagues (1993) were based on a micro-level coding scheme (Maternal Interactions Scale). Using a more global measure of parenting, the authors did not find differences between adolescent and adult mothers on maternal responsivity, maternal sensitivity and maternal activity (Passino & Whitman, 1993; Sommer et al., 1993). Overall, these findings indicate that although adolescent mothers may have engaged in specific parenting behaviors that are more negative than those of adult mothers, their overall parenting may have been more positive than previous findings suggest. However, neither Sommer et al. (1993) nor Passino and Whitman (1993) reported the ethnic composition of their samples. It is possible that culture, poverty, and language served as confounds in these studies. These variations in findings due to different methodologies point to the importance of utilizing a battery of instruments to obtain more accurate information regarding adolescent parenting.

Another sampling issue relates to the age of the adolescents; which has varied across studies. Sommer et al. (1993) did not report on the age range in their sample.

Passino and colleagues (1993) reported a range of 14.28 to 19.14 years, while Levine and colleagues (1985) reported an age range of 16-17 years, and Bernardi and colleagues (1992) simply stated that the adolescent mothers in their sample were under 19 years of age. This could have masked developmental differences that may exist between adolescent and adult mothers (e.g. cognitive and emotional development). It is clear that additional research is necessary to further explore possible differences based on adolescent age.

Despite these methodological caveats, some generalities can be made when comparing adult and adolescent mothers. Overall, adolescent mothers are similar to adult mothers in their sensitivity, responsivity, (Passino & Whitman, 1993; Sommer et al., 1993) and involvement (Bernardi et al., 1992; Passino & Whitman, 1993; Sommer et al., 1993). However, adolescent mothers differ from adult mothers in their levels of punitive behavior (Berlin et al., 2002; Bernardi et al., 1992; Elster et al., 1983; Ketterlinus et al., 1991; Levine et al., 1985; Moore & Brooks-Gunn, 2002; Passino & Whitman, 1993; Sommer et al., 1993), detachment, intrusiveness, lack of support (Berlin et al., 2002), and level of control toward their children (Sommer et al., 1993). Although this body of research has shown that adolescent mothers are more likely to engage in negative parenting behavior, there is less information regarding the influences on adolescent parenting.

Influences on Adolescent Parenting

Research on adolescent parenting has determined that certain factors will affect parenting behavior. Specifically, maternal race (Berlin et al., 2002; Corcoran, Franklin, & Bennett, 2000; Field, et al., 1990; Moore & Brooks-Gunn, 2002; Reis, 1993) and

education (Berlin et al., 2002; Levine et al., 1985; Pelchat et al., 2003) have been shown to influence positive and negative adolescent parenting behaviors. In order to examine those aspects of adolescent parenting that still require clarification, maternal race and education served as control variables in my study. Factors influencing adolescent parenting that were investigated in my study were maternal age (e.g. younger versus older adolescents), depression, and parenting stress.

Adolescent Development. Adolescence has often been operationalized as the point in an individual's life when hormonal changes incur rapid physical change. It has long been assumed that puberty was the leading cause of the emotional ups and downs adolescents supposedly exhibit. However, studies suggest that physiological changes have less to do with adolescent moodiness than environmental factors (Steinberg & Morris, 2001). If hormones are not culprits, what environmental factors can we blame for the so-called adolescent angst? Unfortunately, as discussed below, the current state of adolescent research bars a precise answer to this question.

In their review of the literature Steinberg and Morris (2001) stated that the study of adolescent development has focused primarily on examination of dysfunction, thereby disallowing compilation of data that would demystify development in the typical adolescent. Nevertheless, examining dysfunction has allowed some level of inference regarding normative development during this period of growth. For example, the still popular picture of the adolescent as a rebellious figure filled with turmoil has found little support in the literature. Although arguments with parents increase, and there is a decline in the amount of time spent with family members, most adolescents and their families experience minimal disruption in their daily lives (Steinberg & Morris, 2001).

Additionally, many of the difficulties experienced by adolescents and their families do not last long; rather they are a function of temporary experimentation that tend to dissipate with age and increased responsibility (Steinberg & Morris, 2001).

While many adolescents reach their adult years with minimal strife, there are those who encounter serious difficulties, such as substance abuse, delinquency and violent behavior. Steinberg and Morris (2001) caution that assuming many of these difficulties arise in adolescence is unfounded. Many of those adolescents who develop long-term dysfunction demonstrate precursors to this behavior during childhood (Steinberg & Morris, 2001).

The developmental course during adolescence is rife with change. Researchers have found that there are differences between younger and older adolescents in both affective and cognitive development (Klaczynski, 2000; Moneta et al., 2001). Moneta et al. (2001) found that younger adolescents experienced a rapid decline in positive affect, but this decline slowed with time, resulting in fewer changes in the frequency of positive affectional states in older adolescents. The authors also found that self-esteem increased over time, and although Moneta et al. (2001) found that self-esteem followed a U-shaped function, the net result was that younger adolescents reported significantly lower levels of self-esteem compared with older adolescents. Cognitive changes are also evident within the adolescent population. Klaczynski (2000) found that younger adolescents' reasoning skills were less complex and more subject to heuristic bias compared to older adolescents. Taken together, the results from these studies suggest that there is a wide range of affective and cognitive functioning within the adolescent population. As such, it

is important to examine parenting behavior in adolescents by age to obtain a more accurate description of the processes at work in this population.

Age. Although numerous researchers have investigated the influence of adolescent parenting on child development (Almgren, Yamashiro, & Ferguson, 2002; Black, Papas, Hussey, Dubowitz, et al., 2002; Black, Papas, Hussey, Hunter, et al., 2002; Elster et al., 1983; Field et al., 1990; Leadbeater & Bishop, 1996; Levine, Pollack, & Comfort, 2001; Luster, Bates, Fitzgerald, Vandenbelt, & Key, 2000b; Moore & Brooks-Gunn, 2002), the majority of this literature has not taken into account age variations within the adolescent population (Ketterlinus et al., 1991). Most of the research has included adolescent mothers across a broad age range without comparing across age. The spectrum of ages across studies includes participants from 11-21 years of age, thus preventing a comparison of developmental stages for both 11 and 21 year old mothers (Ketterlinus et al., 1991). Grouping adolescents of all ages into a single category obscures potential differences in parenting that might derive from developmental factors, such as emotional regulation. The age range for adolescents studied in the majority of the literature reviewed focused on 13-19 year olds. However, this range is still too broad. Examining adolescent parenting based on developmentally appropriate categories of parental age is likely to further clarify parenting behaviors adolescent mothers exhibit. Findings from the few studies which have included a comparison of adolescent parenting by age have found variations in parenting behavior (Elster et al., 1983; Reis, Barbera-Stein, & Bennett, 1986). For example, researchers have shown that older adolescent parents are more responsive to their children compared to younger adolescent parents, even when race, poverty, and marital status are controlled (Elster et al., 1983). Younger adolescent

mothers are less likely to engage in touching, speaking in a high pitched voice, synchrony, and close proximity to their infant than older adolescents (Elster et al., 1983). Additionally, researchers point to differences in the level of punitive attitudes, with older adolescent mothers maintaining less punitive attitudes toward discipline than younger adolescent mothers (Reis et al. 1986). In my study, I hypothesized that older adolescents would be engaged in more positive parenting behavior compared to younger adolescent mothers.

Income and adult parenting. Although the mechanism by which income impacts parenting is still unclear, a correlation has been found between income and parenting behavior (Linver, Brooks-Gunn, & Kohen, 2002). In their study of 755 preschool children, Lohman Pittman, Coley, & Chase-Lansdale (2004) found that impoverished parents (those from low-income backgrounds and receiving Medicaid or food stamps) were less responsive, less firm, and inconsistent in their interactions with their children. In other studies, impoverished mothers demonstrated reduced levels of involvement, higher levels of punitive parenting, less warmth, and less consistent behavior toward their children than those from less impoverished backgrounds (Bradley, Corwyn, McAdoo, & Garcia Coll, 2001; Klebanov et al., 1994; Lohman, et al., 2004). Finally, another study documented that income was associated with the quality of mother-child interactions, and interaction quality served as a mediator between income and externalizing behavior (Harnish et al., 1995). In sum, these studies demonstrate that being from a low-income background is associated with negative parenting behavior.

Income and adolescent parenting. Few studies have focused exclusively on the impact of a low-income background on adolescent mothers' parenting. The majority of

studies focus instead on a broad age range of low-income mothers. However, adolescent mothers are at higher risk for receiving public assistance and living in a low-income environment than adult mothers (Deal & Holt, 1998). Sixty-one percent of adolescent mothers live at or below the poverty line (Kalil & Danziger, 2000), compared with the national poverty rate of 12.7 % (Nelson, 2005). Adolescent mothers managing on low-income budgets may not suffer negative effects solely as a result of the stressors accompanying the status of motherhood (Bernardi et al., 1992). Although adolescent mothers are more likely to receive public assistance than adult mothers (Corcoran et al., 2000; Kalil & Danziger, 2000; Ketterlinus et al., 1991; Levine Coley & Chase-Lansdale, 1998; Moore & Brooks-Gunn, 2002), some have suggested that income does not account for differences between adolescent and adult mothers' parenting (Levine et al., 1985). The disadvantaged conditions under which they find themselves are the underlying influences of adolescent mothers' diminished well-being (Battle, 2000; Bernardi et al., 1992). Bernardi et al. (1992) interviewed 79 mothers under the age of 19 and 496 adult mothers from low-income neighborhoods who had children ages 2-5. The authors argued that the risk factors associated with adolescent parenthood are confounded with risk factors associated with living in a low-income environment. Additionally, adolescents from low-income backgrounds are more likely to be exposed to other adolescents who are parents, thereby creating a sense of normalcy around the idea of becoming a young parent (Moore & Brooks-Gunn, 2002). According to this perspective, adolescent parenthood is not an anomalous situation creating excess strain, it is a part of everyday life. These findings underscore the importance of including poverty in any study of adolescent parenting, and examining income variations within the population.

Psychological Factors

Depression and adult parenting. One aspect of emotional well-being that has been studied extensively is depression. Specifically, maternal depression has been documented to negatively influence parenting behavior. Depressed mothers tend to display either a negative or flat affect when interacting with their children. (Gelfand & Teti, 1990) Additionally, depressed mothers have difficulty engaging in sensitive and responsive parenting, and are often inconsistent in their interactions with their children (Gelfand & Teti, 1990).

According to Beeghly and colleagues (2003), depressive symptoms are stable in adult mothers. The period in a child's life during which the mother experiences depressive symptoms has a significant influence on later developmental trends for the child. Children whose mothers are depressed postpartum have increased levels of behavioral difficulties compared with children whose mothers report depressive symptoms only during pregnancy. Severity of maternal depression also has a positive relationship with child aggressive and inattentive behavior (Brennan, Hammen, Andersen, Bor, Najman, & Williams, 2000). Research on the effects of depression on child outcome has found that depressed mothers are more likely to report behavioral difficulties in their children than non-depressed mothers (Black, Papas, Hussey, Dubowitz, et al., 2002a; Elgar, Curtis, McGrath, Washbusch, & Stewart, 2003; Lee, 2003). However, reports from objective observers have also found higher levels of aggressive and inattentive behavior in children of depressed versus non-depressed mothers (Harnish et al., 1995).

Depression has been assessed using a variety of self-report and interview measures such as the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), Composite International Diagnostic Interview (CIDI; Kessler, Wittchen, Abelson, McGonagle, Schwartz, Kendler, et al., 1998), and Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). These measures have been widely used in studies examining depressive symptoms. Psychometric studies have shown that the CES-D differentiates between clinical and non-clinical populations (Knight, Williams, McGee, & Olaman, 1997; Radloff, 1977), the CIDI demonstrates adequate validity and reliability (Andrews & Peters, 1998; Jordanova, Wickramesinghe, Gherada, & Prince, 2004), and the BDI demonstrates acceptable internal consistency and convergent validity (Storch, Roberti, & Roth, 2004). As such, the continued use of self-report and interview techniques in assessing symptoms of depression is warranted.

Depression and adolescent parenting. Adolescent mothers are at increased risk for depression when compared with older mothers (Deal & Holt, 1998), with reports of up to 1/3 of adolescent mothers with high levels of depressive symptoms (Black, Papas, Hussey, Dubowtiz, et al., 2002; Deal & Holt, 1998). This review of the literature has yielded few studies that assess the influence of depression on parenting behavior in a sample of adolescent mothers. Most studies examining maternal depression in adolescence report maternal perceptions of their children (Black, Papas. Hussey, Dubowitz, et al., 2002), but do not report on specific adolescent parenting behaviors. For example, Black, Papas, Hussey, Dubowitz, et al. (2002) found that depressed adolescent mothers were more likely to report internalizing problems in their children than non-depressed adolescent mothers. A notable exception was a study by Leadbeater and

Bishop (1996) in which 120 adolescent mothers (age range = 13-19 years) and their children (aged 12months) were followed for 2 years. The authors found that depressed adolescents were unresponsive to their children. Also, negative interactions between mother and child were associated with maternal depression.

Adolescent mothers are managing the dual role of an adolescent who is transitioning from a child to an adult, and that of a mother. Adolescent mothers find themselves in the position of trying to maneuver maturational changes occurring within themselves (e.g. emotional and cognitive development) (Klaczynski, 2000; Moneta et al., 2001) in addition to managing the responsibilities of parenthood without the guarantee of social support. Those mothers who have difficulties adjusting to their demands are at increased risk for high levels of parenting stress (Passino & Whitman, 1993), and those mothers who experience higher levels of stress (parenting or otherwise) are at increased risk for depression (Moore & Brooks-Gunn, 2002; Passino & Whitman, 1993). Maturational factors may play an important role in the onset of adolescent depression, especially for those adolescents that have parental responsibilities.

Ethnic differences are also an important factor to consider in the examination of adolescent depression. Researchers have found variations in familial responses to adolescent pregnancy as a function of ethnicity (Battle, 2000; Moore & Brooks-Gunn, 2002). In their review of the literature Moore and Brooks-Gunn (2002) found that adolescent pregnancy has fewer negative connotations within black communities when compared with white communities. The higher level of social support and fewer social stigmas experienced by black adolescent mothers compared with white adolescent

mothers may minimize development of depressive symptoms that may otherwise result as a function of becoming a young mother.

In sum, the quality of adolescent parenting is likely to have an inverse association with adolescent depressive symptoms. It is critical in any study of adolescent parenting to determine the extent to which maternal psychopathology affects behavior and in turn child outcomes.

Stress and adult parenting. Another psychological factor that may influence parenting behavior is parenting stress. Assessments of stressful experiences are usually in the form of self-report measures such as the Parent Stress Interview (PSI; Abidin & Wilfong, 1989) and Parenting Daily Hassles questionnaire (PDH; Crnic & Greenberg, 1990). The PSI has been found to be a valid and reliable instrument (Abidin & Wilfong, 1989) in assessment of parental stress. In addition, the PDH shows high levels of reliability (Crnic & Greenberg, 1990). Given these psychometric findings, self-report measures appear to be a valid tool for assessing parenting stress levels.

Parents who regularly experience parenting stress are less likely to engage in positive parenting behavior than those who report low parenting stress levels (Anthony, Anthony, Glanville, Nauman, Waanders, & Schaffer, 2005; Crnic, Gaze, & Hoffman, 2005). Specifically, those parents who report high levels of parenting stress are more likely to demonstrate low levels of positive affect, fewer nurturing behaviors, and less positive interactions with their children (Anthony et al., 2005; Crnic et al., 2005). Additionally, stressed parents are at greater risk for engaging in harsher disciplinary practices relative to non-stressed parents (Anthony et al., 2005). In a study of 30 mothers and their preschool aged children, Repetti and Wood (1997) found that reported levels of

job related stress were associated with parenting behavior. On the days that mothers reported experiencing a stressful day, they were less involved and less warm towards their children than on days when they reported low job related stress levels. As indicated by these studies, parental stress levels are an important factor in parenting behavior.

Stress and adolescent parenting. Few studies have addressed the question of how stress affects adolescent mothers' parenting. Researchers who have examined adolescent stress and parenting behavior used infant irritability as a proxy measure for parenting stress rather than assessing the experience of stress through a more direct measure such as a self-report assessment (Ketterlinus et al., 1991). Adolescent stress is a complex construct. Various factors interact to create an experience of stress in adolescence, such as puberty, dating, and school (Ketterlinus et al., 1991). Having to manage motherhood compounds the experience (Elster et al., 1983; Ketterlinus et al., 1991). It is likely that adolescent mothers are at greater risk for experiencing stressful situations compared with adult mothers. For example, Sommer et al. (1993) found that adolescent mothers reported higher parenting stress levels relative to adult mothers across a variety of child and parent related variables. However, the authors found no significant differences in parenting stress levels between adolescent and adult mothers in the area of child rearing. It may be that adolescent mothers are receiving greater assistance in child rearing from family members than adult mothers (Bernardi et al., 1992), thereby reducing their parenting stress in this domain.

Adolescent mothers who report high levels of parenting stress demonstrate insensitive parenting. Adolescent mothers who do not perceive their children as causing stressful situations engaged in more appropriate parenting than those who perceive their

children as stress inducing (Passino & Whitman, 1993). Additionally, adolescent mothers experiencing high levels of stress demonstrate decreased levels of positive affect when interacting with their infants (Elster et al., 1983). Conversely, adolescent mothers who experience low stress levels are more likely to demonstrate sensitive and responsive parenting (Ketterlinus et al., 1991). Despite these negative findings, Ketterlinus et al. (1991) found that age was unrelated to stress and well-being. It may be that other contextual factors yet to be examined mediate the association between age and stress.

Finally, researchers have found differences in the behavior of children of high versus low stressed adolescent mothers (Ketterlinus et al., 1991). Infants of highly stressed mothers are less likely to demonstrate compliant behavior, less likely to provide clear cues regarding their needs, and are less responsive than infants of low stressed mothers (Ketterlinus et al., 1991). My study examined the association between self-reported levels of parenting stress and parenting behavior in a sample of adolescent mothers.

Familial and Ecological Factors

Outcomes for Children of Adolescent Parents

Adolescent parenthood has been associated with a variety of risk factors for later child development. Children of adolescent mothers are at greater risk for academic difficulties, early sexual intercourse, aggressive interactions with peers (Levine Coley & Chase-Lansdale, 1998; Levine et al., 2001), and poor impulse control (Levine Coley & Chase-Lansdale, 1998). Addressing all the difficulties faced by children of adolescent mothers was beyond the scope of my study. The focus herein was on aggressive and inattentive behavior in young children of adolescent mothers.

Aggressive problems for children of adult parents. The Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000) is a widely used measure of aggressive and inattentive behavior. This parent report measure of child behavior has a good level of reliability and could be used across a wide age range (Achenbach & Rescorla, 2000). Its continued use as a measure of aggressive and inattentive behavior in children is warranted.

One definition of aggression is behavior which occurs for the purpose of harming another (Tremblay, 2000). Another definition proposed by Coie & Dodge (1998) is that aggression is a set of intentional behaviors that may (and are designed to) cause harm, occures in conjunction with a biologically arousing state, and serves to create a noxious situation for the victim. Toddlers demonstrate the highest rates of aggressive behaviors, which have been observed in children as young as 12 months of age (Coie & Dodge, 1998).

Aggressive behavior at 24 months is developmentally appropriate. As the child learns to get her needs met via verbal exchange, a decline in overall levels of physical aggression is expected (Tremblay, 2000). Aggressive behavior during the toddler years is cause for concern only if the level of aggression does not decrease with age (Nagin & Tremblay, 1999; Tremblay, 2000). Children who experience early as well as multiple risk factors, such as having adolescent parents, are at greatest risk for developmentally inappropriate aggressive behavior (Campbell et al., 2000). Endogenous factors are also implicated in the development of aggressive behavior. Temperamental characterstics (Caspi Henry, McGee, Moffitt, & Silva, 1995) and genetic factors (Brook, Rosenberg, Brook, Balka, & Meade, 2004) have been implicated in chronic aggressive behavior.

Aggressive behavior increases in frequency with corresponding increases in children's displays of angry affect (Moeller, 2001). Maximum levels of aggressive behavior are typically observed at 2 years of age (Nagin & Tremblay, 1999). Once they are able to verbalize their needs, children's levels of aggressive behavior are expected to decline (Tremblay, 2000). This is in line with findings that the majority of aggressive behavior observed in infants occurs for the purpose of obtaining a coveted object rather than aggression for the sake of inducing harm. (Moeller, 2001). However, approximately 5 % of children do not demonstrate the normative decline in aggression (Nagin & Tremblay, 1999). Nagin and Tremblay (1999) found 4 trajectories of aggressive behavior in childhood: 'lows' were children who rarely demonstrated difficult behavior (15% to 25%); 'moderate desisters' were children engaged in moderate levels of disruptive behavior but decreased the rate of this behavior over time (50%); 'high-level near desisters' were those children who demonstrated high levels of aggressive and inattentive problems that decreased significantly over time (20% to 30%); and a 'chronic' group of children who had high levels of disruptive behavior that were maintained over time (5%). Shaw and colleagues (2003) found decreased levels of conduct problems in a group of boys between the ages of 2 and 8, with 5.6% of their sample maintaining high levels of aggression. These authors were also able to divide their sample into the 4 developmental trajectories of aggressive behavior discussed by Nagin and Tremblay (1999).

Contrary to the above findings, Hay et al. (2000) found that aggressive behavior was not a regular occurrence during the toddler period. Slightly more than half of the children in their sample never demonstrated aggressive behavior. Additionally, Rubin,

Burgess, Dwyer, and Hastings (2003) found that nearly half of the toddlers in their study also did not demonstrate any form of aggressive behavior.

If 95% of children demonstrate normative decreases in levels of aggressive behavior over time, what factors are implicated in the maintenance of aggressive behavior in the remaining 5% of children? Parenting practices are considered risk factors for aggressive tendencies in children (Campbell et al., 2000). Mothers who display high levels of negative control and negative emotional reactions are more likely to have children with a decreased capacity to regulate their emotional state, which in turn has been linked to aggressive behavior in childhood (Campbell et al., 2000; Caspi et al., 2003; Gilliom et al., 2002). For example, Gilliom, and colleagues (2002) found that maternal negativity was related to teacher reports of aggressive and inattentive problems at school entry. Shaw, Keenan, and Vondra (1994) found that maternal non-responsive behavior at 12 months and child noncompliant behavior at 18 months predicted aggressive behavior in boys at 24 and 36 months. Rubin et al. (2003) found that maternal negative interactions (e.g. hostile and intrusive) with their children at age 2 were associated with aggressive behavior at age 4.

These studies all examined children of adult parents, raising the question: How would children of adolescent mothers behave in similar situations? For both adolescent and non-adolescent mothers, positive interactions with their children have a negative association with aggressive and inattentive behavior in children, whereas insensitive, punitive parenting has a positive association with negative child outcomes (Moore & Brooks-Gunn, 2002; Rothbaum & Weisz, 1994). Moreover, researchers have found that younger mothers are more likely to reject their children than older mothers (Shaw et al.,

2003), which in turn has been linked to higher levels of aggression (Shaw et al., 2003). These findings suggest an increased likelihood of aggressive behavior in children of adolescent parents (Bernardi et al., 1992; Moore & Brooks-Gunn, 2002). To date, little research has been done regarding adolescent mothers' parenting behaviors and engagement in punitive disciplinary strategies (Moore & Brooks-Gunn, 2002).

Aggressive problems for children of adolescent parents. Adolescent parenthood has been associated with a variety of risk factors linked to outcomes over time. For example, children of adolescent mothers are at greater risk for behavioral difficulties (Levine Coley & Chase-Lansdale, 1998; Levine et al., 2001; Moore & Brooks-Gunn, 2002), attachment problems, and delays in impulse control (Levine Coley & Chase-Lansdale, 1998). One study found that 33% of children of adolescent parents scored above the clinical level for aggressive and inattentive behavior (Black, Papas, Hussey, Hunter, et al., 2002).

Contrary to the above findings, in their review of the literature, Moore and Brooks-Gunn (2002) reported that children of adolescent mothers are no more likely to demonstrate problems with hyperactivity and aggression than children of older mothers. However, the authors specified that this is true during the early years of children's lives; once the children begin school, behavioral difficulties become salient. This may be due to the different demands placed on children in school versus those they experience at home.

According to Rubin et al. (2003), there is a paucity of longitudinal information regarding stability of aggressive behavior in very young children. Therefore my study included assessments of aggressive behavior of children of adolescent mothers at both 2 and 3 years of age. Additionally, no studies have been conducted that include adolescent

parenthood as a risk factor in development of aggressive behavior. The majority of studies reviewed have not focused on aggressive behavior in toddlers. Most studies examined school age children of adolescent mothers. Therefore, my study examined aggressive behavior in children ages 24-36 months.

Inattention and hyperactivity in children. In addition to aggression, other forms of aggressive and inattentive behavior that can be linked back to parenting are inattention and hyperactivity. In my study, children's hyperactivity was not assessed. However, due to the high comorbidity between hyperactivity and inattention, I include a discussion of both disorders. Inattention in children has been characterized as their inability to "…sustain attention, interest, or persistence…to their long term goals, or the tasks assigned to them by others…" (Barkley, 2003, p.75). Hyperactivity has been characterized as involving impulsive, high-energy behaviors in children (Barkley, 2003). In their review of the literature, Spira and Fischel (2005) discussed the importance of helping young children learn to manage their behavior. In other words, children must learn to resist their impulses, focus for extended periods of time on specific subject matter, and manage their physical behaviors. Managing inattentive and impulsive behavior becomes increasingly important once children enter an academic institution, such as pre-school, where they need to be able to follow directions, complete tasks, and be able to delay getting their needs met. In addition to the predictive value of parenting in examination of aggressive behavior, alternative endogenous factors may also contribute to the development of aggressive behavior. For example, children with temperamental characteristics classified as 'lack of control are at greater risk for aggressive behavior problems than children without this temperamental characteristics (Caspi, et al., 1995).

Assessing inattention in young children is fraught with difficulty. Researchers have found that toddlers who display inattentive and impulsive behaviors often do not go on to develop Attention Deficit Hyperactivity Disorder (ADHD) (Barkley, 2003; Spencer, et al., 2007). Nevertheless, some authors suggest that children could be assessed as early as 3 years of age, while simultaneously cautioning that earlier assessment may be unable to differentiate between symptoms of ADHD and other behavioral difficulties such as aggression (Barkley, 2003). Other authors have found that children who have difficulty focusing on a task at age 2 years continue to have similar difficulties at age 8 years, suggesting the possibility of early assessment of children at increased risk for future difficulties (Olson, Bates, Sandy, & Schilling, 2002).

Although not all children who demonstrate symptoms of inattention and hyperactivity go on to receive a diagnosis of ADHD, according to Spira and Fischel (2005), 2% of preschool age children demonstrate behavior that is symptomatic of ADHD. ADHD is a behavioral disorder characterized by inattention and lack of impulse control (Barkley, 2003). Although my study did not examine children diagnosed with ADHD, a discussion of the disorder is relevant because these children are at increased risk for receiving this diagnosis. Children from low-income backgrounds are more likely to manifest inattention and hyperactivity relative to their higher-income counterparts (McGrath et al., 2005). ADHD is suggested to be a familial trait, with parental psychopathology functioning as a risk factor for development of the disorder, indicating a possible genetic influence (Barkley, 2003, Cunningham & Boyle, 2002, Johnston & Mash, 2001, Pfiffner, McBurnett, Rathouz, & Judice, 2005). Importantly, children

diagnosed with ADHD often have poor academic (Cunningham & Boyle, 2002, Barkley, 2003) and interpersonal success (Barkley, 2003).

In their review of the literature, Spira and Fischel (2005) found that increased ability to focus occurs between the ages of 3 and 4 years. However, even children under the age of 3 are developing specific regulatory abilities, such as following directions (the ability to inhibit a behavior began after 3 years of age) (Spira & Fischel, 2005). Children demonstrating inattention and hyperactivity in preschool are more likely to demonstrate the same regulatory difficulties into the adolescent years. However, not all children who demonstrate inattention and hyperactivity go on to receive a diagnosis of ADHD.

Researchers have also found that children with early regulatory difficulties are at increased risk for a variety of psychiatric disorders relative to children who do not demonstrate inattention and hyperactivity between the ages of 2 and 5 years. Inattention and hyperactivity are often comorbid with aggressive behavior (Barkley, 2003; Johnston & Mash, 2001). Although some researchers have found that over half of the children with inattention and hyperactivity demonstrate aggressive behavior by middle childhood (Barkley, 2003), others suggest a broader range of 30%-50% (Spira & Fischel, 2005).

Though the findings are mixed, evidence supports the conjecture that punitive parenting of children with inattention and hyperactivity influences the development of aggressive disorders in early childhood (Barkley, 2003; Johnston & Mash, 2001; Pfiffner et al., 2005). In a review of the literature, Johnston and Mash (2001) suggested that sensitive parenting serves to mitigate congenital predispositions to ADHD, whereas punitive and insensitive parenting exacerbates the condition. Additional support for this claim is evident in studies that found mothers of ADHD children are more likely to

engage in demanding, punitive behavior than those of non-ADHD children (Barkley, 2003; Cunningham & Boyle, 2002; Johnston & Mash, 2001; Spira & Fischel, 2005). Mothers of ADHD children are also more likely to be single (Spira & Fischel, 2005), experience high stress levels (Johnston & Mash, 2001; Spira & Fischel, 2005), depressive symptoms (Cunningham & Boyle, 2002, Johnston & Mash, 2001, Spira & Fischel, 2005), and inefficacy regarding their ability to manage their children (Johnston & Mash, 2001). For example, Pfiffner and colleagues (2005) found that low levels of maternal sensitivity and warmth were associated with the development of aggressive behavior in children who demonstrated inattention and hyperactivity.

Concluding Remarks

To summarize, the context of adolescent parenting places young children at risk for compromised developmental outcomes, particularly aggressive and inattentive behavior problems. The resources adolescents have, in the form of income or social support, influences their parenting, and the subsequent development of their children. Adolescent mothers' psychological status, specifically whether they experience high levels of depression and distress, also affects their parenting and the functioning of their children. As with adult samples, there is some evidence that positive parenting behaviors of adolescents may mitigate the negative effect of contextual risks on their children's outcomes.

The purpose of my study was to examine predictors of adolescent parenting behavior. Although numerous studies have examined the influence of adolescent parenting on child aggressive and inattentive behavior, few studies have examined differences in parenting behavior within an adolescent sample. The separation of

adolescents into groups of older and younger mothers allowed for a more precise examination of predictors of adolescent parenting, and the ramifications thereof (e.g. child aggressive and inattentive behavior). It is likely that some of the inconsistent findings reported in the adolescent parenting literature is a function of confounding the different developmental stages of older and younger adolescents. Therefore, my study will help to clarify this by differentiating between parenting behavior in two groups of adolescents.

Chapter 3: Methods

In my study I examined parenting and its influence on child behavior in a low-income, high-risk sample of adolescent mothers. As toddlerhood is a salient developmental period for the onset of behavioral problems (Shaw et al., 2003), parenting and child behavior problems at 24 and 36 months was the focus of my study. To begin with, demographic characteristics of adolescent mothers as they related to parenting behavior were explored. Then, the influence of adolescent parenting behavior on child aggressive and inattentive behavior was analyzed. Finally, adolescent parenting was examined as a mediator between parenting behavior and child aggressive and inattentive behavior.

My study utilized data from the Early Head Start Research and Evaluation Project (EHS Evaluation), which was conducted under the auspices of the Administration of Children, Youth, and Families (ACYF) from 1996-2001. The data were downloaded from the Inter-University Consortium for Political and Social Science Research website (www.icpsr.umich.edu). There were 2 primary goals of the EHS study: one was to understand how Early Head Start (EHS) services influence children ages 0 to 3 years and their families; the second goal was to understand how various programs influenced children and families with differing backgrounds (DHHS, 2001).

In order to receive funding, all 68 EHS centers had to agree to participate in research projects. In 1996, 41 sites, in conjunction with university researchers, submitted grant applications to the EHS Bureau (DHHS, 2001). In order to be chosen for the EHS Evaluation, the EHS centers needed to have the ability to recruit twice the number of families they normally would, and collaborate with a research team. The entire sample of

EHS centers needed to be representative of the EHS program nationwide (DHHS, 2001). A total of 17 sites were chosen to participate in the national evaluation from across the country.

Participants

Families eligible to participate in the study were from low-income backgrounds (living at or below the poverty level according to federal guidelines) and had a child 12 months of age or younger (DHHS, 2001). Participants were chosen from a pool of applicants for the EHS program. The EHS centers were asked not to enroll applicants until Mathematic Policy Research (MPR), the research firm conducting the evaluation, decided whether they would be assigned to the program or control group (DHHS, 2001). Random assignment was done via computer generated random number assignment by MPR staff (DHHS, 2001). The program group was enrolled into EHS, whereas the control group was not. The control group had access to other community resources available to them. Initial enrollment into the EHS Evaluation was 3,001 families (1,513 experimental, 1,488 control), with 150-200 families participating in each site (DHHS, 2001). The final sample consisted of 2,977 mothers. Demographic data were obtained via parent report (Head Start Family Information System (HSFIS)) (see Appendix A) taken at enrollment in EHS, and prior to random assignment to program or control groups (DHHS, 2002b). Baseline demographic analyses found that the program and control groups were similar (DHHS, 2001). There were no differences between groups on the following variables: maternal age at birth of focus child; highest grade completed; race/ethnicity; employment; English language skills; living arrangements; presence of an adult male in the home; number of adults in the home; number of children in the home;

number of moves in the previous year; whether the respondent owned a home; household income as a percent of the poverty level; welfare receipt; resource availability (i.e. food, housing, money to buy necessities, medical care, transportation, child care, money for supplies, and support from friends); maternal risk (i.e. adolescent parenthood, single parenthood, dropping out of school, receiving public assistance, unemployment, no involvement in vocational training.); previous enrollment in Head Start or other program; focus child age at enrollment, focus child gender, whether focus child was first born; low birth weight; whether focus child remained in the hospital immediately after birth; concern regarding the focus child's health and development; whether the focus child received evaluation due to concerns regarding health and development; whether the focus child had established or biological risks; and whether the focus child was covered by health insurance (DHHS, 2002b). Additionally, it must be noted that there were significant differences between program and control group on premature birth of focus child, and whether focus child was exposed to environmental risks (DHHS, 2002b). The study authors asserted that significant differences on 3 variables did not reach the chance level of differences on 5 out of the 47 variables tested (DHHS, 2002b).

The sample for my study consisted of 319 mothers who were adolescents at the time of birth of the target child who was eligible for EHS. Adolescence for the purpose of my study was defined as individuals ages 15 through 19. Adolescent mothers under the age of 15 were not included due to the small number of individuals in this age range (n=31). See Table 1 for identification of each variable by source (maternal observation), measure, and data collection point. According to Cohen (1988), to obtain power of .80 with 6 independent variables at α=.01 with a medium effect size requires a sample size of

134. My sample exceeded this power requirement. The sample was derived from study participants who completed the 14, 24 and 36 month home visits. At enrollment, the ethnic breakdown of the mothers in my sample was as follows: 34.5 % black, 22.9% Hispanic, 38.2 % white, and 4.4% other. Forty nine percent of the sample children were female (see Table 2). The average age of the mothers at the birth of the focus child was 17.61 (SD=1.31) years. The mean age of the children at the 14, 24 and 36 month interviews was 17.03 (SD=4.34), 27.03 (SD=4.38) and 39.03 (SD=4.38) months respectively.

Table 1

Variable Source, Measure, and Data Collection Point

	Source		Measure	Data collection (months)			
	Maternal report	**Observation**		**Enrollment**	**14**	**24**	**36**
Age	X		HSFIS	X			
Depression	X		CES-D		X		X
14mo (SF)							
36mo (SF)							
Parenting		X					
Supportivness			EHS		X	X	X
Negative			Research				
regard			Project		X	X	X
Detachment			Video-tape				
Intrusiveness			Protocol		X	X	X
					X	X	X
Stress	X		PSI		X	X	X
Child aggression	X		CBCL			X	X
Child inattention	X		CBCL			X	X

Table 1

Continued

	Source		Measure	Data Collection (months)			
	Maternal report	**Observation**		**Enrollment**	**14**	**24**	**36**
Covariates							
Group			MPR				
Maternal race	X		HSFIS	X			
Child gender	X		HSFIS	X			
Maternal education	X		HSFIS	X			
Child age (months)	X		HSFIS	X		X	X

Table 2.

Demographic Characteristics of Adolescent Mothers by Age

Demographics	**Age (years)**	
	15-17	**18-19**
Child Gender%		
Female	45.7	52.0
Male	54.3	48.0
Race %		
White	25.7	48.0
Black	45.0	26.3
Hispanic	25.7	20.7
Other	3.6	5.0
Education %		
Less than HS grad	95.7	52.0
HS grad	3.6	35.8
More than HS	0.7	12.3
Household Income		
<33% poverty		
No	70.7	76.0
Yes	29.3	24.0

Table 2.

Continued

Demographics		Age (years)	
		15-17	**18-19**
33-67% poverty			
	No	85.7	77.1
	Yes	14.3	22.9
67-99% poverty			
	No	88.6	79.9
	Yes	11.4	20.1
>=100% poverty			
	No	90.7	89.4
	Yes	9.3	10.6

Procedures

MPR trained all interviewers, and monitored their progress at frequent intervals (DHHS, 2001). Consent forms were signed during the intake interview, which consisted of collecting demographic information. Data collection occurred using 2 separate time points as baseline; these time points were related to (1) amount of time that passed since random assignment to a group, and (2) target child's birthday. Specifically, Parent

Services Follow-up Interviews (PSIs) were collected at 6, 14, and 24 months after initial enrollment. These interviews were conducted over the phone unless the family did not have access to one, in which case the interviews were conducted in the home (DHHS, 2001).

Interviews based on the children's birthdays were conducted in the home when the children were 14, 24 and 36 months of age. The age range was: 13 months to 16 months and 30 days for the 14 month video assessments (13 to 19 months and 30 days for the 14 month parent interview); 23 to 28 months and 15 days for the 24 month video assessments (23 to 31 months and 30 days for the 24 month parent interview); and 35 to 38 months and 30 days for the 36 month video assessments (35 to 40 months and 30 days for the 36 month parent interviews) (DHHS, 2002a). These interviews consisted of parent report, child assessments, and parent-child interactions. Response rates for the parent interviews were 72% at 24 months and 70% at 36 months. Response rates for the video taped assessments were 60% at 24 months and 55% at 36 months (DHHS, 2001). When examining differences between program and control groups, researchers used regression models with many control variables. Some of the analyses were conducted using weights created from the Head Start Family Information System (HSFIS) to verify the validity of the findings (DHHS, 2002a; DHHS, 2002b). Some differences were found between the full sample of respondents and non-respondents on a variety of demographic variables (e.g. number of children in the home, number of adults in the home, income at 33% of the poverty line, welfare receipt, maternal education, and race/ethnicity) (DHHS, 2002b). Nevertheless, the authors suggest that the differences between groups are small, thus the overall analyses were meaningful (DHHS, 2002b) Participants were offered a gift and

monetary compensation at each visit (DHHS, 2001). All data were sent to MPR for storage, coding and computerized entry (DHHS, 2002b).

Measures

MPR staff, researchers from the Center for Children and Families, Columbia University Teachers College, and the Head Start Bureau jointly identified measures that met the following criteria: relevant to intervention goals and hypotheses; developmentally appropriate (for children); appropriate for EHS families; valid and reliable; used previously in large research projects; ease of administration; and cost effectiveness (DHHS, 2002b). Following is a description of each measure. See Appendices for specific items from each measure that were included in the EHS survey.

Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977). During the 14 month assessment, the CES-D was used to examine maternal depression; at the 24 month assessment a decision was made to substitute the CIDI for the CES-D. (Kessler et al., 1998). At the 36 month assessment the CES-D was once again implemented to measure depression. The change in measures was due to the different time frames referenced in each instrument. The CIDI items ask about incidents within the past year, whereas the CES-D asks about incidents within the past week. Therefore, it is possible that the same individual will be placed in different categories by each instrument (DHHS, 2002a). In order to provide accurate comparison of maternal depressive symptoms over time, the 24 month assessment was not included in the analyses for the current study.

The CIDI is a highly structured diagnostic interview that has acceptable levels of validity and high levels of reliability (Andrews & Peters, 1998; Jordanova,

Wickramesinghe, Gherada, & Prince, 2004). Items on the CIDI assess whether individuals have experienced negative emotional states such as sadness or depression for more than 2 consecutive weeks. The respondents are instructed to consider the previous 12 months of their lives when answering the questions. This measure utilizes computerized administration and scoring to further standardize assessment, in addition to already highly standardized items (Jordanova et al., 2004).

The CES-D (Radloff, 1977) is a 20 item self-report measure of depressive symptoms that has been shown to reliably discriminate between clinical and non-clinical levels of depression. The short form of the CES-D was used for analyses at both 14 and 36 month time points. This instrument has a 4 factor structure that measures depressed affect, positive affect, somatic and retarded activity, and social interactions (Radloff, 1977). The CES-D has been found to be both valid and reliable in measuring current levels of depressive symptoms (Radloff, 1977). The reliability of the CES-D in the EHSRE study at 14 months was reported by race: white, α=.90 (n=855); black, α =.88 (n=733); Hispanic, α =.90, (n=495) (U.S. DHHS, 2004). At 36 months the reliability for the total sample was α=.88 (n=2,095) (DHHS, 2002b).

Parent Stress Interview (PSI; Abidin & Wilfong, 1989). The PSI (Abidin & Wilfong, 1989) is an 120 item self-report, Likert type instrument assessing levels of parental stress as related to difficulties associated with the parent (Parent Domain) and those from the child (Child Domain) (Reitman, Currier, & Stickle, 2002). The subscales in the PSI short form (PSI-SF) are parental distress, difficult child, and parent-child dysfunctional interaction. The PSI-SF was used in the EHSRE study, with a total of 24 items at the 14, 24 and 36 month interviews. Items on the PSI include “You often have

feelings that you cannot handle things very well" and You find yourself giving up more of your life to meet your child(ren)'s needs than you ever expected". The measure has been found to be both valid and reliable for measurement of parental stress (Abidin & Wilfong, 1989). The reliability for the Parent Distress Scale of the PSI in the EHSRE study was: α =.82 (n=2,131) at 24 months; α =.84 (n=1,634) at 36 months (DHHS, 2002b).

Parenting. Parenting was assessed through video-taped interactions. The 14, 24 and 36 month 10 minute semi-structured free play parenting task was adapted from the NICHD Study of early Child Care (U.S. Department of Health and Human Services, 2004). For this task the parent was given 3 bags and was asked to play with the child using the toys in each of the bags in turn. Coders rated parenting behavior based on six parenting scales, which were: sensitivity to cues (mother responds to child's signals); positive regard (mother demonstration of positive affect toward the child); cognitive stimulation (mother engages in teaching behavior); detachment (mother is not involved with the child); intrusiveness (controlling behavior); and negative regard (demonstration of negative affect toward the child). The agreement on the parenting scales ranged from 84-100% for the 24 month assessments, and 86-100% for the 36 month assessments (DHHS, 2002b). Observation of parenting behaviors has been used by other researchers as an assessment tool for examining the impact of parenting on child outcome (Zaslow, Weinfeld. Gallagher, Hair, Ogawa, Egeland, et al., 2006). When compared with maternal reports or parenting, observational measures have been shown to have a better predictive value of future child behaviors (Zaslow et al., 2006). Additionally, observations of

parenting have been shown to have moderate correlations with both maternal and teacher report (Zaslow et al., 2006), indicating that similar constructs are likely being measured.

Additionally, a composite score for maternal behavior, 'supportiveness', was created by taking the mean scores of sensitivity, cognitive stimulation, and positive regard (due to their high correlations with one another, r=.52-.67 at 24 months, r=.50-.71 at 36 months) at 24 and 36 months. The mean percent agreement on the subscales was 93 (DHHS, 2002b). For my study, the supportiveness composite variable was used as the measure for positive parenting, and each of the negative parenting variables (detachment, intrusiveness and negative regard) were examined separately due to conceptual differences between the 3 variables.

Child Behavior Checklist. The CBCL 1 ½ - 5 (Achenbach & Rescorla, 2000) is a 102 item maternal report assessing the level of behavioral difficulties exhibited by children, and served as the outcome measure for my study. Thirty two items were used in the 24 month interview, and 39 items were used in the 36 month interview. The CBCL contains 2 broadband scales, Internalizing and Aggressive and Inattentive, which are in turn made up of 5 syndrome scales (Gross, Fogg, & Young, 2006; Skovgaard, Houmann, & Landorph, 2004). Withdrawn, Emotionally Reactive, and Anxious/Depressed make up the Internalizing scale, whereas Attention Problems, and Aggression Problems make up the Aggressive and Inattentive scale (Gross et al., 2006). Only the items from the Aggressive and Inattentive scales were included in this study. The CBCL 1½ - 5 has been shown to be reliable across ethnic, language, and income groups (Gross et al., 2006; Skovgaard et al., 2004). The reliability of the CBCL for the EHSRE study was: α=.91 (n=1,951) at 24 months; α=.88 (n=2,031) at 36 months (DHHS, 2002b).At the 24 month

assessment, 6.0% of the children scored within the clinical range for aggressive behavior and 5.6% scored within the clinical range for inattentive behavior. At the 36 month assessment, 4.1% scored at the clinical range for aggression and 3.4% scored within the clinical range for inattentive behavior. Researchers have used clinical cutoff scores when examining clinical levels of behavior in children (Xue, Leventhal, Brooks-Gunn, & Earls, 2005). This method is useful for assessing differences between the groups, and was utilized in my study.

Analyses

First, frequencies and descriptive statistics were computed. Second, correlation (see Table 3) and ANOVA (see Table 4) analyses were run to determine whether there were significant associations among demographics, parent characteristics, and parenting variables (see Table 5). Finally, multicollinearity was assessed with regard to the regression equations. These analyses determined whether there were independent variables whose inclusion in the regression equation needed to be reassessed due to their correlations with each other.

Table 3.

Correlations between Maternal Characteristics and Demographics

	1	2	3	4	5	6	7	8	9
1. Maternal Age	-	.05	.00	-.05	-.09	-.01	-.14*	.51**	-.02
2. 14m Depression		-	.41**	.41**	.36**	.35**	-.08	.04	.00
3. 36m Depression			-	.35**	.30**	.45**	.20**	.09	-.04
4. 14m Stress				-	.60**	.45**	.11*	-.09	-.06
5. 24m Stress					-	.57**	.11*	-.09	-.04
6. 36m Stress						-	-.07	-.04	-.01
8. Education								-	-.03
9. Program									-

* Correlation is significant at the 0.05 level ** Correlation is significant at the 0.01 level

Table 4.

Analysis of variance examining differences in maternal age, depression and education by ethnicity

Source	SS	Df	F	MS	p
Maternal age					
Between	36.67	3	7.56	12.22	.00
Within	509.13	315		1.62	
14 month Depression					
Between	452.03	3	3.29	150.68	.02
Within	14418.64	315		45.77	
36 month Depression					
Between	735.46	3	5.28	245.15	.00
Within	14627.34	315		46.44	
Highest grade completed					
Between	8.06	3	7.60	2.69	
Within	111.48	315		0.35	.00

Table 5.

Correlations between Parenting Variables

	1	2	3	4	5	6	7	8	9	10	11	12
						14 months						
1. Support	-	-.62**	-.33**	-.29**	.53**	-.40**	-.21**	-.19**	.35**	-.23**	-.13*	-.11
2.Detached			.08	.20**	-.38**	.44**	.01	.05	-.31**	.26**	.08	.11
3. Intrusive				.37**	-.10	-.01	.33**	.19**	.05	-.10	.18**	.17**
4.Neg. Reg					-.18**	.07	.24**	.25**	-.13*	.04	.22**	.28**
						24 months						
5. Support						-.64**	-.33**	-.40**	.51**	-.34**	-.20**	-.24**
6.Detached							.11*	.20**	-.39**	.40**	.06	.11*
7. Intrusive								.55**	-.18**	.05	.32**	.25**
8.Neg. Reg									-.17**	.05	.19**	.30**
						36 months						
9. Support										-.48**	-.32**	-.38**
10.Detached											.07	.10
11. Intrusive												.57**
12.Neg. Reg												

* p<.05 ** p< 0.01

Covariates. Covariates in this study included program versus control group, maternal race, maternal education, child gender, and child age (based on the wave of data collection) (see Table 1). This study did not address differences in adolescent parenting behavior based on programmatic effects, therefore covarying program and control group membership removed confounds due to EHS enrollment status. Next, because maternal race functions as a moderator of adolescent parenting behavior due to cultural differences in child rearing (Berlin et al., 2002), it was entered as a covariate. Additionally, in order to address those factors that specifically influenced adolescent parenting behavior, maternal education at 26 months after enrollment in EHS was entered as a covariate. This variable has been found to influence parenting behavior regardless of maternal age (Pelchat et al., 2003). Employment is non-normative for adolescents in the U.S., therefore this variable was not expected to contribute to the analyses and was not included. Ninety percent of this sample was living at or below the poverty line. Due to the lack of variability in this variable, poverty was not included in the analyses. Due to the broad age range for the parent interviews, during which the parents reported on child behavior, child age was entered as a covariate in the analyses. Additionally, child gender and child age also functioned as moderators of aggressive and inattentive behavior. Higher levels of aggressive and inattentive behavior are seen in males (Linver et al., 2002) and younger children (Shaw et al., 1994; Tremblay, 2000) therefore these variables were entered as covariates (see Table 5 for list of variables).

Table 6.

List of Control, Predictor, and Outcome Variables

CONTROLS	PREDICTORS	OUTCOMES
24 months	Enrollment, 14 and 24 month variables	
• Maternal education (enrollment)	• Maternal age (enrollment)	24 month CBCL
• Child age (enrollment)	• Positive parenting (14 & 24 month)	• Aggression
• Child gender (enrollment)	• Negative parenting (14 & 24 month)	• Inattention
• Program group (enrollment)	• Maternal depression (14 month)	
Maternal race/ethnicity (enrollment)	• Maternal stress (14 & 24 month)	
36 months	Enrollment, 24 and 36 month variables	
• Maternal education (enrollment)	• Maternal age (enrollment)	36 month CBCL
• Child age (enrollment)	• Positive parenting (24 & 36 month)	• Aggression
• Child gender (enrollment)	• Negative parenting (24 & 36 month)	• Inattention
• Program group (enrollment)	• Maternal depression (36 month)	
Maternal race/ethnicity (enrollment)	• Maternal stress (24 & 36 month)	

Data Analytic Strategies per Hypothesis

Consistent with the EHS national study (DHHS, 2002a) multiple regression analysis was the major data analytic strategy undertaken for the current study. Also similar to the EHSRE study, a point-in-time strategy was employed as opposed to a growth trajectory model. Therefore, regression analyses were conducted separately for the study dependent variables at 24 and 36 months. Following is a description of each regression analysis by research question hypothesis (see Table 6).

Table 7.

Research Questions, Hypotheses, and Measurement

Research Questions	Hypotheses	Measurement	Data Analytic Techniques
RQ 1: How do maternal characteristics influence parenting in a low-income high-risk sample of adolescent mothers?	**1a**: low levels of depression at 14 months will predict positive parenting behaviors at 24 months, whereas low levels of depression at 36 months will predict positive parenting behaviors at 36 months	CES-D, video taped parent-child interaction	Hierarchical Regression
	1b: high levels of depression at 14 months will predict negative parenting behaviors at 24 months, and high levels of depression at 36 months will predict negative parenting at 36 months.	CES-D, video taped parent-child interaction	Hierarchical Regression
	1c: older adolescent mothers will display more positive parenting behaviors than younger adolescent mothers at 14, 24 and 36 months.	HSFIS, video taped parent-child interaction	Heirarchical Regression

Table 7**.**

Continued

Research Questions	**Hypotheses**	**Measurement**	**Data Analytic Techniques**
RQ1 continued	**1d**: low levels of stress at 14, 24 and 36 months will predict positive parenting behaviors at 24 and 36 months	PSI, video taped parent-child interaction	Hierarchical Regression
	1e: high levels of stress at 14, 24 and 36 months will predict negative parenting behaviors at 24 and 36 months.	PSI, video taped parent-child interaction	Hierarchical Regression
RQ2: How do positive and negative parenting behaviors directly influence child aggressive and inattentive behavior at 24 and 36 months?	**2a:** Mothers engaging in positive parenting behavior at 13, 24, and 36 months are more likely to have children who do not engage in borderline or clinical levels of aggressive behavior at 24 and 36 months.	video taped parent child interaction, CBCL	Logistic Regrression

Table 7.

Continued

Research Questions	Hypotheses	Measurement	Data Analytic Techniques
RQ 2 continued	**2b:** Mothers engaging in positive parenting behavior at 14, 24 and 36 months are more likely to have children who do not engage in borderline or clinical levels of inattentive behavior at 24 and 36 months	video taped parent-child interaction, CBCL	Logistic Regression
	2c: Mothers engaging in negative parenting behavior at 14, 24 and 36 months are more likely to have children with borderline or clinical levels of aggressive behavior at 24 and 36 months.	video taped parent- child interaction, CBCL	Logistic Regression

Table 7.

Continued

Research Questions	Hypotheses	Measurement	Data Analytic Techniques
RQ 3: How do positive and negative parenting behaviors at 14, 24 and 36 months mediate the association between contextual and maternal characteristics at 14, 24 and 36 months, and child aggressive and inattentive behavior at 24 and 36 months	**3a:** positive parenting at 14, 24 and 36 months will mediate the association between maternal age at birth of the child and child aggressive and inattentive problems at 24 and 36 months.	HSFIS, video taped parent-child interaction, CBCL	Multivariate Regression. Baron and Kenney's mediation (1986) analyses

Table 7**.**

Continued

Research Questions	**Hypotheses**	**Measurement**	**Data Analytic Techniques**
RQ3 continued	**3b:** positive parenting at 14, 24 and 36 months will mediate the association between maternal depression at 14 and 36 months and child aggressive and inattentive problems at 24 and 36 months.	video taped parent- child interaction, CES-D, CBCL	Multivariate Regression. Baron and Kenney's (1986) mediation analyses

R1: How do maternal characteristics influence parenting in a low-income high-risk sample of adolescent mothers?

- Hypothesis 1a: Low levels of depression at 14 months will predict positive parenting behaviors at 24 months, and low levels of depression at 36 months will predict positive parenting behaviors at 36 months.

In order to address this hypothesis, hierarchical regression analyses were conducted. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Second, positive parenting behavior at 24 months was regressed in a single block on depression at 14 months. This procedure was repeated for positive parenting behaviors at 36 months, with the inclusion of maternal depressive symptoms at 36 months, the exclusion of maternal depression at 14 months, and the inclusion of child age at 36 months as a covariate.

- Hypothesis 1b: High levels of depression at 14 months will predict negative parenting behaviors at 24 months, and high levels of depression at 36 months will predict negative parenting behaviors at 36 months.

In order to address this hypothesis, hierarchical regression analyses were conducted. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Second, negative parenting behaviors at 24 months were regressed in a single block on depression at 14 months. This procedure was repeated for negative parenting behaviors at 36 months, with the inclusion of maternal depressive symptoms at 36 months, the exclusion

of maternal depression at 14 months, and the inclusion of child age at 36 months as a covariate and exclusion of child age at 24 months.

- Hypothesis 1c: Older adolescent mothers will display more positive parenting behaviors than younger adolescent mothers at 14, 24 and 36 months.

In order to address this hypothesis, hierarchical regression analyses were conducted. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Second, positive parenting behavior at 24 months was regressed in a single block on maternal age at birth of the focus child. This procedure was repeated for positive parenting behavior at 36 months, with the inclusion of child age at 36 months as a covariate and exclusion of child age at 24 months.

- Hypothesis 1d: Low levels of parenting stress at 14, 24 and 36 months will predict positive parenting behavior at 24 and 36 months.

In order to address this hypothesis, hierarchical regression analyses were conducted. First, covariates (group, race, maternal education 26 months after enrollment in EHS child gender, and child age at 24 months) were entered into block 1. Second, positive parenting behavior at 24 months was regressed in a single block on maternal parenting stress at 14 and 24 months. This procedure was repeated for positive parenting behavior at 36 months, with the inclusion of maternal parenting stress at 36 months, the exclusion of maternal parenting stress at 14 months, and the inclusion of child age at 36 months as a covariate and exclusion of child age at 24 months.

- Hypothesis 1e: High levels of parenting stress at 14, 24 and 36 months will predict negative parenting behaviors at 24 and 36 months.

In order to address this hypothesis, hierarchical regression analyses were conducted. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Second, negative parenting behaviors at 24 months were regressed in a single block on maternal parenting stress at 14 and 24 months. This procedure was repeated for negative parenting behaviors at 36 months, with the inclusion of maternal parenting stress at 36 months, the exclusion of maternal parenting stress at 14 months, and the inclusion child age at 36 months as a covariate and exclusion of child age at 24 months.

RQ2: How do positive and negative parenting behaviors directly influence child aggressive and inattentive behavior at 24 and 36 months?

- Hypothesis 2a: Mothers who engage in positive parenting behaviors at 14, 24 and 36 months are more likely to have children who do not engage in borderline or clinical levels of aggressive behavior at 24 and 36 months.

In order to address this hypothesis, logistic regression analyses were conducted, with the dependent variable being dichotomized as aggressive behavior in the normal range or aggressive behavior at the borderline and clinical levels. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Second, child aggressive behavior at 24 months was regressed on positive parenting behavior at 14 and 24 months. This procedure was repeated for parenting behavior and child aggressive behavior at 36 months, with the exclusion of positive parenting at 14 months, and the inclusion of child age at 36 months as a covariate and exclusion of child age at 24 months.

- Hypothesis 2b: Mothers who engage in positive parenting behavior at 14, 24 and 36 months are more likely to have children who do not engage in borderline or clinical levels of inattentive behavior at 24 and 36 months.

In order to address this hypothesis, logistic regression analyses were conducted, with the dependent variable being dichotomized as inattentive behavior in the normal range or inattentive behavior at the borderline and clinical levels. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Second, child inattentive behavior at 24 months was regressed on positive parenting behavior at 14 and 24 months. This procedure was repeated for parenting behavior and child inattentive behavior at 36 months, with the inclusion of positive parenting at 36 months, the exclusion of positive parenting at 14 months, and the inclusion of child age at 36 months as a covariate and exclusion of child age at 24 months.

- Hypothesis 2c: Mothers who engage in negative parenting behavior at 14, 24 and 36 months are more likely to have children with borderline or clinical levels of aggressive behavior at 24 and 36 months.

In order to address this hypothesis, logistic regression analyses were conducted, with the dependent variable being dichotomized as aggressive behavior in the normal range or aggressive behavior at the borderline and clinical levels. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Second, child aggressive behavior at 24 months was regressed on negative parenting behavior at 14 and 24 months. This procedure was repeated for parenting behavior and child aggressive behavior at 36 months with the

inclusion of negative parenting at 36 months, the exclusion of negative parenting at 14 months, and the inclusion of child age at 36 months as a covariate and exclusion of child age at 24 months.

- Hypothesis 2d: Mothers who engage in negative parenting behavior at 14, 24 and 36 months are more likely to have children with borderline or clinical levels of inattentive behavior at 24 and 36 months.

In order to address this hypothesis, logistic regression analyses were conducted, with the dependent variable being dichotomized as inattentive behavior in the normal range or inattentive behavior at the borderline and clinical levels. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Second, child inattentive behavior at 24 months was regressed on negative parenting behavior at 14 and 24 months. This procedure was repeated for parenting behavior and child inattentive behavior at 36 months with the inclusion of negative parenting at 36 months, the exclusion of negative parenting at 14 months, and the inclusion of child age at 36 months as a covariate and exclusion of child age at 24 months.

RQ3: How do positive and negative parenting behaviors at 14, 24 and 36 months mediate the association between contextual and maternal characteristics at 14, 24 and 36 months, and child aggressive and inattentive behavior at 24 and 36 months?

- Hypothesis 3a: Positive parenting at 14, 24 and 36 months will mediate the association between maternal age at birth of the child and child aggressive and inattentive problems at 24 and 36 months. It was expected that higher maternal age will predict more

positive parenting behaviors, which in turn will decrease children's levels of aggressive and inattentive behavior (i.e. aggressive or inattentive behavior).

In order to address this hypothesis multivariate regression analyses were conducted. The mediational analyses developed by Baron and Kenney (1986) were used to determine whether mediation occurred. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Then positive parenting behavior at 14 and 24 months were regressed on maternal age at focus child's birth. A second multivariate regression analysis was conducted, with covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) entered into block 1. Next child aggressive behavior at 24 months was regressed on positive parenting behavior at 14 and 24 months. A final regression was conducted, with covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) entered into block 1, and child aggressive and inattentive behavior at 24 months was regressed on maternal age at birth of focus child. This process was repeated for parenting and child aggressive and inattentive behavior at 36 months, with the exclusion of positive parenting at 14 months, and the inclusion of child age at 36 months as a covariate and exclusion of child age at 24 months.

Examination of beta weights demonstrated whether full, partial, or no mediation occurred in the analyses. If the differences between the beta weights for the regression equations examining the association between maternal age and child aggressive and inattentive behavior and those examining positive parenting and child aggressive and inattentive behavior were 0, full mediation has occurred. If the beta weights for the

maternal age-child behavior regressions were smaller than for those regressions examining the association between positive parenting behavior and child aggressive and inattentive behavior, but were not 0, partial mediation was indicated. If the beta weights were not smaller, mediation had not occurred.

- Hypothesis 3b: Positive parenting at 14, 24 and 36 months will mediate the association between maternal depression at 14 and 36 months and child aggressive and inattentive problems at 24 and 36 months. It was expected that lower levels of depression will predict more positive parenting behavior, which in turn will decrease children's levels of aggressive and inattentive behavior (i.e. aggressive or inattentive behavior).

In order to address this hypothesis multivariate regression analyses were conducted. The mediational analyses developed by Baron and Kenney (1986) were used to determine whether mediation occurs. First, covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) were entered into block 1. Then positive parenting behavior at 24 months was regressed on maternal depression at 14 months. A second regression analysis was conducted, with covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) entered into block 1. Next child aggressive and inattentive behavior at 24 months was regressed on positive parenting behavior at 14 and 24 months. A final regression was run, with covariates (group, race, maternal education 26 months after enrollment in EHS, child gender, and child age at 24 months) entered into block 1, and child aggressive and inattentive behavior at 24 months was regressed on maternal depression. This process was repeated for parenting and child aggressive and inattentive behavior at 36 months with the exclusion of positive parenting at 14 months

and the inclusion of child age at 36 months as a covariate and exclusion of child age at 24 months.

Examination of beta weights demonstrated whether full, partial, or no mediation occurred in the analyses. If the difference between the beta weights for the regression equations examining the association between maternal depression and child aggressive and inattentive behavior and those examining positive parenting and child aggressive and inattentive behavior were 0, full mediation had occurred. If the beta weights for the maternal depression-child behavior regressions were smaller than for those regressions examining the association between positive parenting behavior and child aggressive behavior, but were not 0, partial mediation was indicated. If the beta weights were not smaller, mediation had not occurred.

Chapter 4: Results

In this chapter, I will summarize the findings from this secondary analysis of the EHS dataset, examining the question of what parenting factors predict aggressive and inattentive behaviors among the children of adolescents. Following an overview of the analyses that were conducted, I present the results of preliminary analyses, I then present the main findings for each research question. A summary of the findings concludes the chapter.

Overview of data analytic plan

For the purposes of this study, I conducted complete case analyses. Due to the large frequency and unpredictability of missing data, it was determined that techniques typically employed to handle missing data, such as multiple imputation, were not appropriate in this instance (see Appendix B for a list of available and missing data) (Allison, 2008; Schaeffer & Graham, 2002). Although complete case analysis reduces power and limits generalizability, this method does provide an accurate model of the current sample. In terms of power, according to Cohen (1988), in order to detect a medium effect size at Power =.80 for multiple R with 8 variables at the $p<.01$ level, a sample of 147 is needed. My sample of 319 mothers exceeds this requirement. As a result, complete case analyses make the current data set a valuable starting point for understanding adolescent parenting and the process by which parenting in this population influences aggressive and inattentive behavior in toddlers.

Frequency counts were obtained for various demographic characteristics in order to better understand the backgrounds of the participants in the current sample (see Appendix C). Next, I conducted crosstabs and χ^2 analyses for the purpose of describing

the characteristics of the participants. In addition, I conducted crosstabs utilizing the same background variables that were used in the examination of maternal characteristics by program type (i.e., living arrangements, number of children in the home, and number of adults in the home; see Appendix D).

Subsequently, I conducted regression analyses to address the major research questions. First, I examined interaction effects by group membership. For example, I created an interaction variable (cross product of program group and maternal age). Then I entered maternal age and program group variables using the stepwise method in the first block and the interaction term I created (also stepwise) in the second block. In this case the dependent variable was maternal depression at 14 months. I then ran the regression analysis and determined whether the interaction term accounted for a significant portion of the variance. I repeated this process creating a cross product using the following variables: 1) maternal age and all the child aggressive and inattentive behavior variables as dependent variables 2) maternal education as a cross product and all of the child aggressive and inattentive behavior variables as dependent variables 3) race as a cross product and maternal depression at 14 and 36 months as the dependent variables 4) race as the cross product and all of the child aggressive and inattentive behaviors as dependent variables 5) maternal parenting stress at all time points as cross products and maternal depression at 14 and 36 months as the dependent variables 6) maternal parenting stress at all time points for the cross product and all of the child aggressive and inattentive behavior variables as dependent variables 7) positive parenting at all time points for the cross product and child aggressive and inattentive behavior at all time points for the dependent variables 8) negative parenting at all time points for the cross products and

child aggressive and inattentive behavior at all time points for the dependent variables 9) positive parenting at 24 and 36 months as the cross products and maternal depression at 14 and 36 months as the dependent variables 10) and finally negative parenting behavior at 24 and 36 months as the cross products and maternal depression at 14 and 36 months as dependent variables. The findings indicated that there were significant interaction effects resulting from group membership, therefore I controlled for this variable in all subsequent analyses. Next, I conducted hierarchical and logistic regression analyses to determine whether there were associations between maternal characteristics and parenting, and parenting and child aggressive and inattentive behavior. Finally, I conducted mediation analyses to examine whether parenting functioned as a mediator of the association between maternal characteristics and child aggressive and inattentive behaviors. I also conducted a Sobel test (Sobel, 1982) to examine whether the mediation models were significant.

Sample Characteristics

This sample consisted of 319 adolescent mothers (ages 15-19 at birth of focus child), with a mean maternal age of 17.6 (SD=1.3). The sample was 38.2% white, 34.5% black and 22.9% Hispanic. Nearly 22% of these adolescents had completed 12 years of education, 90% were living below the poverty line, 82.9% used English as their first language, and 46.7% were enrolled in EHS. Nearly half of the children were female. See Table 2 for more specific information concerning this sample.

At the 14 month assessment, 46.5% of the mothers scored within the clinical range for depressive symptoms and 13.2% scored within the clinical range for parenting stress symptoms. Depression scores at 24 months were not recommended for use because

the instrument used at this assessment was different than the 14 and 36 month instrument (the CIDI was used at 24 months and the CES-D short form was used at 14 and 36 months; see chapter 3). At the 24 month assessment, 12.9% of the mothers scored within the clinical range for parenting stress symptoms. At the 36 month assessment, 41.7% of this sample of adolescent mothers scored within the clinical range for depression and 12.9% reported high levels of parenting stress.

At the 24 month assessment, 6.0% of the children scored within the borderline or clinical range for aggressive behavior and 5.6% scored within the borderline or clinical range for inattentive behavior. At the 36 month assessment, 4.1% scored in the borderline or clinical range for aggression and 3.4% scored within the borderline or clinical range for inattentive behavior.

I examined differences in background variables (i.e., the number of moves in the past year, whether the child ever visited the emergency room and whether there were adult males in the household) by maternal depression (clinical vs. non-clinical range), parenting stress (clinical vs. non-clinical range) and age (older and younger adolescents) (see Appendix E). Additionally, assessing whether there were differences in background factors (i.e., poverty level, number of risk factors and whether the adolescent mother and her child were living in adequate housing) as a function of maternal characteristics and program membership (i.e., enrolled in Early Head Start versus not enrolled in Early Head Start) served to clarify differences that may have been masked by a simple frequency count of the entire sample. I examined all available background variables; those variables that demonstrated significant differences between dichotomized levels of variables (e.g. whether the primary language is English, the number of children in the home and the

number of adults in the home) were included. Differences in background variables that were a function of maternal parenting stress, depression, age or group membership, in turn, served to clarify findings obtained through regression analyses.

I conducted correlational analyses and found several significant associations between maternal characteristics and maternal parenting behavior (see Table 8). Specifically, maternal age was associated with maternal negativity and intrusiveness at the 14, 24 and 36 month waves. Maternal depression at 14 months was negatively associated with maternal negative regard at 24 months. However, at 36 months maternal depression was positively associated with maternal detachment, intrusiveness and negative regard. Additionally, parenting stress at 14 months had a positive association with maternal detachment at 14 and 36 months, and negative associations with maternal support at 14, 24, and 36 months. Parenting stress at 24 months was negatively associated with maternal support at 14, 24 and 36 months. Also, maternal parenting stress at 24 months was concurrently associated with maternal intrusiveness and with maternal detachment at 14 months. Maternal parenting stress at 36 months was correlated with 14 month detachment, 36 month support, and 36 month detachment.

Notably, the effect sizes for the correlations are small, with the largest effect seen for the correlation between 36 month detachment and 36 month parenting stress ($r=.21$, $p<.01$). Despite the small effect sizes, the practical importance of the results remain undiminished. There are a variety of factors impacting the magnitude of the effect size in any analytic strategy. For example, McCartney and Rosenthal (2000) cite measurement error, design of the study (e.g. experimental versus quasi-experimental), and methodology (e.g. between versus within subjects) as factors that serve to dampen effect

size. The authors suggest that even effect sizes that fall within the small range (e.g. below .30) may have more practical importance than straightforward examination of numerical values suggests. The aforementioned factors or measurement error, design, and methodology must be taken into account. Consequently, although I note the lack of large effect sizes in subsequent sections, the importance of the results should not be underestimated.

Table 8.

Correlations between Maternal Parenting and Maternal Characteristics

	Maternal Age	14m Depression	36m Depression	14m Stress	24m Stress	36m Stress
14m Support	.08	-.02	.03	-.15**	-.13*	-.11
14m Detach	.02	.01	.09	.19**	.14*	.17**
14 Intrusive	-.17**	-.02	-.06	.00	.00	.00
14 Neg Reg	-.11*	-.00	.05	.01	.06	.01
24m Support	.06	-.00	-.02	-.11*	-.15**	-.10
24m Detach	.00	.07	.01	.07	.05	.11
24 Intrusive	-.16**	-.06	.01	-.01	.11*	.10
24 Neg Reg	-.13*	-.12*	-.05	-.05	.03	-.02
36m Support	.06	-.09	-.08	-.17**	-.16**	-.15**
36m Detach	.00	.07	.15**	.19**	.07	.21**
36 Intrusive	-.21**	.05	.11*	.06	.11*	.01
36 Neg Reg	-.12*	.03	.18**	.07	.08	.05

* $p<.05$ **$p<.01$

Further, there were significant correlations between parenting behavior and child aggressive and inattentive behavior at all waves (see Table 9). Specifically, maternal support at all waves was negatively correlated with child aggressive behavior at 24 months. Maternal detachment at 14 months and intrusiveness and negativity at 36 months were positively correlated with child aggressive behavior at 24 months. Maternal detachment at 14 months was positively correlated with child aggressive behavior at 36

months. Additionally, maternal detachment and negative regard at 14 months were positively correlated with child inattentive behavior at 24 months. Maternal support at 36 months had a negative correlation with child inattentive behavior at 36 months. The effect sizes for all of the correlations fell within the small category, with the largest magnitude seen for the association between 36 month support and 36 month inattention ($r = -.19$, $p<01$).

Table 9.

Correlations between Maternal Parenting and Child Behavior

	24m Aggression	36m Aggression	24m Inattention	36m Inattention
14m Support	-.12*	-.07	-.05	-.09
14m Detach	.13*	.15**	.16**	.09
14 Intrusive	.02	-.00	.04	-.05
14 Neg Reg	.10	.05	.13*	.03
24m Support	-.14**	-.04	-.04	-.11
24m Detach	.11	.00	.00	.02
24 Intrusive	.03	-.00	-.00	.10
24 Neg Reg	.10	.04	.04	.05
36m Support	-.17**	-.09	-.06	-.19**
36m Detach	.10	.00	.01	.09
36 Intrusive	.16**	-.05	.10	.05
36 Neg Reg	.14*	.10	.09	.10

* $p<.05$ **$p<.01$

Finally, there were significant correlations between maternal characteristics and child aggressive and inattentive behavior, such that both maternal depression and parenting stress were correlated with child aggression and inattention (see Table 10). Specifically, maternal depression at 14 months was positively correlated with child aggressive and inattentive behavior at 36 months. Maternal depression at 36 months and maternal parenting stress at all waves were positively correlated with child inattentive behavior at 36 months. Additionally, maternal parenting stress at 24 months was positively correlated with child aggressive and inattentive behavior at all time points, and maternal parenting stress at 36 months was positively correlated with child aggressive behavior at 24 months and child inattentive behavior at 36 months. I did not find any significant correlations between maternal age and child aggressive and inattentive behaviors. The effect sizes for all of the correlations fell within the small category, with the largest magnitude seen for the association between 24 month parenting stress and 36 month inattention ($r = .27$, $p < 01$).

Table 10.

Correlations between Maternal Characteristics and Child Behavior

	24m Aggression	36m Aggression	24m Inattention	36m Inattention
Maternal Age	.08	.07	-.07	.02
14m Depression	.00	.14*	-.03	.19**
36m Depression	-.04	.09	.10	.16**
14m Stress	.11	.11	.09	.13*
24m Stress	.21**	.13*	.12*	.27**
36m Stress	.14*	.09	.09	.21**

* p<.05 **p<.01

Influences of maternal characteristics on parenting.

Regression analyses. To examine whether maternal characteristics predicted parenting behavior, I conducted hierarchical regression analyses. Then, to explore whether maternal parenting behavior predicted whether children had aggressive and inattentive behavior in the borderline or clinical range, I conducted logistic regression analyses. Additionally, I included multicollinearity statistics in the regression analyses. Examination of the variance inflation factor (VIF) revealed that none of the variables exceeded the suggested criteria of 10 (Hsieh, Lavori, Cohen, & Feussner, 2003). The highest VIF was 1.6 for supportive and detached parenting at 24 months. Finally, in order to examine whether maternal parenting served to mediate the association between maternal characteristics and child aggressive and inattentive behavior, I conducted

mediation analyses using the Baron and Kenny (1988) approach. In this section, I will present findings from the aforementioned analyses by specific research question.

Research question 1: How do maternal characteristics influence parenting in a low-income high-risk sample of adolescent mothers?

Hypothesis 1a: I conducted hierarchical regression analyses to test the hypothesis that maternal depression at child age of 14 months would predict specific parenting behaviors at 24 months, and that maternal depression at 36 months would concurrently influence parenting behaviors.

This hypothesis was only partially supported. Maternal depression at 14 months was not predictive of any parenting behaviors. However, maternal depression at 36 months contributed to concurrent negative regard (ß=.20, $p<.01$, $\Delta R^2=.04$), maternal intrusiveness (ß=.11, $p<.05$, $\Delta R^2=.02$), and detachment (ß=.16, $p<.01$, $\Delta R^2=.02$) (see Appendix F). These results indicated that the effects of early maternal depression on parenting were not evident during the early toddler years; however, by the time the children were 3 years old, those mothers who were reporting depressive symptoms were more likely to engage in negative parenting behavior.

Hypothesis 1b: Hierarchical regression analyses tested whether older adolescent mothers would display more positive parenting behaviors than younger adolescent mothers at 14, 24 and 36 months. The findings partially supported this hypothesis. Maternal age did not predict positive parenting behavior, indicating that younger and older adolescents were similar in supportive parenting behavior at all time points. However, maternal age predicted negative regard at 14 months (ß=-.13, $p<.05$, $\Delta R^2=.02$) and intrusiveness at 36 months (ß= -.15, $p<.05$, $\Delta R^2=.02$) (see Appendix G). These

results indicate that younger adolescent mothers were more likely to engage in negative parenting behavior compared with older adolescent mothers.

Hypothesis 1c: I conducted hierarchical regression analyses to determine whether maternal parenting stress at 14, 24 and 36 months would predict parenting behaviors at 24 and 36 months. The findings generally supported this hypothesis. Maternal parenting stress at 14 months predicted 14 month supportive parenting (ß=-.12, p<.05, ΔR^2=.05) (see Appendix H) and detached parenting (ß=.19, p<.01, ΔR^2=.04) (see Appendix I), and supportive parenting at 36 months (ß=-.15, p<.01, ΔR^2=.04) (see Appendix G). Additionally, 24 month parenting stress contributed to supportive (ß=-.13, p<.05, ΔR^2=.02) (see Appendix J) but not negative parenting at 24 months (see Appendix K), whereas 36 month parenting stress influenced supportive (ß=-.14, p<.01, ΔR^2=.02) (see Appendix L) and detached parenting concurrently (ß=.21, p<.01, ΔR^2=.02) (see Appendix M). These results indicated that higher levels of maternal parenting stress were predictive of less positive and more negative parenting behavior at 14 and 36 months. At 24 months, parenting stress was only predictive of less positive parenting. The effect sizes for all of the regressions fell within the small category, with the largest magnitude seen for the association between 36 month parenting stress and 36 month detachment (ß=.21, p<01).

Research question 2: How do positive and negative parenting behaviors directly influence child aggressive and inattentive behavior at 24 and 36 months?

Hypothesis 2a: I used logistic regression analyses to determine whether parenting behavior at 14, 24 and 36 months was predictive of child engagement in borderline or clinical levels of aggressive behavior at 24 and 36 months. This hypothesis was partially

supported. Parenting behavior at 14 months did not predict child aggressive behavior at 24 months (see Appendix N). However, for a one unit increase in positive parenting behavior, the odds of children exhibiting clinical or borderline levels of aggressive behavior decreased by a factor of 0.45 at 24 months (OR=.55, 95% CI=.32 - .93) (see Appendix O) and 0.51 at 36 months (OR=.49, 95% CI=.25 - .94) (see Appendix P). Additionally, for a one unit increase in detached parenting at 14 months, the odds of children exhibiting clinical or borderline levels of aggressive behavior at 36 months increased by 0.60 (OR=1.60, 95% CI=1.08 - 2.36) (see Appendix Q).

Hypothesis 2b: I used logistic regression analyses to test whether parenting behaviors at 14, 24 and 36 months were predictive of child engagement in borderline or clinical levels of inattentive behavior at 24 and 36 months. This hypothesis was partially supported. For a one unit increase in maternal detached behavior, the odds of children exhibiting clinical or borderline behaviors increased by a factor of 1.54 (OR=1.54, 95% CI=1.08 - 2.21) (see Appendix R). Conversely, for every one unit increase in maternal supportive behavior, the odds of children exhibiting clinical or borderline behaviors decreased by 0.72 (OR=.28, 95% CI=.12 - .66) (see Appendix S). Thus, positive parenting contributed to a decreased likelihood of concurrent clinical levels of child aggressive and inattentive behavior, whereas early detached parenting led to an increased likelihood of clinical levels of child aggressive and inattentive behaviors.

Research question 3: How do positive and negative parenting behaviors at 14, 24 and 36 months mediate the association between maternal characteristics at 14, 24 and 36 months, and child aggressive and inattentive behaviors at 24 and 36 months?

Hypothesis 3a: I used regression analyses to examine whether positive and negative parenting at 14, 24 and 36 months mediated the association between maternal age at birth of the child and child aggressive and inattentive problems at 24 and 36 months. I expected that higher maternal age would predict more positive parenting behavior, which in turn would decrease children's levels of aggressive and inattentive behavior (i.e. aggressive or inattentive behavior). After I examined the regression analyses, I found that although maternal age predicted maternal negative regard at 14 months (β= -.13, $p<.05$, ΔR^2=.02) and maternal intrusiveness at 36 months (β= -.15, $p<.05$, ΔR^2=.02), neither of these parenting variables predicted children's aggressive or inattentive behavior. Consequently, I did not conduct mediation analyses.

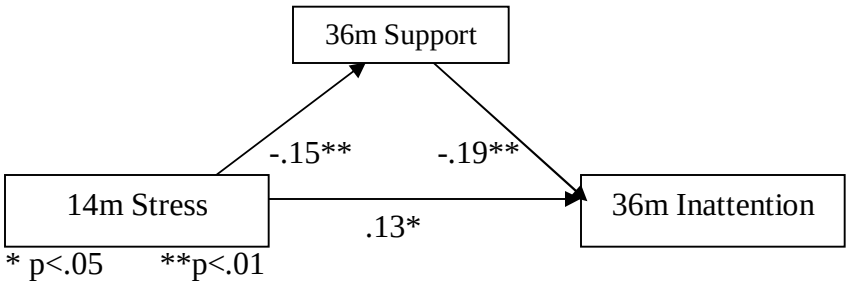
Hypothesis 3b: I conducted regression analyses to determine whether positive and negative parenting at 14, 24 and 36 months would mediate the association between maternal depression at 14 and 36 months and child aggressive and inattentive problems at 24 and 36 months. I expected that lower levels of depression would predict more positive parenting behavior, which in turn would decrease children's levels of aggressive and inattentive behavior. After I examined the regression analyses, I found that although maternal depression at 36 months contributed to concurrent maternal intrusiveness (β= .11, $p<.05$, ΔR^2=.02), negative regard (β= .20, $p<.01$, ΔR^2=.04) and detachment (β= .16, $p<.01$, ΔR^2=.02), none of these parenting behaviors predicted child aggressive and inattentive behavior. Therefore, I did not conduct mediation analyses.

However, once I examined the data, I found that parenting could function as a mediator between maternal parenting stress and child aggressive and inattentive behavior. Specifically, maternal parenting stress at 14 months and child inattention at 36 months

were mediated by positive parenting behavior at 36 months (Sobel = 2.04, p< .05) (see Figure 2, Appendix T). Additionally, the relationship between maternal parenting stress at 24 months and child aggressive behavior at 24 months was marginally mediated by positive parenting behavior at 24 months (Sobel = 1.81, p = .07) (see Figure 3, Appendix T). The effect sizes for all of the regressions fell within the small category, with the largest magnitude seen for the association between 36 month depression and 36 month negative regard (ß=.20, p<01, ΔR^2=.04).

Figure 2.

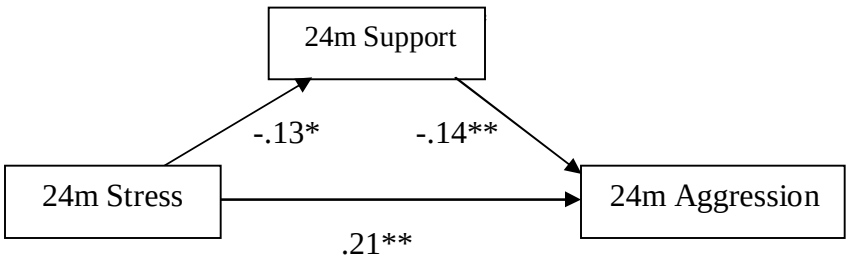
36 month Maternal Support Mediating 14 month Maternal Parenting Stress and 36 month Child Inattention



* p<.05 **p<.01

Figure 3.

Maternal Support Mediating Maternal Parenting Stress and Child Aggression at 24 months



* p<.05 **p<.01

Summary

Overall, the findings I have reported herein generally support the hypotheses regarding the influence of the psychological functioning of adolescent mothers on their parenting behavior. Specifically, maternal depression predicted negative parenting behavior when the children were 36 months of age, however there were no significant findings when the children were 14 months old. Additionally, mothers experiencing higher levels of parenting stress were likely to engage in more negative and less positive parenting behavior than non-stressed mothers. Finally, younger mothers were more likely to engage in negative parenting compared with older mothers.

Further, parenting behavior was found to predict child aggressive and inattentive behavior over time. Specifically, those mothers who displayed detached behaviors were more likely to have children who demonstrated clinical or borderline levels of aggressive and inattentive behavior. Conversely, those mothers who were engaged in positive parenting behavior were more likely to have children who demonstrated lower levels of both aggressive and inattentive behaviors. Parenting behavior also played a mediating role between maternal parenting stress and child aggressive and inattentive behavior. Specifically, positive parenting behavior reduced the influence of maternal parenting stress on child aggression and inattention. Overall, these findings point to the association between compromised psychological functioning and parenting among adolescent mothers on the aggressive and inattentive behavior of their young children, which will be considered in the context of the research and policy literatures in the subsequent chapter.

Chapter 5: Conclusions

Adolescent mothers face a variety of obstacles which affect their parenting. The negative association between adolescent parenting on child outcomes is neither new nor surprising. Numerous studies have been conducted addressing the difficulties children of adolescent parents face as they enter school. However, there is sparse information regarding whether and how adolescent parenting predicts toddler behavior. The purpose of the current study was to examine predictors of adolescent parenting behavior, and those parenting behaviors that lead to child aggressive and inattentive behavior. Maternal age and psychological well-being were found to be indicators of whether adolescent mothers would engage in positive or negative parenting behaviors. Further, mothers' parenting behavior predicted their children's clinical or borderline levels of aggressive and inattentive behavior. Finally, mothers' parenting behavior served as a mediator between maternal psychological well-being and child aggressive and inattentive behavior.

Belsky's (1984) determinants of parenting model has served to disentangle some of the factors associated with parenting behavior. Although Belsky's (1984) model has been used primarily in adult samples, studies have shown that it is also relevant for adolescent parenting (O'Callahan et al., 1999). Belsky postulated a tripartite influence on parenting behavior. Specifically, he demonstrated that parent, child and environmental characteristics contributed to parenting behaviors. Unfortunately, an examination of the bidirectional association between parent and child characteristics on parenting was beyond the scope of this study. Additionally, there was not sufficient usable demographic data to examine the predictive value of the larger context on parenting. However, through this study I have been able to contribute important information regarding the association

between parental characteristics and adolescent parenting, and the association between parenting and children's aggressive and inattentive behavior.

In this chapter I will discuss the findings of this study in the context of the extant literature on adolescent parenting. First I will examine the influence of maternal factors on adolescent parenting. Then I will consider the findings within the general construct of parenting in an attempt to further clarify the underlying meaning of the parenting findings. Next I will discuss predictors of aggressive and inattentive behaviors in children of adolescent mothers. Finally, I will note important limitations and future research directions, followed by the policy implications of this study.

Maternal Characteristics and Adolescent Parenting

Maternal Age

In analyses comparing 15-17 year old with 18-19 year old mothers, I found that younger adolescents were more likely to engage in negative parenting behavior than older adolescents. This is at least partially consistent with other research in which younger adolescents were found to be at increased risk for punitive parenting relative to older adolescent mothers (Reis et al., 1986). Importantly, there appears to be no difference in the level of positive parenting between the two groups. Other researchers have also found that there are lower levels of maternal sensitivity in younger versus older adolescent mothers (Passino & Whitman, 1993; Sommer et al., 1993). It is possible that the lack of findings in my study regarding the relation between age and positive parenting was a function of differences in sample characteristics. All of the mothers in the EHS study actively sought out support for themselves and their children, in that they applied to be part of this comprehensive child development program. This may indicate a level of

involvement and functioning that may differ from those adolescents who neither seek out nor maintain a connection with community services. These adolescent mothers may place higher value on their roles as parents, which may affect their display of positive parenting behaviors.

It has been demonstrated in numerous studies that there is a difference in parenting between adolescent and adult mothers (Berlin et al., 2002; Bernardi et al., 1992; Elster, et al., 1983; Levine Coley & Chase-Lansdale, 1998; Levine et al., 1985; Moore & Brooks-Gunn, 2002; Passino & Whitman, 1993; Shaw et al., 2003; Sommer, et al., 1993), suggesting there may be a variety of developmental factors that play a role in parenting (Elster et al., 1983; Ketterlinus et al., 1991). For example, in their review of the literature Elster et al. (1983) found that adult mothers who reported experiencing stress were more likely to interact appropriately with their infants than adolescent mothers who reported similar feelings of stress. This suggests that adult mothers may be more successful at regulating their emotional state than adolescents. Additional information regarding adolescent parenting as a function of adolescent development may help to clarify the mechanisms responsible for differences in parenting behavior between older and younger mothers. The recent trend in adolescent parenting research has been to group all of the participants into a single age category. The difficulty with this approach is that it may mask important developmental differences within adolescent parents.

Younger adolescents may be cognitively and emotionally less mature than older adolescents. In their examination of discontinuity versus continuity of affective and cognitive development (in the form of self worth and self esteem) in adolescence, Moneta, Schneider, and Csikszentmihalyi (2001) found that positive affect follows a

discontinuous course. Notably, positive affect declines throughout the adolescent years, and, according to the authors, is not expected to increase until adulthood. Importantly, the authors found that demographic factors played a role in reports of positive affect. Specifically, adolescents living in two parent families were less likely to report declines in positive affect than those in single parent homes. Given that adolescent mothers are at increased risk for growing up in a single parent home (Ketterlinus et al., 1991), Moneta et al.'s (2001) finding may help explain differences in parenting behavior across adolescence. At the same time, however, these findings suggest that older mothers would experience less positive affect, which may in turn have a more negative influence on their parenting behavior than younger mothers, which is contrary to what I have found in my study.

In addition to the reduction in positive affect, Moneta et al. (2001) found that self esteem also follows a discontinuous course. Unlike positive affect, adolescents' reports of self esteem follow a curvilinear function, with a decrease shortly after entering adolescence, and an increase approximately half way through the high school years. This suggests that adolescents' appraisal of their ability to succeed in their endeavors improves in later years, which may serve to mitigate the aforementioned findings regarding affective experiences in adolescence. Additionally, Klaczynski (2000) found that reasoning skills of older adolescents were more sophisticated than those of younger adolescents, whereas Galambos, McDonald, Naphtali, Cohen, and de Frias (2005) found that younger adolescents were more likely to demonstrate behavioral problems than older adolescents.

Levine et al. (1985) found that ego development (i.e., impulsive, autonomous, or integrated stages of ego development as measured by Loevinger's Sentence Completion Test (1978)) in adolescent mothers predicted maternal responsivity to their children. Perhaps younger adolescents have difficulties with emotional regulation and have less sophisticated cognitive processing than older adolescents. This may lead to reactive, negative parenting behavior when the adolescent mothers are facing a particularly difficult situation. Another possibility is that younger mothers have less experience than older mothers. Older adolescent mothers may have older children, more experience as a parent, and a better understanding of child development, which may limit the negative parenting behaviors they present.

Another explanation for the lack of age differences regarding positive parenting may be related to the finding that this type of parenting did not influence child aggressive and inattentive behavior. There may be little variation in positive parenting within the adolescent population. Some researchers who have compared adult and adolescent mothers reported no differences in the levels of warm and supportive parenting between the two age groups (Levine-Coley & Chase Lansdale, 1998). More detailed assessments have been found to differentiate between positive affect between adult and adolescent mothers (Passino & Whitman, 1993); however, the micro-level coding scale was developed specifically for this study. The psychometric properties have not been validated in other studies, therefore limiting generalizability to other populations.

Maternal Psychological Functioning

Adolescents who reported high levels of depression and parenting stress in my study were more likely to engage in negative parenting behavior. Young parents face a

host of difficulties. Not only are they trying to navigate the transition from childhood to adulthood, the overwhelming majority of them are from high risk backgrounds, and many of them do not complete high school (Ketterlinus et al., 1991; Moore & Brooks-Gunn, 2002). Specifically, they are more likely to receive public assistance, live in high poverty areas, attend poor quality schools (Moore & Brooks-Gunn, 2002), and come from a single family home (Ketterlinus et al., 1991). As a result, they may not be prepared for motherhood and could be overwhelmed with the responsibilities of raising a child.

High levels of depression and parenting stress have been found in the majority of studies on adolescent parents (Black, Papas, Hussey, Dubowitz, et al., 2002; Deal & Holt, 1998; Moore & Brooks-Gunn, 2002; Passino & Whitman, 1993), the level of depressive symptoms in my sample was 46.5% at 14 months, and 41.7% at 36 months, which is in keeping with the figures reported in the literature (Esbaugh, 2006). However, just 13% of the mothers reported elevated parenting stress levels, which isnot in line with those reported in the literature. In previous studies of adolescent parents, rates of elevated parenting stress levels ranged between 23% and 30% (Larson, 2004).

It is unclear why the rates of parenting stress are so low in my sample. There were no differences in parenting stress levels by ethnicity. From a sampling perspective, it may be that those adolescent mothers who were at a high enough level of functioning to seek out services for their children also had supports in place that other adolescent mothers did not. Some studies have shown that those mothers who receive assistance from their families were more likely to report fewer symptoms of parenting stress (Davis, 2002). However, assistance from the adolescent mothers' own families, which often comes in the form of living in a multigenerational home, with the grandmother as the primary care

provider, can also have a negative influence on the adolescent mother (Black, Papas, Hussey, Dubowitz, et al., 2002). It is possible that conflicts arise between the adolescent mother and her mother as the younger woman strives for independence while the older still views her daughter as a child in need of continued guidance. Notably, in my study, there were no differences in reported level of support for stressed versus non-stressed mothers. The research examining the influence of parenting stress on parenting behavior is sparse. More information is needed on predictors of parenting stress, and how stress subsequently influences parenting behavior. Additional work examining demographic differences in a sample of adolescent mothers who do and do not seek out services would provide useful insight into what supports serve to improve adolescent mothers' psychological well-being.

Another factor that requires further consideration is the maturational effect that adolescent mothers experience. Adolescence is a period of emotional (Moneta et al., 2001) and cognitive flux (Klaczynski, 2000). This transitional period may be more complex for adolescent mothers who must juggle adult responsibilities without the benefit of adult emotional and cognitive stability. It is possible that these factors are associated with increased risk for experiencing depressive symptoms. It is not surprising therefore, that adolescent mothers report high rates of depressive symptoms in this and other studies (Esbaugh, 2006).

Influence of Depression and Stress on Parenting

In my study, mothers who reported elevated symptoms of depression were more likely to engage in negative parenting behavior. This finding is consistent with reports in the literature that depression has a strong influence on individual functioning and

parenting. Depressed mothers struggle with daily tasks and are less likely to demonstrate appropriate skill when dealing with family, friends and responsibilities at work (Prodromidis & Abrams, 1994). Therefore, it is no surprise that depressed mothers, particularly if they are adolescents, have difficulty perceiving their children as needing their care, rather than as interfering with the mothers' ability to get their own needs met. In earlier studies it has been shown that depressed mothers were more likely to report aggressive and inattentive behavior in their children (Carter, Garrity-Rokous, 2001; Civic & Holt, 2000) and engage in poor parenting behavior (Gelfland & Teti, 1990) than non-depressed mothers. For example, some authors have reported that depressed mothers are more likely to have higher rates of negative emotional responses to their children, negative opinions regarding their children (Gelfand & Teti, 1990), and lower levels of sensitivity toward their children's needs (Gelfand & Teti, 1990; Leadbeater & Bishop, 1996) relative to non-depressed mothers. Taken together, these findings indicate that depressed mothers may have more difficulty interacting with their children in a warm and sensitive manner than their non-depressed counterparts.

In addition to finding a negative association between maternal parenting stress and positive parenting behavior, I also found that mothers reporting high levels of parenting stress were more likely to engage in negative parenting (specifically detachment) than mothers who did not report elevated levels of parenting stress. This is consistent with other findings that young mothers experiencing high levels of parenting stress are more likely to engage in fewer positive (Ketterlinus et al., 1991; Passino & Whitman, 1993) and more negative (Deater-Deckard, 1998) interactions with their children. Maternal affective experiences play an important role in parenting behavior;

however, different affective states result in different mother-child interactions. Continued investigations examining the associations between different affective experiences and specific parenting behavior in adolescents are needed to better understand adolescent parenting.

Adolescent Parenting and Child Aggressive and Inattentive Behavior

Poor parenting behavior has been implicated in the impaired development of regulatory abilities in children. Exposure to punitive parenting is associated with underdeveloped capacities such as the inability to inhibit impulses (Chang, Schwartz, Dodge, & McBride-Chiang, 2003). Children whose mothers engage in higher levels of negative parenting are more likely to have difficulties with attention (Masten & Coatsworth, 1998). The ability to focus on a single object or event while simultaneously ignoring other stimuli, whether internal or external, is developed over time. This skill is absent in infants, and begins to emerge during the toddler years (Masten & Coatsworth, 1998). Negative parenting seems to interfere with the proper development of these regulatory mechanisms (Masten & Coatsworth, 1998).

Negative parenting behavior has also been implicated in the development of aggressive behavior in children (Shaw et al., 2003). In their examination of precursors of toddler aggressive behavior, Del Vecchio and O'Leary (2006) found that mothers of aggressive toddlers responded to their children in either a lax or overreactive manner. The authors also found that toddlers' aggression increased subsequent to their interactions with their mothers. Del Vecchio and O'Leary (2006) suggest that two mechanisms were at work in the development of children's aggressive behavior. The first, in the case of the lax or uninvolved parenting, may function as reinforcement for inappropriate behaviors.

If the children are not being properly socialized regarding whether aggressive behavior is appropriate, they are more likely to continue to engage in those aggressive behaviors that they have found to work (i.e. achieve their goal of attaining a coveted object). In the case of those mothers who overreacted to their children's behavior, it is possible that they are serving as models for their children. Toddlers emulate those behaviors to which they are exposed; in this case it is the mothers' overreactive responses which serve as a schema for the children's future behavior. Consequently, these children will learn to use negative behaviors as a strategy for solving problems or attaining goals.

In my study parenting behavior functioned as a predictor of child aggressive and inattentive behavior, which is consistent with previous studies that have demonstrated an association between parenting and child aggressive and inattentive behavior (Black Papas, Hussey, Dubowitz, et al., 2002; Black, Papas, Hussey, Hunter, et al., 2002; Olson et al., 2002; Petit, Bates, & Dodge, 1997; Shaw et al., 1994). Consistent with my findings, numerous other researchers have demonstrated that mothers who engage in negative parenting practices are more likely to have children who engage in aggressive and inattentive behaviors (Campbell et al., 2000; O'Leary et al., 1999; Olson et al., 2002). Conversely, positive parenting behavior had a negative association with aggressive and inattentive behavior, which is also consistent with reports in the literature (Belsky, 1984; Shaw et al., 1994). Negative parenting appears to disrupt children's ability to develop appropriate self-regulatory strategies in addition to serving as a model for future behavior on the part of the child. This in turn leads to an increased likelihood that children who were exposed to negative parenting will engage in aggressive and inattentive behavior such as aggression. Examination of the self-regulatory pathways that

are disrupted as a result of exposure to negative parenting practices may aid in intervention efforts geared toward reduction of aggressive and inattentive behavior in children. Additionally, providing children with positive role models may help teach them that there are alternative strategies for attaining goals that do not include aggressive behavior.

Positive versus Negative Parenting

In my study, I found that positive parenting behavior was associated with decreased levels of aggressive and inattentive behavior. It has been documented repeatedly in the parenting literature that positive parenting is associated with a variety of positive child outcomes (Belsky, 1984; Elster et al., 1983; Ispa, Fine, Halgunseth, Harper, Robinson, Boyce, et al., 2004; McGroder, 2000; Shaw et al., 1994; Zhou, Eisenberg, Losoya, Fabes, Reiser, Guthrie, et al., 2002). Additionally, children engaged in clinical levels of aggressive and inattentive behavior were more likely to have mothers who engaged in negative (i.e. detached parenting). This is consistent with some of the literature that documents a linkage between detached parenting and aggressive and inattentive behavior. For example, Shaw et al. (1994) found that mothers who demonstrate low levels of responsivity to their toddlers were more likely to have children who engaged in aggressive behavior at child age 24 and 36 months.

At the same time conflicting findings regarding the influence of positive and negative parenting are reported across the literature. Petit et al. (1997) found that high levels of positive parenting predicted low levels of aggressive and inattentive behavior. These authors also demonstrated that low levels of positive parenting, but not the presence of negative parenting, predicted child aggressive and inattentive behavior,

suggesting a protective function for the presence of positive parenting. However, Chang, et al. (2003) found that harsh parenting did in fact lead to increased levels of aggressive behavior, which was in turn mediated by the children's levels of emotional dysregulation.

The definition of positive and negative parenting varies across studies, and this may contribute to inconsistencies within the literature. For example, the use of observation measures of actual parenting behaviors is going to yield different information than self-report instruments of these behaviors. However, Zaslow et al. (2006) found that observational, maternal, and teacher reports demonstrated moderate correlations, therefore it is likely that these various measures are assessing the parenting constructs they were designed to measure. In Petit et al.'s (1997) study, the researchers operationalized positive parenting as the engagement in calm discussions with children, involvement in children's social relationships, the use of a positive tone, and the demonstration of a positive attitude towards children. In other studies, researchers have used Likert type scales that asked the parents to rate statements such as "I praise my child" (Dallaire et al., 2006). Similarly, negative parenting has been operationalized variously as the presence and frequency of physical discipline (Petit et al., 1997), and ratings of statements such as "I lose my temper when my child does not do something I asked him/her to do" (Dallaire, Pineda, Cole, Ciesla, Jacquez, & La Grange, 2006, p. 316). In my study I analyzed observational data (3-bag task) that was situated in the home. This variation in operational definitions may underlie some of the disparities in the literature regarding the influence of positive and negative parenting on child outcome.

In my study I found that detached parenting had a greater influence on child aggressive and inattentive behavior than intrusive parenting or negative regard toward the

child. Detached behavior has been found in depressed (Gelfland & Teti, 1990; Leadbeater et al., 1996), neglectful (Tanner & Turney, 2003; Paavilainen & Åstedt-Kurki, 2003) and stressed mothers (Ketterlinus et al. 1991). In their examination of depressed mothers and their toddlers, Dubowitz, Papas, Black, and Starr (2002) found that mothers who demonstrated emotional neglect toward their children were more likely to have children who demonstrated aggressive and inattentive symptoms. Other researchers have found that paternal, but not maternal detachment was associated with child aggressive and inattentive behavior (Sturge-Apple, Davies, Cummings, 2006). However, since Sturge-Apple et al. (2006) were primarily concerned with examining marital discord and its influence on child outcome, it is unclear whether these findings would apply to single parent families. Parental detachment appears to play an important role in the development of aggressive and inattentive behavior in children. A review of the literature has found that there has been minimal examination of this specific type of parenting, often including it in a composite variable labeled as negative parenting. Continued examination of detached parenting is likely to yield valuable information regarding child aggressive and inattentive behavior.

Overall there are differential levels of influence of positive and negative parenting on child aggressive and inattentive behavior. Positive parenting is associated with lower levels of disruptive behavior, whereas negative parenting is associated with high levels of dysregulation in children. It may be that the absence of positive parenting is more important than the presence of negative parenting in predicting children's aggressive and inattentive behavior. Therefore it is important to determine whether positive parenting and negative parenting are separate constructs or whether they run along a continuous

spectrum. Researchers have found that positive and negative parenting have little overlap, indicating that they are better conceived as separate constructs that function independently of one another (Dallaire, et al., 2006). Due to the nature of the sample in my study, it was not possible to examine subgroups of parents and children to determine whether there was a stronger influence of positive or negative parenting behavior on child outcome. This remains an important question that requires further research.

Another consideration is that when their children are 2 years old, mothers may be witnessing, and therefore reporting on, the highest level of aggressive behavior exhibited by their children thus far. Findings in the aggression literature indicate that 2 year old toddlers display levels of aggressive behavior that exceed those of both younger and older children (Nagin & Tremblay, 1999). Additionally, some authors have demonstrated a relationship between maternal well-being and maternal report of child dysregulated behavior. For example, Olson et al. (2002) found that mothers who reported difficult life circumstances were more critical of their children. Although the authors did not find an association between maternal depression and maternal reports of children's aggressive behavior, Civic and Holt (2000) found that mothers who reported symptoms of depression were also more likely to report behavioral difficulties in their children. It is therefore possible that measurement artifacts confounded actual levels of children's aggressive and inattentive behavior.

Mediators of Maternal Functioning and Child Behavior

An important finding in my study was that positive parenting mediated the association between maternal parenting stress and child aggressive and inattentive behavior. This indicates that the presence of positive parenting is an important factor in

minimizing the development of child aggressive and inattentive behavior. It may be that maternal psychological well-being has less influence on child behavior than the actual parenting behavior. Ketterlinus et al. (1991) found that adolescent mothers who reported high levels of parenting stress were less likely to have responsive, positive interactions with their children. They suggested that maternal attitudes and knowledge of child development may play a stronger role in maternal responses to their children than maternal parenting stress levels. In her review of the literature, Mcloyd (1990) found that mothers experiencing high levels of psychological distress were more likely to engage in negative parenting behavior, even when they were aware that their behaviors may be detrimental to their children. According to Mcloyd's (1990) explanatory model of children's behavior problems, parenting behavior has a direct effect on child outcome, whereas psychological wellbeing has an indirect effect, working through parenting behavior.

Parenting aggressive children has different challenges compared with parenting children with attentional difficulties. McLaughlin and Harrison (2006) found that maternal sense of competence and the degree to which children's behavior is disruptive were primary predictors of parenting behavior in adult mothers of children with attention difficulties. Mothers with a decreased sense of competence in their parental role who had children with higher levels of disruptive behavior were at increased risk for engagement in negative parenting behavior. The authors suggest that children's inattention was not the primary force influencing maternal behavior. Instead, the disruptive and aggressive behaviors served to induce negative reactions in the mothers.

In one study, mothers of aggressive children without attention difficulties were found to have lower frequencies of positive interactions with their children, and were more likely to have a negative emotional response to them (Katsurada & Sugawara, 2000). Because much of the literature examines parenting as a precursor to the onset of aggressive behavior in childhood, it is difficult to disentangle etiological factors from parental responses to disruptive behavior. Children with attentional difficulties often display co-morbid difficulties with aggressive behavior, which can affect parenting behaviors in unique ways. For example, Chronis, Lahey, Pelham, Williams, Baumann, Kipp, et al. (2007) found that maternal depression and the presence (or absence) of positive parenting were key factors in predicting conduct problems in children diagnosed with Attention Deficit – Hyperactivity Disorder. Taken together, the results from studies suggest that some of the same parenting behaviors may be contributing to children's aggressive and inattentive behavior problems, and that parents may respond similarly to their children due to an overlap in the behavior of children with aggressive and inattentive behavior.

In my study both positive and negative parenting behavior influenced child aggressive and inattentive behaviors. This may be partially due to different operational definitions of positive and negative parenting. For example, the negative parenting behavior that was associated with increased levels of aggressive behavior in children in my study was detachment, whereas in the extant literature harsh punitive parenting is associated with aggressive and inattentive behavior (Masten & Coatsworth, 1998; O'Leary et al, 1999; Olson et al., 2002). However, others have found that aggressive children are more likely to have uninvolved parents in stressful homes (Campbell et al.,

2000). These varied operational definitions of negative parenting behavior may mask the associations between specific negative parenting behavior and child aggressive behavior. In terms of inattentive behavior, in previous studies it has been found that increased levels of maternal control were associated with lower levels of emotional regulation in children (Gilliom et al., 2002), which could interfere with the development of appropriate attentional strategies (Masten & Coatsworth, 1998). Additional studies that address this issue with both positive and negative parenting behavior would serve to clarify this important distinction.

Time-varying versus time-invariant parenting as predictors of child outcome

In my study, there was evidence for the influence of both concurrent parenting on child aggressive and inattentive behavior as well as early parenting on later child aggressive and inattentive behavior. Interestingly, it was negative parenting behavior that primarily had long term influences on child outcome, whereas positive parenting was associated with time-invariant findings. There is some disagreement in the literature concerning the influence of time-invariant versus time-varying predictors of parenting. Chronis et al. (2007) examined the influence of maternal depression and negative parenting behavior on child ADHD and found that early symptoms of maternal depression and parenting were predictive of subsequent ADHD symptoms in children over an 8 year time span. The authors suggested that dosage is a factor in the development of aggressive and inattentive behavior in children. The longer the children were exposed to maternal depressive affect, the more likely they were to develop aggressive and inattentive behavior. Although the authors found that positive parenting behavior was predictive of decreased risk for behavior problems, there were no findings

for negative parenting. However, in this study, negative parenting was operationalized as negative comments and physical interactions with the children. This differs from the negative parenting behavior that was associated the majority of the results in my study, which was the more passive-detached parenting behavior. The different operational definitions of negative parenting in these studies may explain the different findings regarding time-invariant versus time-varying predictors of aggressive and inattentive behavior in children.

Alternatively, there may be bidirectional effects influencing maternal parenting behavior. The current study examined aggressive and inattentive behaviors, with findings indicating a concurrent association between maternal depression at 36 months and child aggression. In their review of the literature, Pettit and Arsiwalla (2008) discussed studies in which the results indicated that maternal depression was influenced by child behavior. Future studies would benefit from utilizing a transactional model of development for an in depth examination of the association between maternal depression and child aggressive behavior.

Similar to the findings in my study, Marchand, Hock, and Widaman (2002) found both time-invariant and time-varying predictors of child aggressive and inattentive behavior. The authors found that maternal depression and hostility when children were 4 years of age was predictive of time-invariant child aggressive and inattentive behavior. When the children were 6 years old, only maternal hostility predicted time-invariant aggressive and inattentive behavior. The authors also found that maternal hostility, but not depression, when children were 4 years old, predicted child aggressive and inattentive behavior when the children were 6 years old. Perhaps children's early experiences served

as a guide for later behavior. Children's earlier exposure to hostile parenting may have taught them that not focusing on the parent during hostile interactions is a useful coping mechanism, which was subsequently generalized to other situations. It is also possible that maturational factors in the children have an influence on their responses to their mothers' behavior over time. As the children get older, their needs and behavior are likely to change, requiring a change in parenting behavior. Additionally, there could be a variety of environmental factors (e.g., friends and teachers) that may serve to minimize the influence of negative parenting behavior on children's behavior.

In addition to maturational changes occurring in the children which would require changes in parenting strategies, there may also be maturational changes in the adolescent mothers. A variety of affective (Moneta et al., 2001) and cognitive (Klaczynski, 2000) changes occur during the adolescent years. Therefore, it is possible that as adolescents become older, they begin to alter their interactions with their children as a function of the mothers' own increased affective and cognitive maturity.

The timing of children's exposure to maternal depressive symptoms is also an important concern. In their examination of maternal depression and child psychological problems, Brennan et al. (2000) found that children whose mothers reported symptoms of depression during pregnancy had fewer psychological difficulties compared with children whose mothers reported depressive symptoms postpartum. These results indicate that children's exposure to maternal depression may play an important role in the development of behavioral difficulties in these children. Continued examination of environmental factors mediating the influence of parent behavior on child outcomes is warranted given the sparse information currently available.

Summary

In sum, findings from the current study included an association between the maternal characteristics of age and psychological well-being on parenting behavior. Parenting behavior was in turn associated with child aggressive and inattentive behavior when the children were 24 and 36 months of age. There is support for many of the current findings in the extant literature on adolescent parents, although continued investigation is necessary to clarify some of the disparate findings between my study and previous investigations. I now turn to a consideration of the implications of the current study from empirical and policy perspectives.

Study Limitations

There are several limitations in this study that require discussion. The first is that there is a high rate of missing data in this sample. The rates of missingness for each measure ranged from 23-40%. Complete case analyses resulted in a significant portion of the data being dropped from the analyses. This naturally impacted the overall sample size. The entire adolescent sample consisted of 1,140 participants, whereas the final sample consisted of 319 adolescent mothers and their children. As a result of not being able to analyze a significant portion of the data, it follows that the findings have limited generalizability.

There were few demographic differences between my sample and the total adolescent sample in the EHSRE study. For example, in my sample 10% of the mothers reported living at 100% poverty, in the total adolescent sample 9.2% reported the same poverty rate; 21.6% of my sample completed high school, compared with 21.0% of the total adolescent sample; and 7.1% of the mothers in my sample reported living in

inadequate housing, the figure was 11.1% for the total adolescent sample; 64.6% of my sample reported receiving food stamps, whereas 56.7% of the total adolescent sample reported receipt of this assistance.

One difference included the home environment. For example, 22.6% of my sample, compared with 31.9% of the total adolescent sample had only 1 adult living in the home, and 42.0% of the mothers in my sample had an adult male living in the home, compared to 34.3% of the total sample. There were slightly more mothers in the total adolescent sample reporting high parenting stress levels (17.5% versus 13.2% respectively). There were nearly no differences in the number of mothers reporting high parenting stress levels at 24 or 36 months, nor were there differences in reports of depressive symptoms at either time point, or in child aggressive or inattentive behavior at either time point. In sum, there do not appear to be substantial demographic differences between my sample and the complete adolescent sample.

In addition to sample size and formation, generalizability is limited because the participants were those individuals who sought out the EHS program. It is possible that those mothers who sought out a support system such as EHS are experiencing a different level of psychological functioning relative to those mothers who did not seek out services. Perhaps those mothers who did not attempt to enroll their children in EHS suffer from higher levels of depression and parenting stress, which may impede not only their ability to find out about the resources available to them, but also their ability to take the necessary steps to apply for services. It is possible that some of these adolescent mothers have a home life which is too chaotic to allow them the time and organization necessary to apply and arrange for child care services. It is also possible that there may be a stigma

associated with receiving support outside the family system; even if these adolescents were aware of resources for which they are eligible, they may have concerns regarding continued familial support should they seek additional help elsewhere. Without data on those adolescent parents who did not apply for EHS enrollment, it is impossible to make the claim that the findings in this study apply to an entire population of adolescent mothers.

Another consideration is that the EHSRE study was an experimental design. As such, approximately half of my sample was part of an intervention study, whereas the other half, while free to seek out alternative programs, did not receive the same services. I did find that there was an interaction between receipt of EHS services and positive parenting. Those mothers who were enrolled in EHS were more likely to engage in positive parenting than those who were not. Therefore, it may be that a separate examination of parenting behavior of adolescent mothers receiving EHS services and those in the control group would yield different results. This examination was beyond the scope of my study, however, future examinations of parenting behavior by program and control group would provide invaluable information that may inform future intervention efforts.

The dataset on the full sample of adolescent mothers, which provides rich information and is based on a relatively large sample size, nevertheless suffers from generalizability problems. The participants were randomly assigned to control and program groups; however, the sites at which the data were collected were not randomly selected. Each site had to apply for funding from the Head Start Bureau. Those centers that were chosen to participate needed to demonstrate the ability to recruit double their

enrollment capacity, and collaborate with a research team (DHHS, 2001). Another complication was the restricted range of income that is associated with families involved with EHS. The vast majority of these families (90%) live below the poverty line. Therefore the findings cannot be generalized to those adolescent mothers who are living above the poverty threshold. Nevertheless, my study does provide important information regarding the psychological well-being and parenting behavior of older and younger adolescent mothers living in poverty. This information can inform future research examining the mechanisms of parenting in this population. Taken together, the aforementioned difficulties indicate that the findings have limited generalizability beyond the sample of mothers involved with the current study.

Another limitation is the lack of multi-informant reports of child aggressive and inattentive behavior. Numerous scholars have documented that mothers experiencing psychological difficulties are more likely to report higher levels of aggressive and inattentive behavior in their children relative to mothers with sound psychological health (Black, Papas, Hussey, Dubowitz, et al., 2002; Civic & Holt, 2000; Katsurada & Sugawara, 2000; Najman, Williams, Nikles, Spence, Bor, O'Callahan, et al., 2001; Passino & Whitman, 1993). It follows that high-risk adolescent mothers, who are at increased risk for stress and depression (Deal & Holt, 1998; Kalil & Danziger, 2000), may report higher levels of disruptive behavior.

Maternal report in this case is further complicated by the fact that the dataset did not include information regarding the amount of time that the adolescent mothers spend with their children. It is possible that grandparents were more involved in the day-to-day parenting activities than the adolescent mothers (Apfel & Seitz, 1991). As such, they

would be less likely to have an in-depth understanding of their children, which would negatively influence their ability to accurately report on their children's behavior. It is important to keep in mind that the relationships between adolescent mothers and their own mothers are complicated. Some authors have posited a variety of models explaining the aforementioned relationships. For example, a three-generational home characterized by a positive mother-grandmother relationship may lead to transmission of positive parenting behavior, whereas a three-generational home characterized by conflict may be associated with lack of support or transmission of parenting knowledge to the younger mothers (Apfel & Seitz, 1991). The absence of this level of information limits the confidence with which maternal reports can be viewed in this sample.

Measures of psychological functioning, specifically depression and parenting stress used in the EHSRE, were obtained via maternal report. Collection of more objective measures of maternal psychological functioning (e.g. observational data, assessments by a trained clinician) may provide a more accurate picture of adolescent mothers' psychological well being. Similarly, objective measures of child aggressive and inattentive behavior could have validated maternal reports. Although the parenting data were obtained through video taped observation, which is arguably a more objective measure than maternal report, it is nevertheless biased in that it provides information on a very narrow time period of mother-child interactions. Obtaining additional information regarding parenting behavior (e.g., report from parents and other informants) may provide valuable additional insights into parenting behaviors that occur on a regular basis, which may not occur while the mothers are being video taped.

Finally, although I found that maternal age, depression and stress influenced parenting behavior, it is important for future studies to consider the multidimensional nature of parenting. For example, future studies would contribute to the field by examining adolescent mothers' social networks, and their influence on parenting behavior. For example, are adolescent mothers' peer groups primarily other adolescent mothers? Does the choice of friends for this population impact attitudes and behavior toward their children? Are the majority of adolescent mothers receiving support from their family? Is there a difference in parenting behavior for those adolescent mothers who do and not receive familial support? Additionally, examination of maternal socio-economic status may contribute to our understanding of the mechanisms of parenting within the adolescent population. For example, are there variations in report of parenting stress between adolescent mothers from different SES strata? If so, does this variation in parenting stress impact parenting behavior? Continued examination of factors that influence parenting behavior in adolescent mothers will help inform intervention efforts geared at improving parenting for this high risk population.

Future Research Directions

In the future researchers should address the limitations delineated in the above section, including an improved sampling design and multi-informant, multimodal data collection strategies. The researchers would also benefit from inclusion of multiple informants regarding child behavior. The use of multiple informants would not only provide a more accurate picture of child aggressive and inattentive behavior in a high risk sample of adolescent mothers, it would also indicate whether the behaviors that mothers are reporting are occurring across contexts. This is important information as it would

indicate whether the children's behavior is solely a function of their interactions with their mothers, or whether their children present with psychological difficulty across contexts.

I examined two dimensions of parenting-positive and negative parenting behavior in this study. Future assessments of parenting behavior that utilize additional dimensions would provide a more in depth picture of parenting behavior. For example, examination of the degree of maternal warmth in concert with the level of maternal control would provide more information than simply whether the mothers are more or less likely to engage in positive or negative parenting. Daillaire, et al. (2006) found that positive and negative parenting behaviors are orthogonal constructs. This provides support for the idea that positive and negative parenting should be considered separately. It may be that mothers exert different types of control over their children's behavior (e.g. negative control versus guidance), thereby eliciting different behavioral responses from their children (Crockenberg & Litman, 1990).

Although I did not address the influence of bidirectional effects of parenting and child behavior, the importance of this factor cannot be overstated. It is likely that closer examination of parent-child interactions will demonstrate that parenting behavior is, at least in part, influenced by child characteristics (Campbell et al., 2000). For example, in my study I found that maternal depression at 36 months was a concurrent predictor of child aggressive behavior. Examination of the influence the children's behavior may have had on the mothers' behavior may yield important information regarding adolescent mothers' parenting.

It would be beneficial to examine not only the bidirectional effects, but also expand the types of child characteristics assessed in future studies (e.g., temperament, cognitive ability, core regulatory abilities). It is possible that children's endogenous factors also predict parenting behavior. A child's genetic predisposition to react in a particular manner to environmental stimuli may play an important role in how parents respond to the child's behavior. These early interactions could subsequently develop into a stable pattern of behavior between parent and child. Future research addressing the influence of endogenous child behavior on maternal parenting and psychosocial well-being is warranted.

Many researchers have found that adolescent parents engage in poor parenting behavior (Berlin et al., 2002; Bernardi et al., 1992; Elster et al., 1983; Levine Coley & Chase-Lansdale, 1998; Levine et al., 1985; Moore & Brooks-Gunn, 2002; Passino & Whitman, 1993; Sommer, Whitman, Borkwoski, Schellenbach, Maxwell, & Keogh, 1993). At the same time, some researchers have suggested that adolescent mothers want to be good parents. Lesser, Koniak-Griffin, and Anderson (1999) reported that adolescent mothers claimed they wanted to provide better childhoods for their children than the ones they experienced themselves. Perhaps adolescent mothers are engaging in positive behavior on a fairly regular basis, and the negative parenting occurs when the mothers are experiencing particularly high levels of parenting stress or symptoms of depression. For example, Passino and Whitman (1993) found that those children who were perceived as creating less stress received more appropriate parenting than children who were perceived as stress inducing by their mothers. Research assessing adolescent mothers' psychological state in conjunction with their parenting behavior requires continued

examination. This line of study would provide valuable information regarding the parenting practices of this group of individuals.

The examination of environmental determinants of parenting would also contribute to the adolescent parenting literature. For example, assessing maternal living situations, child care, and social support will allow a greater understanding of why adolescents engage in particular parenting practices. Additionally, obtaining information regarding the primary caregiver (e.g., grandmother) may provide a more accurate model of the parenting behavior experienced by children of adolescent mothers. To this end, it is important to determine the specific nature and quality of the parenting behaviors of the primary caregiver. If, for example, the grandmother engages in positive parenting behavior, then this may mitigate any detrimental effects that negative parenting on the part of the adolescent mother may create. If, on the other hand, the grandmother engages in negative parenting behavior, then this may exacerbate the negative effects on the child that come as a result of having an adolescent mother.

Another environmental influence that requires additional consideration is poverty. The vast majority of adolescent mothers in this study were living at or below the federal poverty line. My study provides a valuable insight into the parenting behavior of adolescent mothers within this general level of the socioeconomic strata. However, it is important to examine parenting behavior of adolescent mothers living in more affluent environments. Is there a difference in parenting within a group of adolescent mothers who are separated by SES factors, or is there a commonality within the group of mothers that transcends social strata? Continued examination of adolescent parenting across

contexts is necessary for the development of a more precise understanding of parenting within a group of adolescent mothers.

Alternative analytic strategies

Implementation of different analytic techniques may provide additional important information regarding adolescent parenting and child outcome. For example, in order to fully examine the influence receipt of EHS services had on adolescent parenting, the interaction terms for group membership and variables of interest may be included in the regression models. Alternatively, each of the variables could be examined separately within the program and control groups. Examination of significant differences between the groups may yield more fine tuned information regarding adolescent parenting.

Another approach that may be used in future studies is to alter the selection criteria for the sample. Choosing those participants with at least one parenting measure, as opposed to complete case analysis, would increase the sample size. In this case it may be possible to use multiple imputation to manage missing data because there will be less information that needs to be generated if those participants without any parenting measures are excluded from the sample. Multiple imputation techniques provide appropriate strategies for managing missing data when there are lower rates of missingness. Changing the definition of the sample may allow for examination of the data in greater detail than was possible with a smaller sample size.

In this study child outcomes were assessed using dichotomous variables. Although other authors have used clinical cutoff scores when examining clinical versus subclinical levels of behavior (Xue, et al., 2005), future studies may benefit from utilizing continuous variables as their outcome measures. Use of dichotomous variables allows for

an assessment of the differences between two groups, those falling above and below a predetermined clinical cutoff score. This is useful for determining whether there are differences between the two groups on a variety of variables. However, use of a continuous measure may provide more precise information regarding variation within the overall sample. Additionally, the use of clinical cutoffs may pose some difficulties when applied to very young children.

Policy Implications

Findings from this study have multiple implications for policy and practice. First, Early Head Start and other child development and family support programs should continue to develop services specific to the adolescent parent population. For example, parenting programs could focus on educating and supporting adolescents to engage in positive parenting behavior, as opposed to the more general parent education programs that exist. Adolescent parents engaged in positive parenting behavior, even those reporting high levels of parenting stress, are less likely to have children with aggressive and inattentive behavior. The presence of positive parenting serves an important role in the developmental trajectory of young children, functioning as a protective factor for those in high risk situations. This implies the need for service providers to assist adolescent parents to interact with their children in the most appropriate manner possible.

Intervention efforts addressing the development of coping strategies for adolescent mothers living in high stress environments are necessary. Although it is not possible to remove stress from the life of adolescent mothers, teaching them how to manage their experience of stress and how to prevent this experience from interfering with their parenting ability will serve to improve both mother and child functioning. Additionally,

maternal depression continues to be an important issue that requires attention. Intervention efforts targeting depression are a necessary component of programs geared toward assisting adolescent parents. It is also important to incorporate parent training into intervention efforts. Maternal mental health may revolve, at least in part, around perceptions of parental competence (Gelfland & Teti, 1990). Therefore, addressing maternal concerns regarding parenting behavior may have the added benefit of improving maternal psychological well being.

It is important to consider the differences between younger and older adolescent mothers. Developmental differences within the adolescent population need to be taken into account when developing intervention strategies. It is likely that 15 year old mothers require different strategies than 19 year old mothers. For example, while the former may benefit from strategies aimed at high school completion, the older mothers may require additional services such as job training options and information regarding funding opportunities for college.

In addition to helping the mothers interact in a more appropriate way with their children, practitioners need to intervene with those children who are at risk for subsequent aggressive and inattentive behavior problems. This multi-generational approach is likely going to yield a more effective intervention. Additional funding to provide services to adolescent families would also likely have positive long term impacts on both the parents and children.

Concluding Remarks

Adolescent mothers are at higher risk for living in a low income environment, experiencing emotional disorders, and engaging in negative parenting behavior. It is no

surprise that there is an association between adolescent parenting, psychosocial risk and child outcome, but additional clarification of the factors involved, and their role in adolescent parenting is in order. Although numerous studies have been conducted examining adolescent parenting behavior as it compares with that of adults, few studies have examined within group differences in an adolescent sample. This study documented that there are variations in adolescent parenting as a function of age and psychological well-being. Younger mothers are at increased risk for punitive parenting behavior relative to their older counterparts. Adolescent mothers reporting high levels of parenting stress and depression are more likely to engage in negative parenting behavior, specifically detachment.

The findings from the current study highlight the importance of providing supports to adolescent mothers to assist them to successfully maneuver the challenges of parenting. Developing a more in depth understanding of the difficulties that adolescent mothers face, and the mechanisms underlying their parenting practices will allow for the implementation of more effective intervention strategies, benefiting both the mothers and children.

APPENDIX A: HISFIS

SECTION 4: APPLICATION INFORMATION
FAMILY COMPOSITION AND RESOURCES 78

Each family submitting an application should complete Section 4. Section 4 provides additional information related to the applying family including: family type, financial status and social supports. The box below provides a working definition of family which should be used for purposes of completing this section.

FAMILY: A family is composed of: (1) a pregnant woman or (2) 2 or more people who: (a) reside in the same household; and (b) are related either by blood, marriage, adoption or commitment. A child's biological or adoptive parent or other focal adult who resides outside of the household may also be included.

4.1 Please tell me which of the following descriptions best fits your family: *(Read list and check only one)*
HA4-1
01 ☐ Two parent family (married or common law)
02 ☐ Single parent family (mother figure only)
04 ☐ Single parent family (mother figure only) living with partner
03 ☐ Single parent family (father figure only)
05 ☐ Single parent family (father figure only) living with partner
06 ☐ Other relative(s)
07 ☐ Foster family
99 ☐ Other: Specify _____

4.2 How many adults are there in your family? _____ adults
HA4-2 (topcoded)

4.3 How many children are there in your family? _____ children
HA4-3 (topcoded)

4.4 What is your family's yearly gross income? $ _____
HA4-4

1 = less than $3,000
2 = $3,000 - < $6,000
3 = $6,000 - < $12,000
4 = $12,000 - < $18,000
5 = $18,000 - < $24,000
6 = $24,000 - < $30,000
7 = $30,000 or more

4.5 What time period is this income based on? *(Mark only one)*
HA4-5
1 ☐ Previous 12 months
2 ☐ Last calendar year

4.6 How many adults contributed to this income? ____ adults
HA4-6 (topcoded)

4.7 Many families receive services or financial assistance from one or more programs or agencies. Does your family receive any of the following types of services or financial assistance? *(Read list and mark all that apply)*

HA4-7-01 ☐ Medical financial assistance (i.e. Medicaid/Medicare)
HA4-7-02 ☐ AFDC
HA4-7-03 ☐ Food Stamps
HA4-7-04 ☐ WIC
HA4-7-05 ☐ Supplemental Security Income (SSI)
~~HA4-7-06~~ ☐ Foster care/Adoption subsidy
☐ Unemployment insurance HA4-7-07
☐ Public housing assistance HA4-7-08
☐ Energy program assistance HA4-7-09
☐ EPSDT HA4-7-10
☐ Child support/alimony HA4-7-11
☐ Other: Specify ~~HA4-7-12~~ HA4-7-12

HA4-7-NO ☐ None of the above

HA4-7-N number of types of financial assist/services received

4.8 Has your family applied to receive Supplemental Security Income (SSI)?
HA4-8
☐ Yes ☐ No

Appendix B: Available and Missing Data

Table B1.Frequency of missing data

Variable	Total	Percent	Missing
Covariates			
Program Group	1018	100	0
Child Gender	1008	99	10
Maternal Age at Random Assignment	1018	100	0
Race	1000	98.2	18
Education	978	96.1	40
Child Age (months)	1018	100	0
Depression			
14m CES-D SF	1018	100	0
36m CES-D SF	697	68.5	321
Parenting Behavior			
14m Support	660	64.8	358
14m Detachment	660	64.8	358
14m Intrusiveness	660	64.8	358
14m Negative Regard	660	64.8	358
24m Support	604	59.3	414
24m Detachment	604	59.3	414
24m Intrusiveness	604	59.3	414
24m Negative	604	59.3	414

36m Support	568	55.8	450
36m Detachment	569	55.9	449
36m Intrusiveness	569	55.9	449
36m Negative Regard	569	55.9	449
Parenting Stress			
14m	787	77.3	231
24m	682	67.0	336
36m	679	66.7	339
Child Outcome			
24m ODD	678	66.6	340
36m ODD	668	65.6	350
24m ADHD	691	67.9	327
36m ADHD	675	66.3	343

Table B2. Mean differences in demographics for missing and non-missing variables of interest

Demographics	t	Df
14 months		
# kids 0-5 in home	-.19*	472.78
# moves past year	3.44***	352.08
Hours in edu prog/week	-2.73**	167.98
Highest grade completed	-2.11*	713.00
Child age	-2.77**	1031.00
36 months		
# adults in home	-2.06*	1029.00
# moves past year	3.40***	551.88
Hours in edu prog/week	-2.38*	118.61
Foodstamps	2.54**	555.00
# child care arrangements	-3.36***	631.00
Support		
14 months		
# moves past year	3.52***	630.59
# adults in home	-3.60***	726.42
Hours in edu prog/week	-3.26***	360.70
Child age	-5.04***	1031.00
# childcare arrange.	-2.33*	255.88

24 months		
# adults in home	-2.97**	882.93
Child age	-3.16**	1031.00
36 months		
# moves past year	2.71**	884.31
# adults in home	-3.43**	962.76
AFDC/TANF	2.44*	564.00
Foodstamps	2.43*	555.00
Hrs worked/week	-2.41*	322.17
# childcare arrangements	-2.86**	631.00
Detachment		
14 months		
# moves past year	3.52***	630.59
# adults in home	-3.60***	726.42
Hours in edu prog/week	-3.26***	360.70
Child age	-5.04***	1031.00
# childcare arrangements	-2.33*	255.88
24 months		
# adults in home	-2.97**	882.93
Child age	-3.16**	1031.00
36 months		
# moves past year	2.76**	881.44

# adults in home	-3.53***	962.10
AFDC/TANF	2.44*	564.00
Foodstamps	2.43*	555.00
Hours at work per week	-2.42*	317.97
# childcare arrangements	-2.86**	631.00
Intrusiveness		
14 months		
# moves past year	3.52***	630.59
# adults in home	-3.60***	726.42
Hours in edu prog/week	-3.26**	360.70
Child age	-5.04***	1031.00
# childcare arrangements	-2.33*	255.88
24 months		
# adults in home	-2.97**	882.93
Child age	-3.16**	1031.00
36 months		
# moves past year	2.76**	881.44
# adults in home	-3.53***	962.10
AFDC/TANF	2.44*	564.00
Foodstamps	2.43*	555.00
Hours at work per week	-2.42*	317.97
# childcare arrangements	-2.86**	631.00

Negative Regard		
14 months		
# moves past year	3.52***	630.59
# adults in home	-3.60***	726.42
Hours in edu prog/week	-3.26***	360.70
Child age	-5.04***	1031.00
# childcare arrangements	-2.33*	255.88
24 months		
# adults in home	-2.97**	882.93
Child age	-3.16**	1031.00
36 months		
# moves past year	2.76**	881.44
# adults in home	-3.53***	962.10
AFDC/TANF	2.44*	564.00
Foodstamps	2.43*	555.00
Hours at work per week	-2.42*	317.97
# childcare arrangements	-2.86**	631.00
14 months		
# kids 0-5 in home	-2.30*	450.78
# moves past year	3.22***	334.30
# adults in home	-2.09*	1029.00
Hours in edu prog/week	-2.50**	147.98

Highest grade completed	-2.44*	713.00
Child age	-2.66**	1031.00
# childcare arrangements	-2.05*	631.00
24 months		
# kids 0-5 in home	-2.60**	730.80
# adults in home	-2.85**	1029.00
Child age	-2.73**	1031.00
36 months		
# moves past year	2.99**	605.14
Foodstamps	2.13*	555.00
# childcare arrangements	-2.60**	631.00
24 months		
# kids 0-5 in home	-2.58**	804.58
# adults in home	-2.78**	1029.00
Child age	-2.58**	1031.00
# childcare arrangements	-2.34*	631.00
36 months		
# moves past year	3.02**	1031.00
# adults in home	-2.23*	1029.00
Hours in edu prog/week	-2.53**	164.39
Foodstamps	2.33*	555.00

# childcare arrangements	-2.93**	631.00
24 months		
# kids 0-5 in home	-2.34*	750.26
# moves past year	2.11*	1031.00
# adults in home	-3.20***	1029.00
Child age	-2.56**	1031.00
# childcare arrangements	-2.40*	631.00
36 months		
# moves past year	3.07**	1031.00
# adults in home	-2.48*	1029.00
Hours in edu prog/week	-2.03*	151.20
Foodstamps	2.20*	555.00
# childcare arrangements	-2.29*	631.00

*p<.05 **p<.01 ***p<.001

Appendix C: Frequencies

DV		Valid Percent
Program Type		
	Center	31.0
	Home	39.5
	Mixed	29.5
Primary language English		
	No	17.1
	Yes	82.9
Speaks English well		
	Parent lang English	83.4
	Lang not English but speaks well	13.7
	Does not speak English well	2.9
Living arrangements		
	Lives with husband	14.1
	Lives with other adults	63.9

	Lives alone	21.9
	with children	
Number adults in home		
	1	22.6
	2	49.2
	3 or more	28.2
Number kids 0-5 in home		
	0	80.3
	1	14.1
	2	5.3
	3	.3
Number kids 6-17 in home		
	0	46.7
	1	34.5
	2	10.0
	3	6.3
	4	2.5
Moves in past year		
	0	54.9
	1	27.5
	2	7.9
	3	5.3
	4	4.4

Child <2500g at birth		
	Yes	93.5
	No	6.5
Child born > 3 weeks early	No	88.4
	Yes	11.6
Stay in hospital after birth		
	No	84.0
	Yes	16.0
Adult male in house at baseline	Yes	42.0
	No	58.0
Focus child firstborn	No	13.2
	Yes	86.8
Income <33% poverty	No	73.7
	Yes	26.3
Income 33-67% poverty	No	80.9
	Yes	19.1
Income 67-99% poverty	No	83.7
	Yes	16.3
Income >=100% poverty	No	90.0
	Yes	10.0
Number risk factors at baseline	0,1 or 2	15.1
	3	36.6
	4,5	48.3

Medicaid	No	23.9
	Yes	76.1
Food Stamps	No	64.6
	Yes	35.4
Public Housing Assistance	No	92.9
	Yes	7.1
Inadequate Housing	No	92.4
	Yes	7.6
Inadequate Money	No	85.9
	Yes	14.1
Inadequate Medical Care	No	87.7
	Yes	12.3
Inadequate Transportation	No	79.3
	Yes	20.7
Inadequate Child Care	No	72.7
	Yes	27.3
Inadequate Support –Family or	No	92.7
Friends	Yes	7.3
Concerns re health/development	No	89.7
	Yes	10.3
Child has Established risks	No	88.0
	Yes	12.0

Child has Bio/medical risks	No	60.7
	Yes (data ambiguous)	39.3
Child has Environmental Risks	No	60.7
	Yes	39.3
Child has medical or other risks	No	55.6
	Yes	44.4
PSI26: ever in education program	No	23.5
	Yes	76.5
PSI26: ever receive pub assistance	No	25.0
	Yes	75.0
PSI26: ever receive AFDC/TANF	No	48.1
	Yes	51.9
PSI16: any parenting classes	No	68.9
	Yes	31.1
PSI26: any parenting classes	No	77.7
	Yes	22.3
PSI15: Any group socializations	No	86.3
	Yes	13.7
PSI16: Any group socializations	No	88.2
	Yes	11.8
PSI26: Any group socializations	No	86.6
	Yes	13.4

PSI15: any parent support groups	No	95.2
	Yes	4.8
PSI16: any parent support groups	No	94.8
	Yes	5.2
PSI26: any parent support groups	No	95.9
	Yes	4.1
PSI15: any parenting classes	No	76.0
	Yes	24.0
PSI15: any group parenting activity	No	68.5
	Yes	31.5
PSI26: any group parenting activity	No	73.2
	Yes	26.8
By PSI15: any group parenting	No	52.1
activity	Yes	47.9
By PSI26: any group parenting	No	45.5
activity	Yes	54.5
By PSI26: used any child care	No	10.0
	Yes	90.0
By PSI26: # child care arrangement	0	10.0
	1	13.4
	2	23.8
	3	24.2
	4	15.2

	5	7.4
	6	5.6
	7	0.4
PSI16: child visited ER	No	75.6
	Yes	24.4
PSI15: family received mental	No	89.4
health services	Yes	10.6
PSI15: family received any mental	No	82.2
health services	Yes	17.8
PSI16: family received mental	No	88.3
health services	Yes	11.7
PSI26: family received mental	No	91.8
health services	Yes	8.2
PSI26: family received any mental	No	79.5
health services	Yes	20.5
By PSI26: ever moved	No	23.1
	Yes	76.9
By PSI26: ever homeless	No	95.6
	Yes	4.4
PSI16: have a close friend	No	13.1
	Yes	86.9
PSI26: have someone to confide in	No	7.8
	Yes	92.2

PSI16: contact w/family in past 2	No	11.2
weeks	Yes	88.8
14m any child care	No	37.4
	Yes	62.6
24m child health status	Poor	0.9
	Fair	9.1
	Good	19.2
	Very good	38.4
	Excellent	32.4
24m mother health status	Poor	1.3
	Fair	14.1
	Good	32.9
	Very good	32.3
	Excellent	19.4
36m child health status	Poor	1.6
	Fair	14.7
	Good	34.2
	Very good	32.6
	Excellent	16.9
36m mother health status	Poor	1.6
	Fair	14.7
	Good	34.2
	Very good	32.6

	Excellent	16.9
36m dad caregiving score (bio)	0	36.7
	1	7.5
	2	10.2
	3	19.7
	4	25.9
36m dad caregiving score (FF)	0	16.0
	1	6.8
	2	11.9
	3	29.9
	4	35.4
36m father presence with child	No	34.8
	Yes	65.2
36m any male presence with child	No	8.9
	Yes	60.9
14-36m continuous bio father	No	39.1
involvement	Yes	60.9
14-36m no father involvement	No	85.9
	Yes	14.1
14-36m continuous male	No	16.4
involvement	Yes	83.6
14-36m no male involvement	No	98.3
	Yes	1.7

14m mom married/living w/bio dad	No	44.2
	Yes	55.8
24m mom married/living w/bio dad	No	50.3
	Yes	49.7
36m mom married/living w/bio dad	No	57.5
	Yes	42.5

APPENDIX D: Demographic Variables by Group Membership

Variable		Program Group (%)			X^2
		Center	Home	Mixed	
Primary lang. English	No	25.9	55.6	18.5	8.00*
Living arrangements	Live w/husband	20.0	55.6	24.4	16.38**
	Other adults	34.8	31.4	33.8	
	Alone w/children	27.1	52.9	20.0	
# kids 0-5 in home❋	0	34.4	39.5	26.2	11.55@
	1	20.0	40.0	40.0	
	2	11.8	41.2	47.1	
	3	0	0	1.1	
# kids 6-17 in home❋	0	32.9	45.0	22.1	27.65**
	1	37.3	36.4	26.4	
	2	25.0	28.1	46.9	
	3	0	35.0	65.0	
	4	31.0	39.5	29.5	
# adults in home	1	26.4	54.2	19.4	10.86*
	2	33.8	36.9	29.3	
	3 or more	30.0	32.2	37.8	
# moves in past	0	42.29	29.71	28.0	78.43**
year❋❋	1	14.77	56.82	28.41	
	2	16.0	48.0	36.0	
	4	35.7	28.6	35.7	

Focus child firstborn	No	14.3	42.9	42.9	7.45*
	Yes	33.6	39.0	27.4	
Child born >3 weeks	No	39.4	40.4	20.2	7.24*
early	Yes	15.4	46.2	38.5	
Concern re	No	36.3	38.3	25.4	5.21[@]
health/develop	Yes	30.4	60.9	8.7	
Biomedical risks	No	39.3	38.3	22.3	7.57*
	Yes	14.3	46.4	39.3	
Medical or other risks	No	40.8	40.8	18.5	5.92*
	Yes	30.8	37.5	31.7	
Environmental risks	No	40.8	42.3	16.9	11.07**
	Yes	29.3	34.8	35.9	
PSI16: Child visited	No	29.5	35.5	35.0	9.77**
ER	Yes	36.6	47.9	15.5	
Income 67-99% of	No	33.3	36.3	30.3	7.34*
poverty	Yes	19.2	55.8	25.0	
Family received	No	36.5	38.5	25.0	10.12*
foodstamps	Yes	20.0	41.9	38.1	
By PSI26: Ever	No	39.4	32.1	28.5	11.02**
AFDC/TANF	Yes	22.3	47.3	30.4	

English Speaking❋	Parent Lang Eng.	32.4	35.5	32.1	11.26*
	Lang not Eng-speaks well	30.2	55.8	14.0	
	Does not speak Eng well	11.1	66.7	22.2	
Inadequate Childcare	No	23.7	48.9	27.4	41.49**
	Yes	64.3	12.9	22.9	
14m any childcare	No	21.8	52.1	26.1	13.97**
	Yes	36.7	31.7	31.7	
PSI15: Any group	No	32.5	36.5	31.0	5.19^{+}
social ❋	Yes	20.0	55.0	25.0	
PSI26: Any parent	No	31.7	39.9	28.5	8.02*
support grp❋	Yes	16.7	16.7	66.7	
PSI15: Any grp parent	No	35.0	37.0	28.0	5.23$^{@}$
activity	Yes	21.7	43.5	34.8	
By PSI15: Any grp	No	37.1	37.1	25.8	5.67$^{\wedge}$
parent activity	Yes	24.5	41.7	33.8	
36m dad (bio)	0	29.6	29.6	40.7	24.97**
caregiving score	1	40.9	27.3	31.8	
	2	30.0	40.0	30.0	
	3	41.4	41.4	17.2	
	4	23.7	57.9	18.4	

36m dad (ff)	0	29.8	27.7	42.6	13.91+
caregiving score	1	40.0	30.0	30.0	
	2	37.1	31.4	31.4	
	3	35.2	38.6	26.1	
	4	25.0	51.9	23.1	
36m father presence	No	29.1	33.0	37.9	5.66^
with child	Yes	32.6	42.5	24.9	
36m continuous bio	No	28.7	28.7	42.6	11.97**
father involve	Yes	31.5	44.6	23.8	
36m no father	No	32.1	40.1	27.8	8.60**
involvement	Yes	20.5	28.2	51.3	
14m mom married/live	No	35.8	32.8	31.4	5.33@
w/bio dad	Yes	27.7	45.7	26.6	
36m mom married/live	No	35.8	31.8	32.4	12.10**
w/bio dad	Yes	25.4	51.5	23.1	

^ p=.06 @ p=.07 + p=.08 *p<.05 **p<.01

Appendix E: Demographic Variables by Maternal Depression, Parenting stress, and Age

Table E1.

Demographics by 36m Depression.

IV		36m Depression (%)		X^2
		Not Depressed	Depressed	
Child visit ER	No	89.5	10.5	5.39*
	Yes	78.9	21.1	
PSI 15 Family ever	No	89.2	10.8	5.66*
Received Mental	Yes	76.9	23.1	
Health Svc by PSI 15				
PSI 26 Family ever	No	89.3	10.7	5.06*
Received Mental	Yes	78.3	21.7	
Health Svc by PSI 26				
PSI26: Have someone	No	73.9	26.1	
to confide in	Yes	88.1	11.9	3.81*

*p<.05 **p<.01

Note: Values are based on percentages within rows, e.g. % within “child visit ER” rather than percentage of “Depression”.

Table E2.

Demographics by 36 month Parenting stress

Variable		36 month Stress (%)		X^2
		No	Yes	
Adult male in household	No	83.8	16.2	4.45*
at baseline	Yes	91.8	8.2	
Focus child firstborn	No	76.2	23.8	5.18*
	Yes	88.8	11.2	
Household income 33-	No	88.8	11.2	3.13^{+}
67% of poverty or higher	Yes	80.3	19.7	
Number of risk factors at	0-2	97.7	2.3	6.56*
baseline	3	87.9	12.1	
	4-5	83.0	17.0	
Child has environmental	No	83.8	16.2	3.68$^{\wedge}$
risks	Yes	92.4	7.6	
By 26 months: Ever	No	94.4	5.6	4.56*
received public assistance	Yes	84.7	15.3	
By 25 months: Ever	No	92.0	8.0	5.73*
received AFDC/TANF	Yes	82.4	17.6	

By PSI15: Family received any mental health services	No	88.8	11.3	3.70*
	Yes	78.8	21.2	
36 month maternal health status	Poor	80.0	20.**0**	8.85[@]
	Fair	76.6	23.4	
	Good	85.3	14.7	
	Very Good	93.3	6.7	
	Excellent	88.9	11.1	

^ p=.06 @ p=.07 + p=.08 *p<.05 **p<.01

Table E3.

Crosstabs: Demographics by Maternal Age

Variable		Age in years (%)		X^2
		15-17	18-19	
36m mom married/live w/bio dad	No	52.3	47.7	10.3**
	Yes	33.8	66.2	
Living arrangements	Live with husband	15.6	84.4	22.0**
	Live w/other adults	52.5	47.5	
	Live alone w/children	37.1	62.9	
Focus child firstborn	No	19.1	81.0	12.1**
	Yes	47.7	52.3	

Income 33-67% poverty	No	46.5	53.5	3.8*
	Yes	32.8	67.2	
Income 67-99% poverty	No	46.4	53.6	4.3*
	Yes	30.8	69.2	
# risk factors	0,1 or 2	6.8	93.2	27.2**
	3	51.4	48.6	
	4	46.1	53.9	
Inadequate housing	No	45.6	54.4	6.9**
	Yes	17.4	82.6	
Biomedical Risks	No	44.2	55.8	3.7*
	Yes	25.0	75.0	
Environmental Risks	No	35.9	64.1	5.3*
	Yes	51.1	48.9	
PSI26: ever in edu program	No	22.1	77.9	15.8**
	Yes	49.3	50.7	
By PSI26: ever use	No	22.2	77.8	6.1**
childcare	Yes	47.1	52.9	
By PSI26: ever moved	No	53.8	46.2	3.7*
	Yes	40.3	59.7	
PSI16: Contact w/family	No	60.0	40.0	3.3[@]
last 2 weeks	Yes	42.4	57.6	
36m (bio) dad caregiving	0	49.1	50.9	14.5**

	1	54.5	45.5	
	2	63.3	36.7	
	3	37.9	62.1	
	4	28.9	71.1	
36m (ff) dad caregiving	0	53.2	46.8	11.8*
	1	60.0	40.0	
	2	60.0	40.0	
	3	37.5	62.5	
	4	35.6	64.4	
14m mom living w/bio dad	No	51.8	48.2	6.3**
	Yes	37.6	62.4	
24m mom living w/bio dad	No	51.6	48.4	7.6**
	Yes	36.1	63.9	

@p=.07 *p<.05 **p<.01

Appendix F: 36 month Negative Parenting regressed on 36 month Depression (N=319)

Variable	B	SE B	β	Total R^2	F
Intrusive[a]					
Step 1				.04	14.71***
Maternal Age	-.12	.03	-.21**		
Step 2				.06	9.54***
Maternal Age	-.12	.03	-.21**		
36 Depression	.01	.01	.11*		
Negative Regard[b]					
Step 1				.02	5.13*
Education	-.15	.06	-.13*		
Step 2				.05	8.93***
Education	-.17	.06	-.14**		
36m Depression	.02	.01	.20**		
Detachment[c]					
Step 1				.02	5.32*
Education	-.15	.07	-.12*		
Step 2				.04	7.02***
Education	-.16	.06	-.14**		
36 Depression	.02	.01	.16**		

a. Note: R^2 = .04 in step 1 ΔR^2 = .01 in step 2
b. Note: R^2 = .02 in step 1 ΔR^2 = .04 in step 2
c. Note: R^2 = .02 in step 1 ΔR^2 = .03 in step 2
*p<.05 **p<.01 ***p<.001

Appendix G: Parenting Regressed on Maternal Age (N=319)

Variable	B	SE B	β	Total R^2	F
14 m Intrusiveness[a]					
Step 1				.04	11.75***
Race	.27	.08	.19**		
Step 2				.05	8.87***
Race	.28	.08	.20**		
Program Group	.34	.14	.13*		
14 m Negative Regard[b]					
Step 1				.02	5.07*
Maternal Age	-.20	.09	-.13*		
24 m Intrusiveness[c]					
Step 1				.02	6.23**
Race	.18	.07	.14**		
24m Negative Regard[d]					
Step 1				.02	6.52**
Child Gender	.26	.10	.14**		
Step 2				.03	5.40**
Child Gender	.26	.10	.14**		
Education	-.17	.08	-.11*		
36 m Intrusiveness[e]					
Step 1				.02	7.19**
Education	-.19	.07	-.15**		
Step 2				.04	6.59**
Education	-.10	.08	-.08		
Maternal Age	-.23	.10	-.15*		

a. Note: R^2 = .04 in step 1 ΔR^2 = .02 in step 2
b. Note: R^2 = .02 in step 1
c. Note: R^2 = .02 in step 1
d. Note: R^2 = .02 in step 1 ΔR^2 = .01 in step 2
e. Note: R^2 = .02 in step 1 ΔR^2 = .02 in step 2
*p<.05 **p<.01 ***p<.001

Appendix H: Positive Parenting Regressed on 14 month Parenting Stress (N=319)

Variable	B	SE B	β	Total R^2	F
14 m Support[a]					
Step 1				.05	15.60***
Race	-.26	.07	-.22**		
Step 2				.06	10.33***
Race	-.23	.07	-.19**		
Education	.21	.10	.12*		
Step 3				.07	8.44***
Race	-.22	.07	-.18**		
Education	.20	.10	.12*		
14 month Stress	-.01	.01	-.12*		
24m Support[b]					
Step 1				.02	5.61*
Education	.22	.09	.13*		
Step 2				.03	5.46**
Education	.21	.09	.13*		
Child Gender	-.26	.11	-.13*		
36m Support[c]					
Step 1				.04	12.37***
Program Group	.34	.10	.19**		
Step 2				.06	10.03***
Program Group	.35	.10	.20**		
Education	.21	.08	.15**		
Step 3				.08	9.29***
Program Group	.33	.10	.19**		
Education	.20	.08	.14**		
14 month Stress	-.02	.01	-.15**		

a. Note: R^2 = .05 in step 1 ΔR^2 = .01 in step 2 ΔR^2 = .01 in step 3
b. Note: R^2 = .02 in step 1 ΔR^2 = .02 in step 2
c. Note: R^2 = .04 in step 1 ΔR^2 = .02 in step 2 ΔR^2 = .02
*p<.05 **p<.01 ***p<.001

Appendix I: 14 month Parental Detachment Regressed on 14 month Parenting stress (N=319)

Variable	B	SE B	β	Total R^2	F
Step 1				.04	12.45***
14 month Stress	.03	.01	.19**		

Note: R^2 = .04 in step 1
**p<. ***p<.001

Appendix J: Positive Parenting Regressed on 24m Parenting Stress (N=319)

Variable	B	SE B	β	Total R^2	F
24m Support[a]					
Step 1				.02	5.61*
Education	.22	.09	.13*		
Step 2				.03	5.46**
Education	.21	.09	.13*		
Child Gender	-.26	.11	-.13*		
Step 3				.05	5.63***
Education	.19	.09	.12*		
Child Gender	-.23	.11	-.12*		
24 month Stress	-.02	.01	-.13*		
36m Support[b]					
Step 1				.04	12.37***
Program Group	.34	.10	.19**		
Step 2				.06	10.03***
Program Group	.35	.10	.20**		
Education	.21	.08	.15**		
Step 3				.08	8.95***
Program Group	.34	.10	.19**		
Education	.20	.08	.14**		
24 month Stress	-.01	.01	-.14**		

a. Note: R^2 = .02 in step 1 ΔR^2 = .02 in step 2 ΔR^2=.02 in step 3
b. Note: R^2 = .04 in step 1 ΔR^2 = .02 in step 2 ΔR^2 = .02 in step 3
*p<.05 **p<.01 ***p<.001

Appendix K: Negative Parenting Regressed on 14 and 24 month Parenting Stress (N=319)

Variable	B	SE B	β	R^2	F
24m Intrusiveness[a]					
Step 1				.03	8.78**
Maternal Age	-.14	.05	-.16**		
Step 2				.04	6.67***
Maternal Age	-.13	.05	-.15**		
Race	.15	.07	.12*		
14 month stress regressed on 36 month detachment					
36m Detachment[b]					
Step 1				.02	5.32*
Education	-.15	.07	-.13*		
Step 2				.05	8.34***
Education	-.13	.06	-.11*		
14 month Stress	.02	.01	.18**		

a. Note: R^2 = .03 in step 1 ΔR^2 = .01 in step 2
b. Note: R^2 = .02 in step 1 ΔR^2 = .03 in step 2
*p<.05 **p<.01 ***p<.001

Appendix L: 36 month Maternal Supportiveness Regressed on 36 month Parenting stress (N=319)

Variable	B	SE B	β	R^2	F
Step 1				.04	12.37***
Program Group	.34	.10	.19**		
Step 2				.06	10.03***
Program Group	.35	.10	.20**		
Education	.21	.08	.15**		
Step 3				.08	9.06***
Program Group	.35	.10	.20**		
Education	.21	.08	.14**		
36 month Stress	-.01	.01	-.14**		

Note: R^2 = .04 in step 1 ΔR^2 = .02 in step 2 ΔR^2 = .02
**p<.01 ***p<.001

Appendix M: Negative Parenting Regressed on 36 month Parenting Stress (N=319)

Variable	B	SE B	β	R^2	F
36m Detachment[a]					
Step 1				.02	5.32*
Education	-.15	.07	-.13*		
Step 2				.06	9.77***
Education	-.14	.06	-.12*		
36 month Stress	.02	.00	.21**		
36 month intrusiveness regressed on 24 month stress 36m Intrusiveness[b]					
Step 1				.04	14.71***
Maternal Age	-.12	.03	-.21***		

a. Note: R^2 = .02 in step 1
b Note: R^2 = .04 in step 1
ΔR^2 = .04 in step 2

Appendix N: Fourteen month Parenting Predicting 24 month Child Aggression (N=319)

Variable	B	S.E.	$\chi 2$	Odds Ratio	95% CI
Block 1			9.44		
Program	0.34	0.50		1.40	{.53, 3.74}
Race1	-1.00	0.61		0.34	{.11, 1.23}
Race2	-1.09	0.66		0.34	{.09, 1.21}
Age	-0.69	0.56		0.50	{.17, 1.51}
Education	-0.54	0.58		0.58	{.19, 1.81}
Child Gender	-0.59	0.50		0.56	{.21, 1.49}
Child Age	-0.08	0.06		0.93	{.89, 1.03}
Block 2			3.74		
Program	0.25	0.51		1.28	{.47, 3.50}
Race1	-0.67	0.65		0.51	{.14, 1.81}
Race2	-0.89	0.68		0.41	{.11, 1.55}
Age	-0.66	0.57		0.52	{.17, 1.57}
Education	-0.56	0.60		0.57	{.18, 1.84}
Child Gender	-0.57	0.51		0.57	{.21, 1.53}
Child Age	-0.08	0.06		0.92	{.82, 1.03}
14m Maternal Support	-0.33	0.33		0.72	{.38, 1.38}
14m Maternal Detachment	0.13	0.24		1.14	{.71, 1.83}

Appendix O: Twenty Four month Parenting Predicting 24 month Child Aggression (N=319)

Variable	B	S.E.	$\chi 2$	Wald	Odds Ratio	95% CI
Block 1			9.44			
Program	0.34	0.50			1.40	{0.53, 3.74}
Race1 (Black)	-0.10	0.61			0.37	{0.11, 1.23}
Race2 (Hispanic)	-1.09	0.66			0.34	{0.09, 1.21}
Age	-0.69	0.56			0.50	{0.17, 1.51}
Education	-0.54	0.58			0.58	{0.19, 1.81}
Child Gender	-0.59	0.50			0.56	{0.21, 1.49}
Child Age	-0.08	0.06			0.93	{0.83, 1.03}
Block 2			5.31*			
Program	0.21	0.51		0.17	1.23	{0.45, 3.38}
Race1	-0.54	0.65		0.68	0.58	{0.16, 2.09}
Race2	-1.03	0.66		2.46	0.36	{0.10, 1.30}
Age	-0.67	0.56		1.43	0.51	{0.17, 1.54}
Education	-0.63	0.59		1.13	0.54	{0.17, 1.70}
Child Gender	-0.43	0.52		0.69	0.65	{0.24, 1.79}
Child Age	-0.08	0.06		2.17	0.92	{0.82, 1.03}
24 m Support	-0.60	0.27		4.98*	0.55	{0.32, 0.93}

* $p<.05$

Appendix P: Twenty Four month Parenting Predicting 36 month Child Aggression (N=319)

Variable	B	S.E.	$\chi 2$	Wald	Odds Ratio	95% CI
Block 1			6.62			
Program	0.31	0.59			1.37	{0.43, 4.36}
Race1 (Black)	0.09	0.67			1.09	{0.29, 4.07}
Race2 (Hispanic)	0.48	0.85			1.62	{0.31, 8.47}
Age	-0.13	0.72			0.88	{0.22, 3.58}
Education	-1.06	0.67			0.35	{0.09, 1.29}
Child Gender	-0.85	0.62			0.43	{0.13, 1.45}
Child Age	0.00	0.07			1.00	{0.88, 1.14}
Block 2			5.03*			
Program	0.24	0.61		0.16	1.27	{0.39, 4.17}
Race1	0.64	0.73		0.79	1.90	{0.46, 7.88}
Race2	0.61	0.85		0.52	1.84	{0.35, 9.66}
Age	-0.19	0.71		0.07	0.82	{0.20, 3.33}
Education	-1.18	0.68		2.98	0.31	{0.08, 1.17}
Child Gender	-0.61	0.64		0.90	0.55	{0.16, 1.91}
Child Age	0.00	0.07		0.00	1.00	{0.88, 1.15}
24m Maternal Support	-0.72	0.34		4.58*	0.49	{0.25, 0.94}

* $p<.05$

Appendix Q: 14 month Parenting Predicting 36 month Child Aggression (N=319)

Variable	B	S.E.	$\chi 2$	Wald	Odds Ratio	95% CI
Block 1			6.62			
Program	0.31	0.59			1.37	{0.43, 4.36}
Race1 (Black)	0.09	0.67			1.09	{0.29, 4.07}
Race2 (Hispanic)	0.48	0.85			1.62	{0.31, 8.47}
Age	-0.13	0.72			0.88	{0.22, 3.58}
Education	-1.06	0.67			0.35	{0.09, 1.29}
Child Gender	-0.85	0.62			0.43	{0.13, 1.45}
Child Age	0.00	0.07			1.00	{0.88, 1.14}
Block 2			5.07*			
Program	0.15	0.61		.06	1.16	{0.35, 3.83}
Race1	0.46	0.72		.41	1.59	{0.39, 6.55}
Race2	0.58	0.86		.45	1.78	{0.33, 9.51}
Age	-0.04	0.73		.00	0.96	{0.23, 3.99}
Education	-1.04	0.69		2.27	0.35	{0.09, 1.37}
Child Gender	-0.74	0.64		1.35	0.48	{0.14, 1.66}
Child Age	0.01	0.07		.03	1.01	{0.89, 1.16}
14 m Detachment	0.47	0.20		5.58*	1.60	{1.08, 2.36}

* $p<.05$

Appendix R:14 month Parenting Predicting 24 month Child Inattention (N=319)

Variable	B	S.E.	$\chi 2$	Wald	Odds Ratio	95% CI
Block 1			6.85			
Program	0.13	0.50			1.14	{0.43, 3.00}
Race1 (Black)	-.09	0.56			0.91	{0.30, 2.75}
Race2 (Hisp)	0.47	0.72			1.59	{0.39, 6.52}
Age	0.81	0.58			2.25	{0.71, 7.06}
Education	-0.70	0.65			0.50	{0.14, 1.79}
Child Gender	-0.67	0.52			0.51	{0.19, 1.43}
Child Age	0.08	0.06			1.09	{0.97, 1.22}
Block 2			8.50**			
Program	0.13	0.52		.07	1.14	{0.41, 3.19}
Race1	0.42	0.62		.46	1.52	{0.45, 5.13}
Race2	0.53	0.74		.51	1.69	{0.40, 7.17}
Age	0.86	0.61		1.99	2.36	{0.72, 7.76}
Education	-0.64	0.69		.87	0.53	{0.14, 2.03}
Child Gender	-0.47	0.54		.76	0.63	{0.22, 1.80}
Child Age	0.09	0.06		2.08	1.09	{0.97, 1.23}
14m Maternal Detach	0.43	0.18		5.56*	1.54	{1.08, 2.21}
14m Maternal Negative	0.40	0.24		2.75	1.49	{0.93, 2.39}

* p<.05 ** p<.01

Appendix S: 36 month Parenting Predicting 36 month Child Inattention (N=319)

Variable	B	S.E.	$\chi 2$	Wald	Odds Ratio	95% CI
Block 1			4.86			
Program	0.45	0.65			1.57	{0.44, 5.56}
Race1 (Black)	-0.47	0.74			0.63	{0.15, 2.70}
Race2 (Hispanic)	-0.40	0.80			0.67	{0.14, 3.26}
Age	-0.88	0.74			0.42	{0.10, 1.77}
Education	-0.04	0.75			0.96	{0.22, 4.19}
Child Gender	-1.01	0.69			0.37	{0.09, 1.43}
Child Age	0.02	0.07			1.02	{0.89, 1.18}
Block 2			10.44***			
Program	0.11	0.69		.02	1.11	{0.29, 4.33}
Race1	0.08	0.78		.01	1.08	{0.23, 5.02}
Race2	-0.26	0.86		.09	0.78	{0.14, 4.16}
Age	-0.88	0.75		1.39	0.42	{0.10, 1.79}
Education	0.08	0.80		.01	1.09	{0.23, 5.17}
Child Gender	-0.97	0.71		1.83	0.38	{0.09, 1.54}
Child Age	0.00	0.08		.00	1.00	{0.87, 1.16}
36m Maternal Support	-1.26	0.43		8.45**	0.28	{0.12, 0.66}

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

Appendix T: Mediation Analyses: Positive Parenting Behavior Mediating Maternal Stress and Child Inattentive and Aggressive Behaviors (N=319)

Table 1T.

36 month parental support mediating 14 month parental stress and 36 month child inattention

DV	IV	B	SE B	β	R^2	F	Sobel
36m Support[a]							2.04*
	Step 1				.04	12.37***	
	Program	.34	.10	.19[a***]			
	Step 2				.06	10.03***	
	Program	.35	.10	.20***			
	Education	.21	.08	.15**			
	Step 3				.08	9.29***	
	Program	.33	.21	.19***			
	Education	.20	.10	.14**			
	14m Stress	-.02	.08	-.15**			
36m ADHD[b]	Step 1				.04	11.64***	
	36m Support	-.04	.01	-.19***			
36m ADHD[c]	Step 1				.02	5.60*	
	14m Stress	.00	.00	.13*			

a. Note: R^2 = .04 in step 1 ΔR^2 = .02 in step 2 ΔR^2 = .02 in step 3
b. R^2 = .04 in step 1
c. R^2 = .02 in step 1
* p<.05 ** p<.01 *** p<.001

Table 2T.

24 month parental support mediating 24 month parental stress and 24 month child aggression

DV	IV	B	SE B	β	R^2	F	Sobel
24m Support[a]							1.81[d]
	Step 1			.13*	.02	5.61*	
	Education	.22	.09	.12*			
	Step 2				.03	5.46***	
	Education	.21	.09	.13*			
	Gender	-.26	.11	-.13*			
	Step 3				.05	5.63**	
	Education	.19	.09	.12*			
	Gender	-.23	.11	-.12*			
	24m Stress	-.02	.01	-.13*			
24m ODD[b]							
	Step 1					6.75**	
	24m Support			-.14**			
24m ODD[c]							
	Step 1				.04	13.84***	
	24m Stress	.01	.00	.21***			

a. Note: R^2 = .02 in step 1 ΔR^2 = .02 in step 2 ΔR^2 = .02 in step 3
b. R^2 = .02 in step 1
c. R^2 = .04 in step 1
d. p<.07
* p<.05 ** p<.01 *** p<.001

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